



OAKLAND 2030

EQUITABLE CLIMATE ACTION PLAN

JULY 2020





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HONORING THE LAND AND ITS ORIGINAL STEWARDS

The City of Oakland acknowledges the original indigenous residents of the Ohlone land. Oakland was founded on unceded Chochenyo Ohlone land, the land of Huichin, Confederated Villages of Lisjan. By drawing on indigenous knowledge along with the wealth of Oakland's diverse cultures and experiences, the City seeks to implement a holistic approach to achieving climate equity for present, and future residents of Oakland, while paying proper respect to the history of this land and its original stewards. Through the 2030 Equitable Climate Action Plan, the City will seek to build reciprocity with local indigenous communities while addressing local climate change impacts, building frontline community resilience, and inspiring Oaklanders today and tomorrow to love and care for the land we share and call home.

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LETTER FROM THE MAYOR

LIBBY SCHAAF



My fellow Oaklanders,

Oakland has always been a place for social justice movements. We're a city that is fiercely proud of our diversity, our unique culture, and the ways in which our people demand action to bring about needed change. We are a stronger and more resilient community because of this, and it is this call to justice that guides our solutions to one of the great challenges of our time: the climate crisis.

This crisis is a generational battle for the future of our community and the world. It is not only an environmental emergency, but threatens our economy, our health, and the future of all generations to come. People of color and low-income residents have been hit first, worst, and hardest by climate change, a pattern that will continue unless we act now. In 2018, I introduced a Climate Emergency Declaration for Oakland, acknowledging the impact this crisis is having on our frontline communities.

This Declaration committed to the creation of a strategy to bring about a just transition to a low carbon future that creates good green jobs, improves health, mobilizes our resources, and addresses the inequalities that climate change has worsened.

This Equitable Climate Action Plan is our strategy to create a future built on justice, equal opportunity, and environmental protection. This Plan is more than just policies to reduce greenhouse gas emissions. Equity drives every aspect of this approach, and each Action is designed to maximize benefits to frontline residents. These benefits come in many forms: reduced asthma and respiratory illnesses, more housing security, lower utility bills, more access to nature, greater economic opportunity, improved access to fresh food, and so much more.

Our commitment to equity is not only evident in the actions, but the process of creating the strategy as well. The ECAP is the result of thousands of Oaklanders sharing their time, expertise, and wisdom to generate solutions specific to the needs and conditions of their neighborhoods. An Equity Facilitator team crafted and administered innovative new techniques for lifting up the voices of our frontline residents. We conducted a Racial Equity Impact Analysis to ensure that that final Actions truly reflected our commitment to racial justice. We partnered with many of the amazing social justice organizations in Oakland to build on their successes and established a financing plan to implement the actions without creating a financial burden on those least able to pay. Equity led every step in the creation of this Plan, and will lead every future step in its implementation.

The scale of our ambitions must reflect the magnitude of the challenge. Tackling this crisis will require every bit of the passion, determination, and creativity that define Oakland. I am committed to making our city a model of sustainability for California and the world. It will take the focus and effort of all of us to happen, but I believe we can do it. We have to do it. The future of Oakland – and the world - depends on it.

A handwritten signature in black ink that reads "Libby SchAAF". The signature is fluid and cursive, with a large, stylized "S" at the end.

Libby SchAAF
Mayor, City of Oakland

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LIST OF ACTIONS

Transportation + Land Use

- TLU-1** Align All Planning Policies & Regulations with ECAP Goals & Priorities
- TLU-2** Align Permit and Project Approvals with ECAP Priorities
- TLU-3** Take Action to Reduce and Prevent Displacement of Residents & Businesses
- TLU-4** Abundant, Affordable, and Accessible Public Transit
- TLU-5** Create a Zero Emission Vehicle (ZEV) Action Plan
- TLU-6** Establish Temporary and Permanent Car-Free Areas
- TLU-7** Rethink Curb Space
- TLU-8** Expand and Strengthen Transportation Demand Management Requirements
- TLU-9** Ensure Equitable and Clean New Mobility
- TLU-10** Expand Neighborhood Car Sharing

Buildings

- B-1** Eliminate Natural Gas in New Buildings
- B-2** Plan for All Existing Buildings to be Efficient and All-Electric by 2040
- B-3** Prevent Refrigerant Pollution
- B-4** Reduce Lifecycle Emissions from Building Materials
- B-5** Require All Major Retrofits of City Facilities to be All-Electric

Material Consumption + Waste

- MCW-1** Eliminate Disposal of Compostable Organic Materials to Landfills
- MCW-2** Strengthen Infrastructure and Partnerships for Edible Food Recovery
- MCW-3** Eliminate Single-Use Plastics & Prioritize Reuse in Food Preparation, Distribution, and Sale
- MCW-4** Support the Reuse, Repair, Recovery, and Refurbishment Economy
- MCW-5** Expand Community Repair Resources
- MCW-6** Establish a Deconstruction Requirement

LIST OF ACTIONS

Adaptation	A-1	Fund Creation and Operation of Resilience Hubs
	A-2	Enhance Community Energy Resilience
	A-3	Fund & Implement Citywide Vulnerability Assessment & Comprehensive Adaptation Plan
	A-4	Wildfire Risk Reduction
	A-5	Identify and Reduce Financial Risks from Climate Change
	A-6	Expand and Protect Green Infrastructure & Biodiversity
Carbon Removal	CR-1	Develop Local Carbon Investment Program
	CR-2	Expand and Protect Tree Canopy Coverage
	CR-3	Rehabilitate Riparian Areas and Open Space
	CR-4	Explore Carbon Farming
	CR-5	Assess Feasibility for Sequestration Incubator
	CR-6	Explore Regional Aquatic Sequestration Opportunities
City Leadership	CL-1	Evaluate and Reduce Climate Impacts of City Expenditures and Operation
	CL-2	Phase Out Fossil Fuel Dependency in All City Agreements and Contracts
	CL-3	Accelerate City Fleet Vehicle Replacement
	CL-4	Explore Creation of Public or Green Bank
	CL-5	Establish the Oakland Climate Action Network to Support Inclusive Community Engagement on ECAP Implementation
Port of Oakland	P-1	Reduce Emissions from Port Vehicles and Equipment
	P-2	Reduce Emissions from Electricity

INTRODUCTION

The global climate crisis is not one that Oakland can solve on its own, but it is one in which our city can, as it has done for decades, be a global leader. Across the world, cities are the vanguard of innovation for climate and resilience action. At the same time, like so many other cities, Oakland is vulnerable to the effects of climate change. With 19 miles of San Francisco Bay shoreline, wildfire and drought vulnerability, and social inequities that exacerbate the human impacts of a changing climate, Oakland cannot afford not to lead the fight against the climate crisis.

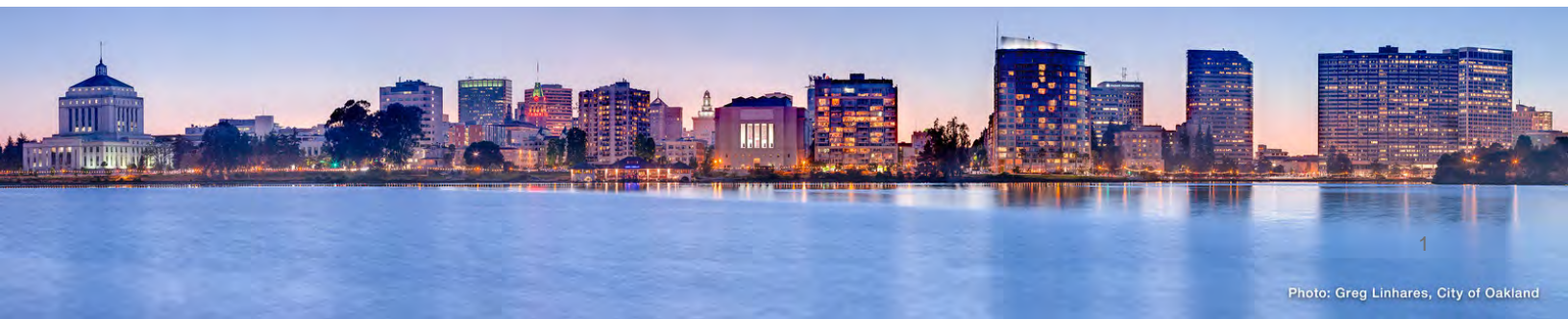
This is also an opportunity for Oakland. A bold response to the climate crisis – one rooted in equity, collaboration, and a just transition – can increase economic opportunity, particularly for residents who face barriers to full employment. It can restore ecosystems and lead to cleaner air and water. It can increase neighborhood resilience,

stimulate innovation, and improve health outcomes. An equity-focused response to the climate crisis represents an unparalleled opportunity for Oakland to realize its full potential. It's time to seize that opportunity.

In 2018, Oakland City Council passed a Climate Emergency and Just Transition Resolution, calling for an urgent climate mobilization effort to reverse global warming, rapidly reduce greenhouse gas (GHG) emissions, and be more resilient in the face of intensifying climate impacts. This includes creating good green jobs, reducing pollution, and helping Oaklanders to thrive. With global consensus that we have only until 2030 to avert the most catastrophic impacts, the time to act decisively on this resolution is now. This 2030 ECAP is the City's roadmap to bring about an equitable transition to a low-carbon economy.

How COVID-19 Highlights the Urgency of Climate Action

The early 2020 COVID-19 pandemic brought Oakland's economy, like economies around the world, to a near-halt. Like the climate crisis, as of May 2020, the COVID-19 pandemic has disproportionately harmed people of color, small business owners, and income-insecure workers. Early research has shown that the climate crisis is exacerbating the pandemic's toll; those exposed to higher rates of pollution have proven more susceptible to contracting and dying from the illness. At the same time, the pandemic has shown us what might be possible from a dramatic shift in our economy: cleaner air, reduced traffic congestion, lowered climate-warming emissions, fewer traffic fatalities, and more. A resilience- and equity-focused approach to climate action should accomplish these while having the opposite economic impact of the COVID-19 crisis: We should have cleaner air and better jobs for all; lower emissions and housing security; fewer cars on the roads and a strong local economy; healthier homes and more time with our families. For many, the pandemic has only further underscored the need for a holistic approach to local resilience, underpinned by climate equity and environmental justice. This ECAP lays out a path to these goals.



The goal of this ECAP is to identify an equitable path toward cost-effectively reducing Oakland’s local climate emissions a minimum of 56%, transitioning away from fossil fuel dependence, and ensuring that all of Oakland’s communities are resilient to the foreseeable impacts of climate change, by 2030.

Actions and strategies in this plan have been designed to meet all five of the following criteria:

EQUITABLE

Strategies are structured to maximize benefits and minimize burdens on frontline communities; prevent displacement; and respond to community priorities and values, addressing disparities in resource allocation and local vulnerability.

REALISTIC

Strategies are actionable within the City’s legal and functional sphere of control; cost effective and fiscally responsible; and measurable over the 10-year period of the plan.

AMBITIOUS

Strategies are responsive to the climate crisis, recognizing the urgency of immediate and game-changing actions that significantly and sustainably reduce local and/or lifecycle climate emissions, and directly addressing short-lived climate pollutants wherever possible.

BALANCED

The plan reflects a mixture of climate change mitigation and adaptation; immediate actions and longer-term strategies that demand innovation; and actions addressing both local and lifecycle emissions, responsive to the need to reduce emissions over which we have direct control and ability to measure, but also recognizing the global impact of each and every activity and purchasing decision within Oakland.

ADAPTIVE

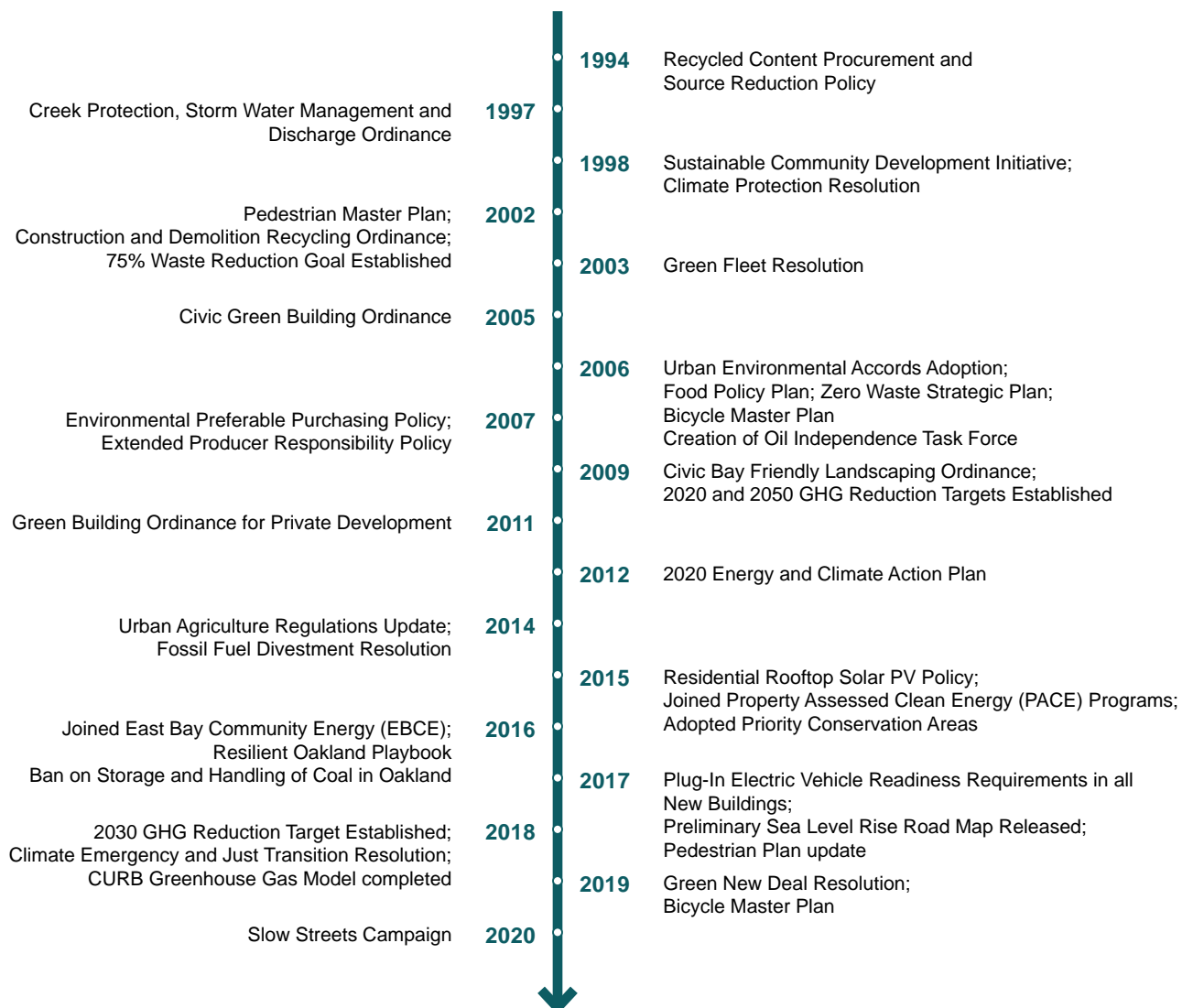
Strategies leave flexibility to accommodate technological, political, and cultural shifts over the Plan’s 10-year implementation period.



HISTORY OF CLIMATE LEADERSHIP



This ECAP builds on the City of Oakland's history of climate leadership by setting the path to equitably reach its ambitious GHG reduction targets and adapt to a changing climate. Oakland was an important player in the Paris Climate Agreement and is a signatory to the Global Covenant of Mayors for Climate and Energy and the Pacific North America Climate Leadership Agreement. The City has formalized these commitments in Resolutions and public declarations to reduce its dependence on diesel fuel, eliminate GHG emissions from the City's electricity supply, and meet or exceed the goals of the Paris Climate Agreement. The City's first ECAP (the "Energy and Climate Action Plan"), adopted in 2012 and outlining climate action through 2020, provided a first look at Oakland's climate story. This Plan builds on lessons learned from past work to create a bold and accountable approach. The City's notable achievements include:



CALL FOR FURTHER ACTION

Regardless of Oakland's progress in achieving our climate goals, local action alone cannot solve the global climate crisis. Oakland's [Climate Emergency and Just Transition Resolution \(2018\)](#) called for immediate, regional collaboration. State and federal leadership and manufacturer and producer responsibility are critical aspects of a comprehensive solution. For example, while this ECAP includes actions to minimize single-use plastics in our local economy, corporate manufacturing practice is the key to eliminating plastic from our oceans and air. Similarly, while Oakland can increase the availability of electric vehicle chargers city-wide, auto manufacturers must invest in more EV product offerings and a more robust charging network. The City does not have control over those actors, but it can influence them through advocacy and collaboration. Department staff across the City participate in dozens of regional coordination opportunities to advance best practices and advocate for Oakland's priorities. We recognize the systems that have led to the climate crisis. This Plan focuses on changing those systems where we can, to ensure our community has the opportunity to make

climate-friendly decisions while maintaining or enhancing their quality of life. It also includes an advocacy platform, spread across six sectors, to highlight the policies and systems that need changing but are beyond the City's sphere of control.

While broad-scale change is critical, every Oaklander can be part of making this Plan a reality. Every replacement of a gas-powered appliance with an electric alternative sends a strong market signal. Every time you're able to walk, bike, carpool, or take public transit rather than drive a car, you are reducing emissions and local pollution. While many of these actions are described here, the Plan focuses on areas where the City government has the greatest ability to require or influence outcomes. Many more climate-friendly actions are available to everyone in the community, including eating local, plant-based diets, flying less, and planting trees. We all have a role to play, both big and small. **It starts at home. It starts in Oakland. It starts now.**



Photo: Greg Linhares, City of Oakland

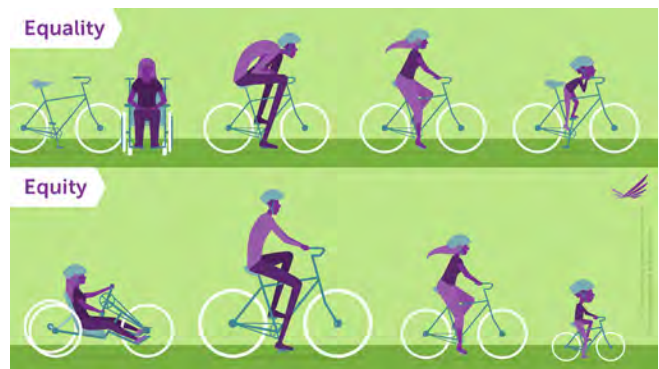
LEADING WITH EQUITY

The climate crisis is the greatest threat to human society of our time. It is also a profoundly inequitable one. Historical policies and systemic discrimination have resulted in certain communities being more impacted by poverty, lack of services, and unequal distribution of opportunities; as a result, these communities are most at risk from the threats of sea level rise, industrial pollution, heat, and more. The City of Oakland is committed to being a leader in responding to the climate crisis in terms of ambitious policy and racially equitable implementation. That means equity in process – ensuring that those facing the greatest impacts are robustly represented in policy and program development – and implementation – ensuring that the benefits of Oakland’s climate actions accrue first and foremost to communities that have been hit hardest by social and economic injustices. Wherever possible, ECAP Actions are structured to increase the capacity of individuals, communities, institutions, businesses, and systems within the city to survive, adapt, and grow. A Preliminary Equity Screen was used in drafting the ECAP to ensure that it sufficiently addresses equity considerations and provides meaningful guidance to ensure equitable outcomes in the implementation of each Action.

Prioritizing Frontline Communities

Throughout this ECAP, we use the term **frontline communities**: those who have been and will continue to be hit first and worst by the impacts of environmental injustice and the climate crisis. Frontline communities face intersecting vulnerabilities, including racial discrimination, poverty, disability, housing insecurity, linguistic isolation, poor air quality, and more, which magnify climate threats. As a result, they are often the least able to adapt, resist, or recover from climate impacts. Who we define as “frontline community” can change based on the specific threat or public policy being considered. In Oakland, frontline communities often include those living in areas with the worst air and soil pollution, traffic congestion, and diesel particulate exposure, and the least access to nature and healthy food. This largely describes the flatlands and the Interstate 880 corridor, where generations of industry have left their mark. Flatland residents suffer elevated rates of asthma, heart disease, and early death – as well as reduced access to economic opportunities. Frontline communities have done the least to create the climate crisis, yet they are bearing the greatest burden of its impacts.

Four topics are particularly intertwined with equity and the climate crisis: health, housing, food, and jobs. The following sections describe these interconnections, provide brief summaries of what the City is already doing to address these complex topics, and then show how the ECAP provides strategies to achieve climate equity in each area.



The City of Oakland defines “climate equity” as inclusive of environmental justice and racial and economic equity. Equitable climate actions reduce disparate harms from the effects of climate change by prioritizing frontline communities. They incorporate determinants of wellbeing and access to healthy living opportunities, such as clean air; good green jobs and supportive job pathways; reasonable costs of living and protection from displacement; improved public health and service access; and local resilience. Climate Equity enables all people, regardless of identities like race, ethnicity, gender, age, disability, or sexual orientation, to thrive in an environment without toxic pollution or environmental degradation, and to take an active role in designing and implementing solutions. Because the impacts of climate change tend to affect frontline communities first and worst, “climate equity” inherently includes an end to the climate crisis.

Public Health and the Climate Crisis

Our health is inextricably linked to the environments in which we live. From the outdoor environment in our neighborhoods to the indoor environment of our homes and schools, the conditions around us have profound impacts on both quality of life and life expectancy. Oakland's Department of Race and Equity (DRE) and Alameda County's Public Health Department (ACPHD) have documented significant health disparities linked to environmental conditions based on race and income. Oaklanders' access to clean air and water, nature, and fresh and nutritious food vary dramatically based on their neighborhood and the color

of their skin. DRE found in 2018 that African American children in Oakland were 10 times more likely than White children to be admitted to the emergency department for asthma-related conditions. ACPHD data show that average life expectancy can vary by as much as 15 years across one mile, from Oakland's flatlands to Oakland's hills, depending on race. Swift and equitable climate action can reduce these disparities, improve health outcomes, and ensure that all Oaklanders can thrive regardless of race or neighborhood.



Health in Oakland

Outdoor Environment

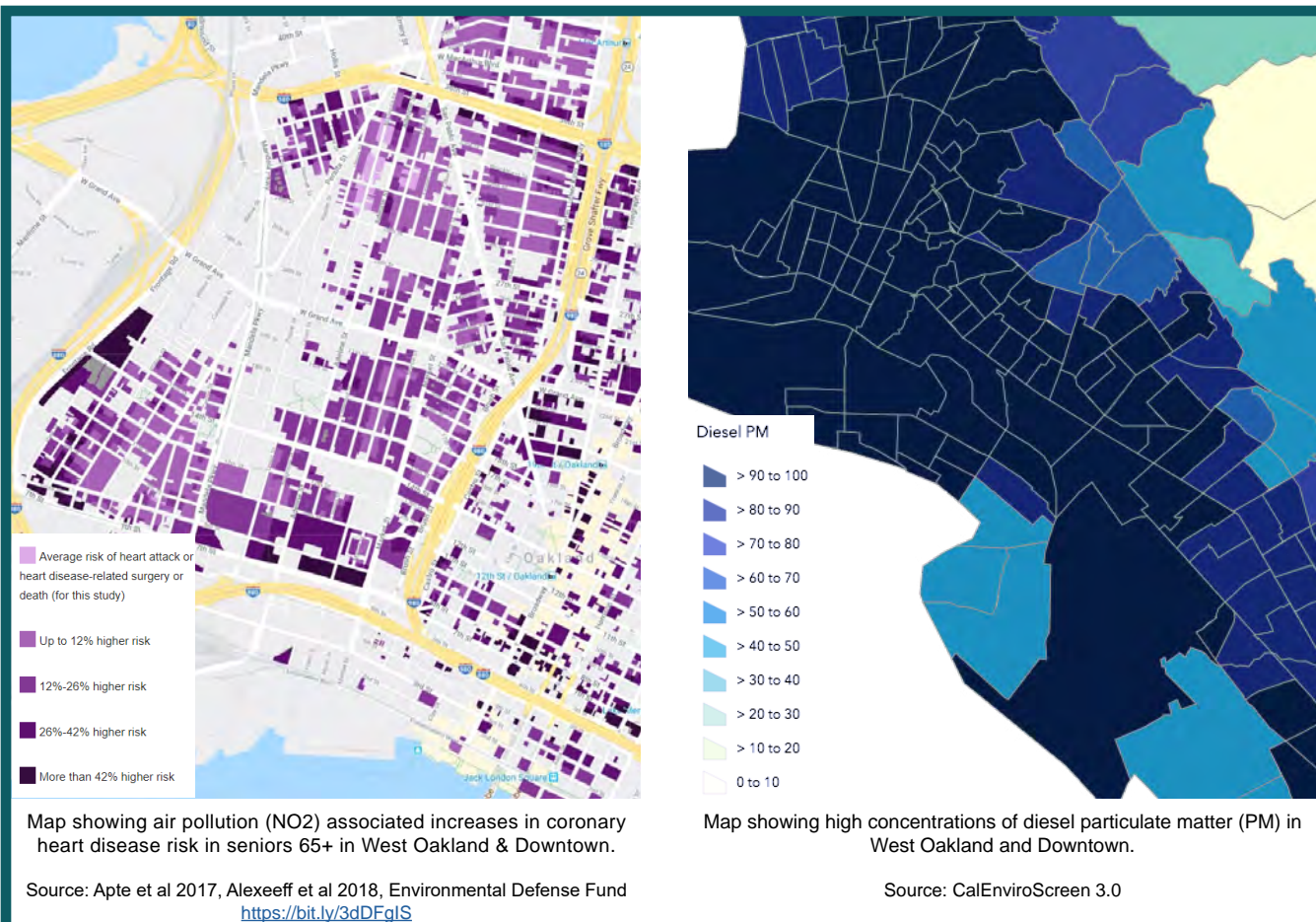
Outdoor air pollution comes from many sources, including the exhaust from tail pipes on vehicles, volatile organic compounds from industrial activity, smoke from wildfires, and pollen from local trees and plants.

The transportation and industrial sectors, including the Port of Oakland, release exhaust and chemicals that drive the climate crisis and are major sources of public health impacts. Air pollution from these activities contributes to increased rates of asthma, congestive heart failure, and stroke, as well as increased economic burden from hospitalizations and health care. The density of chemical and fuel release sites in high poverty neighborhoods is four times higher than in affluent neighborhoods. Ocean-going vessels and trucks serving the Port bring high levels of diesel pollution and fine particulate matter to West Oakland and communities living along the 880 freeway corridor, increasing the incidence of cancer and asthma in these populations. In addition to harming local air quality, these toxic pollutants are absorbed in nearby soil and contaminate groundwater. Heavy rains and floods, which are becoming more unpredictable, bring pollutants to the surface, threaten streets and waterways

with further pollution, and expose Oaklanders to additional health hazards.

Overall, these pollution sources and corresponding public health hazards are particularly prevalent from West to East Oakland along the 880 freeway. The reality is that the Oaklanders with the least ability to pay for and recover from these environmental health threats are impacted the worst.

Additionally, seasonal sources of outdoor air pollution that were once manageable are increasingly frequent and worsening because of climate change. This includes increased rate of smoke pollution from fire seasons that are growing longer and more difficult to combat. Increased CO2 in the air leads to increased pollen production in plants, so as climate change increases, allergy seasons are becoming longer and more severe. All of these health burdens are exacerbated for the young, elderly, and disabled, for those who work outdoors, and for unsheltered Oaklanders. Actions in this ECAP are intentionally designed to prioritize equitable health outcomes across Oakland.



In order to design effective climate policies that support equity at the local level, the City relies on granular data on health and other impacts. One example is this point-in-time data from a study conducted by the Environmental Defense Fund and others in 2016, showing the varying impacts of air pollution on seniors in West Oakland. This study adds depth to the Diesel PM map to better understand the connection between high pollution levels and localized health impacts among vulnerable residents.

Indoor Environment

Data shows that on average, Americans spend 90% of their time indoors. Our indoor environments, which for many include our homes, work, and schools, can expose Oaklanders to air pollutants such as nitrogen oxide, particulate matter, moisture, and mold. Old appliances and poor ventilation in buildings can exacerbate exposure to these indoor pollutants. According to the EPA, levels of pollutants can be two to five times higher indoors than outdoors. Many of these pollutants are in our air and water and occur because of old appliances and deteriorated building infrastructure.

Several major appliances inside our buildings are fueled by natural gas, including water heaters, space heaters, clothes dryers, and stoves. Natural Gas is a major driver of climate change. Its burning and leakages create indoor

air pollutants such as carbon monoxide, nitrogen oxide, and formaldehyde, all of which can have significant health impacts such as nose and throat irritation, headaches, fatigue, and nausea. Populations with asthma or other existing heart or lung vulnerabilities are particularly susceptible to harmful impacts of natural gas pollution. In fact, children who live in homes with gas stoves have a 24% increased chance of developing asthma over their lifetimes. This Plan is committed to addressing the adverse health impacts of natural gas by taking action to replace natural gas infrastructure and appliances in buildings with clean alternatives.

Poorly designed and maintained buildings can lead to additional indoor pollutants. Deteriorated water infrastructure can pollute drinking water, causing an

array of health complications such as impacted brain development, anemia, or reduced attention span and behavioral changes. Poor indoor air ventilation can cause a buildup of moisture, often resulting in mold. Mold is an allergen, and when touched or inhaled can cause sneezing, runny nose, red eyes, rash, lung irritation, and asthma. Older, leaky buildings also allow outdoor pollutants to enter

inside, further exacerbating exposure to unhealthy pollution – especially for populations living near acute sources such as freeways or heavy industry. Recognizing the profound health impacts that indoor air pollution can cause, this Plan is committed to strengthening Oakland's buildings and creating healthy, indoor spaces resilient to climate change.

The disparate impacts of the COVID-19 pandemic substantiated the deeply rooted issue of health inequity among those most vulnerable to the climate crisis. Data has shown that frontline communities, particularly the elderly, people with disabilities, the low-income, Black and Latinx residents, immigrant communities, and unsheltered residents, are disproportionately impacted by COVID-19 due to higher rates of underlying health conditions like chronic lung disease, diabetes, and high blood pressure. Health is compromised from consistent exposure to poor outdoor and indoor air quality such as living near heavily trafficked highway or using leaky household appliances powered by natural gas. These impacts are often exacerbated by the lack of long-term sheltered housing, access to healthy food, safe and flexible employment, and affordable healthcare. A full recovery from the global pandemic will therefore require addressing the root causes of health disparities through climate-resilient solutions. As parallels are drawn between the health impacts of COVID-19 and the climate crisis, the ECAP reaffirms the focus on improving health outcomes through deliberate, equitable climate actions.



Photo: Stephen Teixeira (City Testing Site)

Social Environment

The underlying causes of climate change impact health in more ways than just through the physical environment. Housing and job displacement, unemployment and underemployment, and other social stressors drive mental health challenges that affect quality of life and hinder resilience. An equitable approach to climate action, as this ECAP contains, can reverse these stressors by building local resilience and a clean, regenerative local economy.

What the City is doing

Various efforts exist to address these health disparities on both the city and the county level. The City of Oakland's Environmental Protection and Compliance Unit conducts

ongoing monitoring and enforcement to ensure that City activities do not create health hazards for the community, and to ensure that ground pollution from past private activities is adequately remediated. This includes preventing groundwater contamination, overseeing proper disposal of hazardous waste produced by City operations, performing human health and ecological risk assessments related to infrastructure and materials, and monitoring stationary sources of air emissions. The City's [Watershed and Stormwater Management Division](#) works to expand green infrastructure to mitigate stormwater runoff polluting local creeks and to prevent localized flooding that can surface and spread pollutants. The [Environmental Stewardship Program](#) recruits and supports thousands of

Oakland volunteers each year to clean and green the city, removing trash and hazardous materials from our streets, creeks, and the bay.

While the City is responsible for our own impact on environmental health, Alameda County's [Public Health](#) and [Environmental Health](#) Departments provide the majority of community-facing services for health. Their work includes their Healthcare for the Homeless program, which recognizes that Oaklanders without houses face some of

the worst health impacts from environmental threats such as toxic pollution. The County's asthma program provides case management and helps identify housing conditions that might be exacerbating a person's asthma, and their Healthy Homes Department works to identify and reduce lead poisoning in homes and schools.

What the ECAP will do

This Plan builds on existing work to improve environmental health outcomes in Oakland, particularly for the most impacted populations. The ECAP will result in improved indoor and outdoor air quality, increased resilience, reduced heat and smoke exposure, and decreased air pollution and traffic deaths through lowered automobile dependence. The ECAP generally directs City staff to implement Actions

that have direct health impacts in frontline communities first, such as by installing green buffer zones to protect children and families from freeway and industrial pollution, ensuring that residents in older apartment buildings can access safe walking routes and electric vehicle charging, and prioritizing frontline communities for urban forestry and green infrastructure investments.

The following ECAP actions directly improve health outcomes:



Public Health and the Climate Crisis

BUILDINGS

- » B-1 Eliminate Natural Gas in New Buildings
- » B-2 Plan for All Existing Buildings to be Efficient and All-Electric by 2040
- » B-5 Require All Major Retrofits of City Facilities to be All-Electric

MATERIAL CONSUMPTION + WASTE

- » MCW-2 Strengthen Infrastructure and Partnerships for Edible Food Recovery

TRANSPORTATION + LAND USE

- » TLU-4 Abundant, Affordable, and Accessible Public Transit
- » TLU-5 Create a Zero Emissions Vehicle (ZEV) Action Plan
- » TLU-6 Establish Temporary and Permanent Car-Free Areas

ADAPTATION

- » A-1 Fund Creation and Operation of Resilience Hubs
- » A-2 Enhance Community Energy Resilience
- » A-4 Wildfire Risk Reduction
- » A-6 Expand and Protect Green Infrastructure & Biodiversity

CARBON REMOVAL

- » CR-2 Expand and Protect Tree Canopy Coverage
- » CR-3 Rehabilitate Riparian Areas and Open Space

CITY LEADERSHIP

- » CL-3 Accelerate City Fleet Vehicle Replacement

PORT OF OAKLAND

- » P-1 Reduce Emissions from Port Vehicles and Equipment

Housing Security and the Climate Crisis

Housing and climate are deeply interrelated. For example, if downtown service workers cannot afford to live close to Oakland’s urban core, they will be forced to commute from ever-greater distances, increasing vehicle miles traveled and worsening health outcomes. If housing is built far from necessary services like grocery stores, banks, healthcare services, and schools, residents will be unable to make use of mobility options like walking and biking.

In recent decades, global and regional forces have strained the local housing market, dramatically increasing housing and rent costs. Many longtime Oakland residents are now unable to rent or buy a home here, with historically Black neighborhoods and low-income households of color being impacted the worst. The affordability crisis leaves frontline communities at perpetual risk of displacement and

homelessness; climate change exacerbates this crisis.

Climate-related disasters are becoming more frequent and devastating to already-vulnerable households. Rising seas, storms, and wildfires lead to property and infrastructural damage; frequent public safety power shut-offs (PSPS) send residents scrambling to find shelter, food preservation, and electricity for medical technologies; extreme heat days and air pollution create unlivable conditions for residents in poor quality housing or shelter.

These climate hazards, coupled with homelessness and the housing affordability crisis, are already happening in Oakland, especially in East and West Oakland neighborhoods. They demand that GHG emission reduction strategies also prioritize housing security.



The Crisis in Oakland

Oakland’s [Department of Housing and Community Development \(HCD\)](#) defines housing-insecure households as those facing “high housing costs in proportion to income, poor housing quality, unstable neighborhoods, overcrowding, or homelessness – which represent 22.5% of Oakland’s households.” The affordability crisis disproportionately impacts Oakland’s existing lower-income communities of color who have endured past discriminatory housing policies and who are most exposed to climate change impacts.

Nearly half of all rental households and 80% of the lowest income renters in Oakland are cost-burdened, meaning they spend more than 30% of total income on housing. African American renters represent 35% of all renters in Oakland, yet comprise 45% of cost-burdened renters; and despite representing only 26% of all homeowners in Oakland, African Americans make up 35% of the city’s cost-burdened homeowners.

The disproportionate impact is seen not only in housing-insecure and cost-burdened households, but also in

Oakland's unsheltered community. Data from the City's 2019 Point-in-Time Count put the total number of homeless residents in Oakland at 4,071 in 2019, of which 79% are unsheltered and 70% are African Americans. Unsheltered Oaklanders are among the most vulnerable to worsening climate change impacts.

Improving housing security for Oakland's frontline communities is an important climate equity outcome because a strong, sustainable Oakland means resilient,

sheltered communities in the face of increased climate-related disasters. Housing security also strengthens social cohesion and neighborhood stability, as homeowners and income-secure tenants can help build community wealth and community-controlled assets. The City can only achieve its ECAP goals if Oaklanders are able to participate fully in, and benefit from, climate action without fear of displacement and homelessness.



What the City is doing

The City of Oakland is actively working to address the housing crisis. In September 2015, Oakland City Council adopted [A Roadmap Toward Equity: Housing Solutions for Oakland, California](#) as a framework for addressing the housing crisis with a focus on equity, race, and income. In 2016, Mayor Schaaf convened the Oakland Housing Cabinet – a working group of City staff, housing policy experts, community leaders – which produced the [Oakland At Home](#) report, a strategic action plan to protect 17,000 low-income families from displacement and produce 17,000 new homes at all income levels by 2024. In 2018, the City launched [Oakland Housing Secure \(OHS\)](#), an anti-displacement program that combines legal services and emergency financial assistance for low-to-moderate-income tenants and homeowners facing evictions or loss of their home.

Through its affordable housing programs, City staff work with residents, local community organizations, and for-profit and non-profit developers to increase housing opportunities

through new construction, substantial rehabilitation, and preservation of rental and ownership housing for extremely low-to-moderate-income households. The City's annual [Notice of Funding Availability \(NOFA\)](#) provides funding for affordable housing projects, prioritizing projects that are close to public transportation and meet other sustainability standards. The 2019 NOFA provided \$12 million to support community land trusts and limited equity cooperatives. HCD staff also monitor a portfolio of more than 100 existing affordable housing properties to ensure proper management and compliance with rent and income limits. These programs help to create new affordable housing units, preserve existing affordable housing at risk of conversion to market rate, and convert existing market rate housing to affordable housing wherever possible.

The City is updating and developing new policies to make it easier for Oaklanders to build and rent accessory dwelling units (ADU's) on their properties to expand the number of units available and provide additional opportunities for

homeowners to generate income. Services like the [Safer Housing for Oakland Program \(SHOP\)](#) help existing homes and apartment buildings to be more resilient in the case of earthquakes and disasters, and HCD's [Residential Lending Services](#) unit offers a variety of loans and grants for low-to-moderate-income residents to fund emergency home repairs, accessibility improvements, energy efficiency upgrades, and building code violation corrections.

Homelessness is a major regional crisis that the City is working to address directly. [Keep Oakland Housed](#), which launched in 2018 as a partnership among local nonprofits and the City, prevented more than 2,100 Oakland households from losing their housing in its first 15 months. In October 2019, Oakland's Human Services Department presented the updated five-year Plan to Address Homelessness (PATH), which aims to reduce the number of unsheltered individuals by providing affordable housing, emergency intervention programs, and rapid rehousing. In 2018, the City [secured \\$8.6 million](#) through the state's Homeless Emergency Aid Program (HEAP) to provide services and housing for unsheltered Oaklanders. This funding has enabled the construction of community cabin and RV sites, an increase in shelter beds, and numerous support services.

What the ECAP will do

This ECAP was carefully developed to fight and adapt to climate change without exacerbating displacement of housing-insecure and cost-burdened residents. Strategies will reduce emissions while helping existing Oaklanders stay in their homes, including in cases of climate-related disasters and major changes to the built environment. The ECAP also provides guidance for incorporating climate equity principles in the City's housing and homelessness programs.

Using climate action to address the housing crisis takes many forms, including lowering energy costs, improving energy efficiency in existing homes, lowering the risk of damage to homes from flooding or fire, and ensuring that as much affordable housing as possible – including for low, very low, and extremely low-income households – is built throughout Oakland. Since reducing emissions will require considerable changes to how our residents live, work, and play, it is essential that strategies support the need for safe and affordable housing.

More affordable housing must be built near transit and active mobility options. Energy-efficient and all-electric

amenities and appliances must be accessible to lower-income tenants without driving up housing costs. For this reason, the ECAP characterizes building electrification as occurring in two stages: In the first, new buildings must be constructed without gas connections; cost savings from all-electric construction can be passed onto the homeowner or renter. The new construction requirements signal that contractors and retailers must prepare for the second stage: moving Oakland's existing buildings away from gas dependency. Stimulating the industry through new construction requirements will increase product availability and decrease costs, making building electrification more affordable. Leveraging state and regional incentives for electrification, efficiency, and energy storage will enable all Oaklanders to live in safe, healthy, and affordable all-electric homes.



Photo: Tim Daw Photography

The following ECAP actions directly address housing security:



Housing Security and the Climate Crisis



TRANSPORTATION + LAND USE

- » TLU-1 Align All Planning Policies & Regulations with ECAP Goals & Priorities
- » TLU-3 Take Action to Reduce and Prevent Displacement of Residents and Businesses



BUILDINGS

- » B-2 Plan for All Existing Buildings to be Efficient and All-Electric by 2040



ADAPTATION

- » A-2 Enhance Community Energy Resilience
- » A-4 Wildfire Risk Reduction
- » A-5 Identify & Reduce Financial Risks from Climate Change
- » A-6 Expand and Protect Green Infrastructure & Biodiversity



CARBON REMOVAL

- » CR-3 Rehabilitate Riparian Areas and Open Space



Photo: Pyatok

Casa Arabella, a 94-unit affordable housing development directly adjacent the Fruitvale BART Station, was developed by the East Bay Asian Local Development Corporation (EBALDC) and The Unity Council. The project supports Oakland's commitment to end veteran homelessness and increase access to affordable housing. Of the 94 units in the building, 20 are specifically dedicated to housing formerly homeless veterans.

Food and the Climate Crisis

Food has important social and environmental impacts, both globally and locally. Access to seasonal, nutritious, fresh food is not equitable. Local food access is directly related to global food production, many elements of which are wasteful and produce considerable emissions. Much of the food consumed in the U.S. is grown using industrial practices that contribute to biodiversity loss. High rates of pollution define the system, including petroleum-based fertilizers and chemical pesticides that destroy aquatic life, erode soil, and expose farmworkers to carcinogens. According to the United Nations, the global food system accounts for at least a quarter of GHG emissions, including 10-12% from crop and livestock activities. As climate change worsens, agricultural resources and food supply chains are already being disrupted by prolonged drought, unpredictable weather patterns, fires, and flooding. These disruptions exacerbate local food insecurity. This ECAP recognizes that sustainable food systems and local food security are essential to a thriving population and a resilient city able to withstand climate impacts.

Food and Climate Change

According to the City's 2017 Greenhouse Gas Emissions Inventory, the upstream emissions of food consumed by Oaklanders accounted for 17% of the City's total lifecycle emissions. Globally, according to the United Nations Intergovernmental Panel on Climate Change food systems account for 37% of total GHG emissions. Additionally, much of the food that is meant for consumption in Oakland ends up in the landfill, where it produces methane emissions. Improving housing security for Oakland's frontline communities is an important climate equity outcome because a strong, sustainable Oakland means resilient, sheltered communities in the face of increased climate-related disasters. Housing security also strengthens social cohesion and neighborhood stability, as homeowners and income-secure tenants can help build community wealth and community-controlled assets. The City can only achieve its ECAP goals if Oaklanders are able to participate fully in, and benefit from, climate action without fear of displacement and homelessness.

Food Insecurity

In addition to climate impacts, the global food system is vulnerable to economic shocks and natural disasters. Coupled with the Bay Area's high cost of living, this creates an unfortunate reality that many Oaklanders must weigh purchasing healthy food against their ability to pay for



Photo: Greg Linhares, City of Oakland

other basic necessities such as housing, healthcare, and transportation. In Oakland, a family of four must earn \$92,267 per year in order to meet their basic needs, yet 65% of people relying on the Alameda County Community Food Bank (ACCFB) for their food have incomes under \$28,290 per year. Living in a state of hunger has lasting, whole body health impacts such as increased risk of diabetes and high blood pressure, and already vulnerable populations are impacted the worst. ACCFB has found that food-insecure residents are more likely to have children at home, be single women, or rent their home. Data from Feeding America shows that 15% of children in Alameda County are food insecure. People facing marginal food security (MFS) are more likely to be nonwhite, rent their home, and have a household head over the age of 60. Often, those experiencing MFS have incomes above 200% of the federal poverty level, so although they struggle to afford food, they do not qualify for the Supplemental Nutrition Assistance Program (SNAP). Even for Oakland residents who can afford to purchase food, limited access to grocery stores, predominantly in East and West Oakland, further impede access to fresh and nutritious food.

What the City is doing

Climate change makes it more important than ever that every Oakland resident has access to healthy, sustainable, and affordable food. The City is working to address food insecurity through temporary relief programs that provide immediate aid to food insecure residents, as well as structural solutions that alleviate the root socio-economic causes of food insecurity.

Several City programs provide food and financial assistance to food-insecure residents. Each year, the Department of Human Services' Hunger Program and the Emergency Food Providers Advisory Committee serve over 10,000 emergency brown bags of groceries to low-income families and seniors. Oakland's Summer Food Service Program delivers free, nutritious meals to children ages 18 and younger, while cultivating community education around healthy eating habits and positive self-image. Partnering with more than 200 food pantries, hot-meal programs, senior centers, and nonprofits, the ACCFB also distributes millions of pounds of food every year throughout the county.

In 2019, the City's Zero Waste program expanded its efforts to increase composting and prevent food waste in response to California's SB 1383. Staff have begun partnering with the ACCFB as well as local nonprofits such as the HOPE collaborative to identify and strengthen partnerships for "rescuing" edible food that would otherwise be sent to landfill, ensuring that food reaches those who need it most. The City has also developed policies to support mobile food vending, and leveraged the Façade improvement and Tenant Improvement programs to provide grants to store owners and commercial kitchens to produce and sell local food.

Beyond temporary assistance, the City recognizes that structural change is necessary to eliminate food insecurity. Thus, the City is working to reduce barriers for localized agriculture in frontline communities while ensuring public health and safety and preventing displacement. The City passed a local food security resolution in 2005, establishing a goal of 30% local food production and calling for the establishment of the Oakland Food Policy Council (OFPC), which was founded in 2006. Though not fully funded, the OFPC works with City staff on creating progressive urban agriculture policies to support Oakland residents in growing and selling food. The OFPC has determined that a 5% local food production goal is attainable using a mix of land uses. The City updated its zoning policies for urban agriculture in 2014, differentiating "Crop Raising" from "Animal Raising" and modifying the definition of "Community Gardens" to increase the public's ability to practice small-scale agriculture citywide.

Local food systems are crucial to not only providing sustenance but also building long-term community resilience. Oakland's Parks, Recreation, & Youth Development Department's (OPRYD) Community Gardening Program provides 16 community garden spaces for residents to grow organic food; 10 rental plot community gardens; 23 sites with youth gardening facilities; and six community gardens in partnership with schools and local nonprofit organizations such as Acta Non Verba, City Slicker Farms, Phat Beets Produce, and Oakland Based Urban Gardens. The Oakland Public Library is also committed to increasing local food security by hosting a Seed Lending Library at four branches – Cesar Chavez, Dimond, Melrose, and the African American Museum and Library at Oakland (AAMLO).



Photo: Kelly D. Carlisle, Acta Non Verba

What this ECAP will Do

Equitable climate action offers opportunities to address both global food emissions and local food insecurity. The ECAP leverages these opportunities through actions that reduce emissions associated with food consumption and waste, increase food security through edible food recovery and economic improvements, and support sustainable local agriculture that can reverse food deserts and remove carbon from the atmosphere.

The ECAP calls for the City to lead by example in reducing its GHG emissions associated with its food purchases. Following in the footsteps of Oakland Unified School District's (OUSD), the ECAP calls for adoption of a climate-friendly food policy such as the Good Food Purchasing Policy with a racial justice lens, ensuring that all food purchased by the City, on City property, or at City events, has limited carbon emissions and maximum health, equity, and local economic benefits. This will minimize the City's contribution to the upstream emissions of unsustainable

food practices that characterize the current global food system.

Eliminating food waste will require structural changes throughout the private sector, which the City will influence through both policy and advocacy. Fighting food insecurity through edible food recovery is one important strategy in the ECAP. Edible food that is otherwise wasted will be recovered and distributed to those communities with the least access to affordable, healthy food.

Overall economic improvement through local green job creation is also woven throughout the Plan. Job security enables Oaklanders to afford healthy food, so creating good, green jobs for those who need them most addresses the root causes of food insecurity related to poverty and cost of living. By designing actions that create green jobs as an equitable outcome, the Plan recognizes that economic prosperity for all Oaklanders is the best strategy to permanently alleviate hunger.

The following ECAP actions directly address food security and sustainable food systems:



Food and the Climate Crisis

TRANSPORTATION + LAND USE

- » TLU-1 Align All Planning Policies & Regulations with ECAP Goals & Priorities

MATERIAL CONSUMPTION + WASTE

- » MCW-2 Strengthen Infrastructure and Partnerships for Edible Food Recovery

ADAPTATION

- » A-6 Expand and Protect Green Infrastructure & Biodiversity

CARBON REMOVAL

- » CR-4 Explore Carbon Farming
- » CR-5 Assess Feasibility for Sequestration Incubator

CITY LEADERSHIP

- » CL-1 Evaluate and Reduce Climate Impacts of City Expenditures and Operation



Photo: Doug Zimmerman

Green Economy

The ECAP is not just a plan to reduce emissions; it is also a plan for sustainable and equitable economic development. As we invest in local regenerative systems, an equitable approach can ensure that frontline communities benefit first and foremost from green job creation and new projects.

“A fair and Just Transition will create good, high-wage jobs; and ensure prosperity and economic security for all Oaklanders.”

[Resolution Supporting a Green New Deal adopted by Oakland City Council, 1/23/2019](#)

Good green jobs underpin a sustainable, low-carbon economy. As an industry category, the green jobs sector includes clean energy development and installation, carbon reduction technology, advanced materials, food scientists, and applied technology. But there are many more ways in which a Just Transition can create sustainable, high-wage jobs: Mechanics for heating and air conditioning systems, plumbers, electricians, arborists, construction workers, recycling collectors, compost site workers, organic farmers, and repair technicians all have a role in the transition from inefficient, fossil fuel-based systems to alternatives based on clean energy and resource conservation. **Good green jobs are local, difficult to outsource, and support sustainable livelihoods.**

This is a growing industry. As our community invests in reversing emissions through carbon farming or creek

restoration, more local workers will be needed to install and maintain those systems. Programs and policies must be designed to ensure that new green jobs are well-paying, long-term, with good benefits and promotional opportunities. **Green jobs often pay more than equivalent jobs**, without higher educational requirements. Roughly 50% of workers in clean energy and energy efficiency have only a high school diploma or equivalent. Decisive climate policies can help ensure ongoing demand for new services, giving employers the certainty they need to invest in more workers, training and re-training, and long-term contracts.

Historically, many of the fields noted above have lacked diversity. To ensure a Just Transition, Oakland must build on its early success in green job training for frontline communities: strong cross-sector partnerships with local, trusted community organizations; adequate funding; a well-structured, comprehensive curriculum; targeted recruitment; and wrap-around support services.

Recognizing the value of green jobs, industrial properties throughout Oakland will be valuable in job creation for middle-wage job earners. A robust focus on growing the green economy can shape the City’s Industrial land policies: Oakland must maintain its employment centers and facilitate investment in new industrial building stock to accommodate diverse green businesses and employment that support emerging green industries and local hiring.



Photo: Greg Linhares, City of Oakland

What the City is doing

Because green jobs are spread throughout the economy, any broadscale economic and workforce development effort can support green job development. Many existing City programs can be leveraged to accelerate the transition to a sustainable economy. For example, Oakland has some of the most progressive local hire requirements in the country. Under the Local and Small Local Businesses Enterprise Program (L/SLBE), 50% of all City contracting must be awarded to local businesses. Additional procurement rules require living wages and favor bidders that hire Oakland residents. These requirements ensure that as the City leads on climate through its own operations, Oaklanders will benefit doubly.

Similarly, numerous City programs support small businesses, which play an outsized role in climate action and in Oakland's overall economy. These include streamlined permit navigation, access to market research, location assistance, and the City's Business Assistance Center – all of which can benefit emerging climate-friendly entrepreneurs.

Job training is critical to fortify pathways into stable, wealth-building careers; this will be increasingly important as the City invests in new and emerging green sectors. Since 1993, Oakland Public Works has operated the Team Oakland summer youth job training program for youth aged 15-24. Participants develop job and life skills through environmental service-learning and outreach to clean and green Oakland. Additional summer jobs programs are

supported by the Oakland Fund for Children and Youth, and Oakland's Parks, Recreation, and Youth Development Department. The City's Department of Housing and Community Development and Oakland Workforce Development Board partner with local vocational training programs, such as the Cypress Mandela Training Center and Laney Community College, to provide employment-related training and job preparation skills; many of these programs include a focus on green building and climate-friendly technologies.

The City also pursues economic strategies focused on specific sectors or neighborhoods. Oakland's Economic and Workforce Development Department (EWDD) is conducting an industrial lands inventory and impact analysis to evaluate how to best manage Oakland's important industrial uses, including assessing the impact of the legalized cannabis industry on existing local manufacturers and transportation firms. Thirty of Oakland's census tracts have been designated Opportunity Zones through 2026, to spur economic development and job creation in distressed communities by providing tax benefits to investors. The City has prioritized community wealth building projects in Opportunity Zones, to date identifying a co-operative grocery store and several anti-displacement housing and commercial funds as potential investments.

Transitioning to a low-carbon city can be disruptive, but a forward-thinking economic development approach can mitigate harms and help ensure a prosperous future



for all. For example, as the City worked with AC Transit to construct the new Bus Rapid Transit (BRT) system, it provided technical and financial assistance to businesses along the BRT corridor to help them during the construction phases and afterwards in a more pedestrian- and transit-oriented environment.

EWDD pursues partnerships to ensure that wealth-building is equitable. As of early 2020, it is seeking funding with the East Bay Permanent Real Estate Cooperative to expand

the co-op clinic currently offered by Sustainable Economies Law Center, hosted monthly in East Oakland; it also supports the Oakland Community Land Trust, which made its first commercial and mixed-use purchases in 2018. The City is also supporting creation of a new Community Development Corporation in East Oakland, the Black Cultural Zone, which has a goal to secure both residential and commercial property and ensure that economic activity grows local wealth without displacement.

The City of Oakland actively promotes equity in the Green jobs sector. For example, the City put entrepreneurs of color at the center of its tech strategy by partnering with local firms to create the Oakland Startup Network, an alliance and social network to help diverse local entrepreneurs build their business in the tech economy. Currently, ownership of clean tech and energy firms in Oakland is disproportionately white, as is employment. In order to achieve its goal to reduce racial wealth disparities in Oakland, the City will continue to target its business and workforce development services to Black, Latinx, Native and Asian Oaklanders, and seek industry and public partnerships to invest in the growth of green businesses owned by people of color.



What the ECAP will do


Directly and indirectly, this ECAP represents a massive investment in the low-carbon economy of the future. These investments can support wealth creation in frontline communities while helping prepare and defend those communities from the impacts of climate change. Here are some examples:

- Retrofitting buildings to replace on-site fossil fuel combustion with modern electric systems will support jobs for HVAC technicians, construction workers, electricians, and plumbers. Training in clean energy and heat pump technologies will be needed, and for that the City partners with the Bay Area Regional Energy Network and East Bay Community Energy.
- Meeting the City's food recovery and organic waste reduction goals will create increased demand for compost management and regenerative material sourcing, and strengthen the infrastructure for edible food recovery, all of which can create jobs.
- Efforts to support the reuse and repair economy with deconstruction, community repair facilities, and training will help grow the demand for repair and reuse workers.
- Efforts to remove carbon from the atmosphere will create new jobs in urban farming, tree planting and maintenance, and engineering, while ecosystem restoration and green infrastructure investments can provide an on-ramp to the green economy for Oakland youth.
- Investments in community adaptation and resilience will create opportunities in local food systems, traditional and green infrastructure repair and maintenance, and other community support services.


Oakland’s Economic Development Strategy aims to “make Oakland an easy, efficient, prosperous place to do business, ... reduce racial disparities, and help all Oaklanders achieve economic security so that everyone has an opportunity to thrive.” Equity-driven climate action, leveraging the City’s existing workforce training and small business assistance, will advance this mission.

Many ECAP Actions directly and indirectly support local job creation in frontline communities.

The following ECAP Actions directly address green jobs:




Green Economy




TRANSPORTATION + LAND USE

- » TLU-3 Take Action to Reduce and Prevent Displacement of Residents and Businesses
- » TLU-4 Abundant, Affordable, and Accessible Public Transit
- » TLU-10 Expand Zero-Carbon, Shared-Use Bus and Van Service




BUILDINGS

- » B-2 Plan for All Existing Buildings to be Efficient and All-Electric by 2040




MATERIAL CONSUMPTION + WASTE

- » MCW-2 Strengthen Infrastructure and Partnerships for Edible Food Recovery
- » MCW-4 Support the Reuse, Repair, Recovery, and Refurbishment Economy
- » MCW-5 Expand Community Repair Resources
- » MCW-6 Establish a Deconstruction Requirements



ADAPTATION

- » A-1 Fund Creation and Operation of Resilience Hubs
- » A-6 Expand and Protect Green Infrastructure & Biodiversity



CARBON REMOVAL

- » CR-2 Expand and Protect Tree Canopy Coverage
- » CR-3 Rehabilitate Riparian Areas and Open Space
- » CR-5 Assess Feasibility for Sequestration Incubator



Community Engagement

Enabling all members of the community to participate, debate, and have real ownership in the public dialogue is an important part of an equity-driven process. Extensive community engagement was foundational in creating the ECAP, including community workshops, online resources and feedback, social media, and youth engagement. In Spring 2019, the City and a local Equity Facilitator team (Oakland Climate Action Coalition, Environmental / Justice Solutions, and Blue Star Integrative Studios) held eight community workshops, including one in each Council District, where nearly 400 Oaklanders learned about the ECAP and voted for the strategies they felt were most critical. An online survey drew nearly 800 respondents, providing more insights on what actions Oaklanders prioritized,



and the specific barriers they faced in personal climate action. At two community-wide Town Halls, more than 200 participants reviewed and provided in-depth feedback on the draft ECAP through a Democratic Deliberative Decision-making process. Through many other online and in-person forums, Oaklanders learned about and weighed in on this evolving strategy.

Established by the City Council, the ECAP ad hoc Community Advisory Committee also played a pivotal role in reviewing draft strategies and advising the City on community concerns and needs. The 13-member Committee included a diverse membership with a range of expertise and perspectives on achieving climate equity.

Youth Voices

Youth engagement and education are critical in an equitable, forward-looking process. In fact, *Climate Justice Education and Curriculum* was one of the highest-scoring topics in ECAP workshops. In Spring 2019, the City worked with students in Skyline High School's Green Energy Pathway program through the Youth-Plan Learn Act Now ([Y-PLAN](#)) program to analyze local climate impacts. More than 100 sophomores researched topics from low-carbon mobility to adaptation, and made recommendations for how the City could support youth and families to tackle the climate crisis at a UC Berkeley program finale. In Summer 2019, the ECAP team worked with youth from [New Voices are Rising](#), engaging a cohort of high school students to prepare climate action recommendations. The youth presented their visions at the West Oakland Community Workshop, and two completed internships with the Equity Facilitator team. In Fall 2019, City staff engaged the City's Youth Commission in critiquing draft ECAP strategies. Staff

also visited AP Environmental Science classes at Oakland Technical High School, where students commented on the draft and discussed how they could lead climate action in their school and homes.

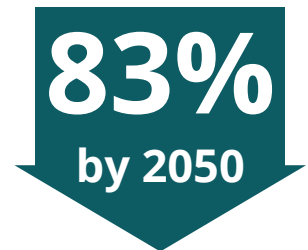
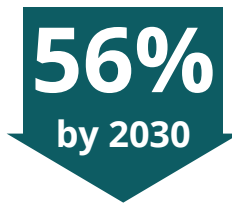
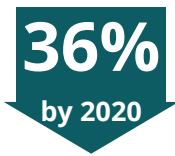
The City continues actively coordinating with the Oakland Unified School District (OUSD) to improve climate literacy. OUSD enacted an Environmental and Climate Change Literacy policy that calls for the District to reinvigorate sustainability programming, support climate change education, and strengthen partnerships with the City and local sustainability organizations. The City is supporting OUSD in designing and implementing a climate literacy curriculum that reflects the values and goals of the ECAP. Through this partnership, the City hopes to empower Oakland students to be leaders in ensuring the ECAP's success. A detailed look at all ECAP community engagement is provided in Appendix A.



GREENHOUSE GAS EMISSIONS IN OAKLAND

This ECAP views Oakland's greenhouse gas (GHG) emissions through three different lenses:

- GHG Inventory: What are Oakland's current local and lifecycle GHG emissions?
- No City Action: What will Oakland's future GHG emissions be without specific actions to address climate change?
- ECAP Actions: How much will the ECAP actions reduce Oakland's emissions?



Oakland's GHG Reduction Goals, compared to 2005 emissions

GHG Inventory

The City updates Oakland's GHG Inventory every two years. Data sources vary in quality and availability, and each time the data improves, the City revises past inventories to be more accurate. The inventory shows where emissions come from and helps calculate progress towards reduction targets. Total GHG emissions in Oakland in 2017 were 24% lower than the City's 2005 baseline. Since 2017, Oakland has made significant progress in reducing emissions, thanks in part to cleaner electricity delivered by East Bay Community Energy, increased use of sustainable transportation modes, and higher than expected use of electric vehicles. As a result of these factors, coupled with the intense economic slowdown resulting from the shelter-in-place orders related to the COVID-19 crisis, the City expects that it will surpass the GHG reduction target of 36% by 2020.

The largest sources of local GHG emissions in Oakland are transportation and buildings. Both sectors have seen reductions in their total emissions since 2005. Building emissions decreased 38% – the largest of any sector – while transportation emissions decreased over 15%. However, the percentage of total emissions from the transportation sector is growing, and it remains the largest source of local emissions by a wide margin.

The remaining sources of local emissions in Oakland originate from the Port of Oakland (including seaport and airport) and the material consumption and waste sector. The Port accounts for 2.4% of local emissions, with a 16.6% reduction in its total greenhouse gas emissions since 2005. The waste sector, which in 2017 was almost 5% of local emissions, made a 30% reduction in its emissions since 2005.

The early 2020 COVID-19 pandemic reduced global GHG emissions by 7% relative to 2019. As the world quieted to slow the spread of the virus, both air and passenger vehicle travel decreased dramatically, including in Oakland. In many places, industry and its associated emissions also paused. As the economy recovers from the ravages of the pandemic, emissions will begin to rise again. Systemic solutions, including those advanced in this ECAP, can ensure that the economic recovery benefits everyone, and that a return to prosperity will not entail a return to emissions as usual.



Photo: Stephen Teixeira (City Testing Site)

Local vs. Lifecycle Emissions

Not all climate emissions are local. In fact, about two-thirds of the emissions for which Oakland is responsible occur outside of Oakland. These global or **lifecycle emissions** include both local emissions (for example, tailpipe exhaust from auto trips), and emissions from the material extraction, manufacturing, shipping, and other activities that occur outside Oakland – often overseas – to satisfy local demand for materials, food, and services. From cars and clothes to condiments and concerts, everything we consume has a lifecycle carbon impact. In most North American cities, lifecycle emissions are about three times the amount of local emissions.

This deeper look at global emissions associated with Oakland's actions indicates that, while buildings and transportation have the highest emissions here in Oakland, the largest share of global emissions come from the climate impacts of our every-day purchasing decisions.

No City Action

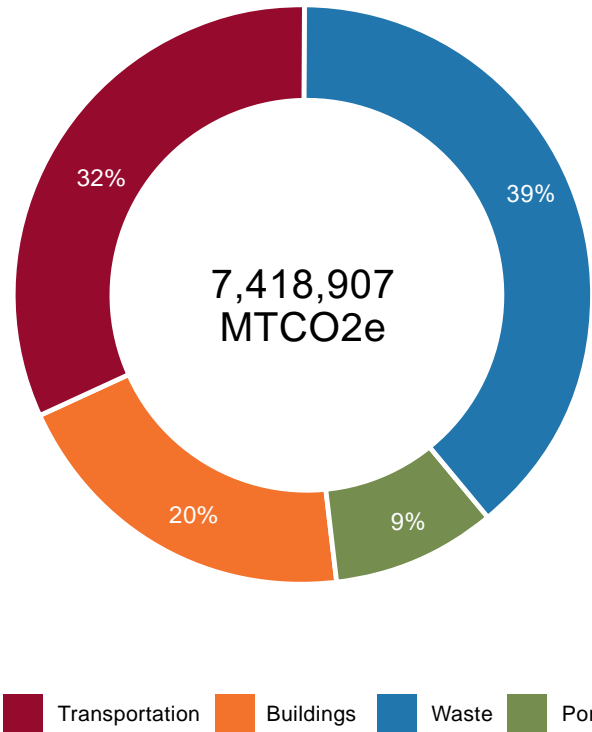
What will Oakland's GHG emissions look like if we don't take further action to update City policies and programs?

The Business as Usual (BAU) forecast models GHG impacts from existing local and state policies, as well as anticipated population and jobs growth to predict what would happen to emissions without additional City action.

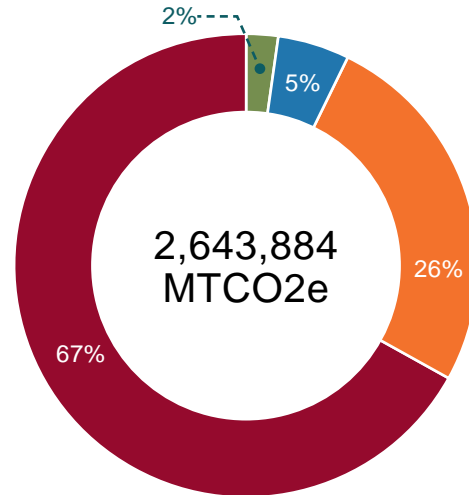
Forecasting BAU emissions relies on several assumptions related to electric vehicle adoption rates, GHG reductions implemented in Specific Plans, GHGs from future electricity, and other areas. In short, these assumptions consider what changes would occur regardless of any additional actions taken by the City of Oakland. The full set of assumptions is included in Appendix C.

This forecast is unable to address the more complex possible emissions associated with changing lifestyles and individual decisions due to climate change. Burdens such as housing displacement, pollution-related diseases, high energy costs, and unemployment are intertwined with GHG emissions, and are likely to remain high along with emissions in the absence of strong intervention. The forecast also does not account for how the energy demand of buildings might change in the future due to climate change, like increased need for air conditioning due to increased frequency of heat waves. In California, climate change will primarily lead to increased electricity demand, which will be met with renewable sources.

Total 2017 Lifecycle Emissions



Total 2017 Local Emissions



With current growth rates and policies in place at the state and local level and no additional action, Oakland is not on track to meet its 2030 GHG reduction target. Without additional action, Oakland will have emitted 23 million metric tons of CO₂e between 2020 and 2050.

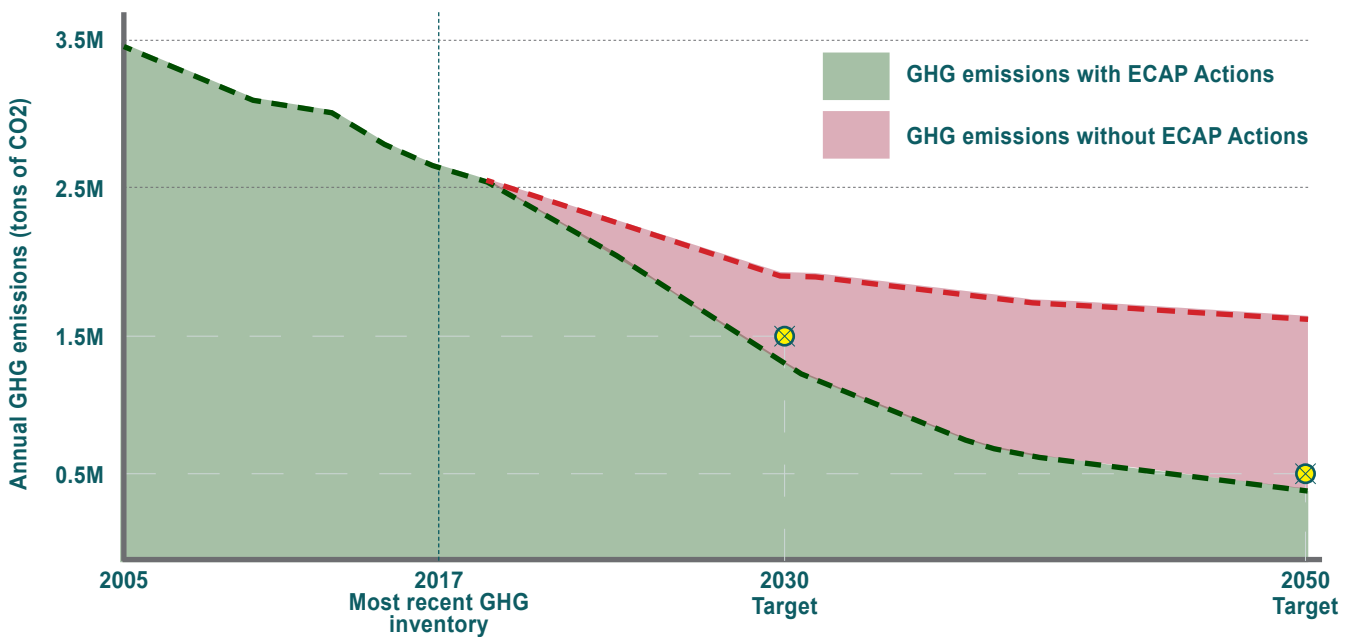
ECAP Actions

The actions in this ECAP can achieve Oakland's ambitious carbon reduction targets. Forecasting emissions reductions in some areas is straightforward and in other areas is complex. For example, emissions from zero-carbon electricity sources are relatively easier to estimate than those from electric vehicle use or bus ridership. ECAP Actions are interrelated and should be considered as an integrated plan instead of a line-item list. Thus, instead of presenting each Action as a specific amount of GHG impact, reductions are aggregated across the entire ECAP. By implementing all Actions in this ECAP, Oakland can reduce GHG emissions at least 60% by 2030 and 84% by 2050. Most critically, the Actions in this ECAP will form the foundation for actions required in future years to meet the deepest emissions reductions. Without successful implementation of this ECAP, it will not be possible to achieve future commitments.

Projected GHG Emission Reduction from 2005

YEAR	2020	2030	2050
No City Actions Reduction	32%	42%	49%
ECAP Actions Reduction	n/a	60%	84%
Target Reduction	36%	56%	83%

GHG Emissions With and Without ECAP Actions



The graph above makes it clear that additional action is needed. Analysis of the remaining emissions in 2030 and 2050 reveal that the most important factors to achieving Oakland's GHG targets will be:

- Changing land use policies and transportation patterns to reduce vehicle emissions
- Switching building energy systems from natural gas to electricity from clean sources
- Reducing solid waste emissions and building the local reuse economy

REPORTING ON IMPLEMENTATION PROGRESS

During the 10 years of ECAP implementation, City staff will regularly report on climate action progress to City Council and the public. The City has conducted comprehensive GHG emission inventories approximately every two years since the 2020 ECAP was adopted. Staff will maintain this schedule, combining the GHG emissions inventories with a **biannual ECAP Progress Report**. The report will utilize data from the inventories, tracking from relevant City departments and external partners, as well as any relevant, supplementary, or newly available data that arises over time.

When monitoring and evaluating progress, the City will consider both the **process** of implementation and the **outcomes** of action. Implementation **process** will produce more measurable data from tracking City and community programs and policies. Data on **outcomes** is critical, but can be scarce or less reliable (due to modeling). Environmental and community outcomes are impacted by numerous external factors, and metrics of success

can vary across communities. For example, it is easy to measure the increase in protected bike lane miles or bus route expansions; tracking the race and income of those who utilize those services is nearly impossible, and overall bus ridership is impacted by external factors such as global economic health, what kinds of vehicles are on the market, and weather. Staff will continue to advocate for improving data collection methodology throughout implementation. Through ongoing partnership with the Department of Race and Equity and leveraging the ECAP's [Racial Equity Impact Assessment and Implementation Guide](#), the City will use the most reliable and measurable data available to accurately and comprehensively report on the progress of ECAP implementation, particularly as it relates to the City's efforts to reduce disparities and increase climate equity and resilience.

For more considerations of equitable implementation and progress tracking, see Appendix C.



Photo: Rick Lewis

Fewer than 3,000 endangered ridgeway rails survive in the tidal wetlands of the San Francisco Bay, and nowhere else in the world. Arrowhead Marsh in Oakland is one of the premier spots to observe them. Successful implementation of this ECAP will mean not only fewer GHG emissions, improved resilience, and reduced disparities across Oakland, but also enhanced biodiversity and access to nature -- of all kinds, and for all Oaklanders.

HOW TO READ THE ECAP

Action Reference Number
This is shorthand used throughout the plan to refer to this Action.

Section Name

Action Name

Cost
This is an estimate of the cost to the City to implement this Action.

- \$\$\$ \$ \$0 - \$200,000
- \$\$\$\$ \$200,001 - \$500,000
- \$\$\$\$\$ \$500,001 - \$5,000,000
- \$\$\$\$\$\$ \$5,000,001 - \$16,500,000

Benefits
These are additional benefits to Oakland that this Action provides.

- Increased Resilience
- Improved Air Quality
- Improved Public Safety & Health
- Potential Green Job Creation
- Increased Mobility

Section Logo

ECAP Action
This language describes the specific details of this ECAP Action.

Climate Benefit
This is an estimate of how much this Action will reduce GHG reductions.

- Low Impact
- Medium Impact
- High Impact

Lead Agency
This shows which City agencies will lead implementation of these Actions.

ADAPTATION

A-2

Enhance Community Energy Resilience

Lead Agency	Climate Benefit	Cost	Benefits
OPW		\$\$\$\$\$	

Work with EBCE to develop a program and timeline for increasing resilience to power losses, including Public Safety Power Shutoffs (PSPS), and climate-driven extreme weather events for low-income, medically dependent, and elderly populations through installation of renewable energy and onsite energy storage with islanding capabilities

Going Deeper

As climate-driven weather events become more frequent and volatile, Oakland's residents, businesses, and buildings are increasingly vulnerable. Impacts include structural damage, power outages, and health consequences. This Action focuses on resident vulnerability during disaster-induced power losses and Public Safety Power Shutoffs (PSPS) that occur as a precautionary measure during high fire danger events.

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Power losses pose a serious threat to Oaklanders, particularly those who are low-income, medically dependent, elderly, or who have disabilities. For many, losing food, heat, or medical equipment due to power outages can be life-threatening. Backup generators can be used during power losses, but they are often expensive and energy-inefficient, and are themselves sources of emissions and pollution.

Going Deeper
This describes the background, context, and rationale for each of the Actions.

TRANSPORTATION + LAND USE



Vision

Integrated land use and access to safe, reliable, low-cost, high-quality mobility options for every Oaklander enable an equitable transition away from cars. Auto use is minimized, and all remaining vehicles on Oakland roads are electric.

TRANSPORTATION + LAND USE



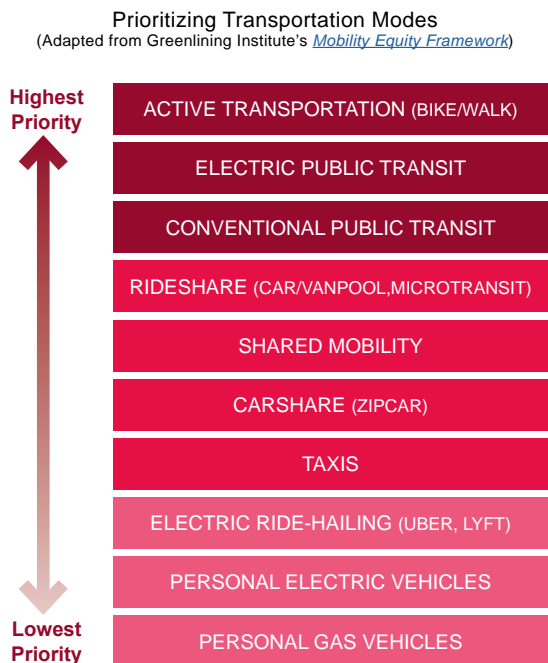
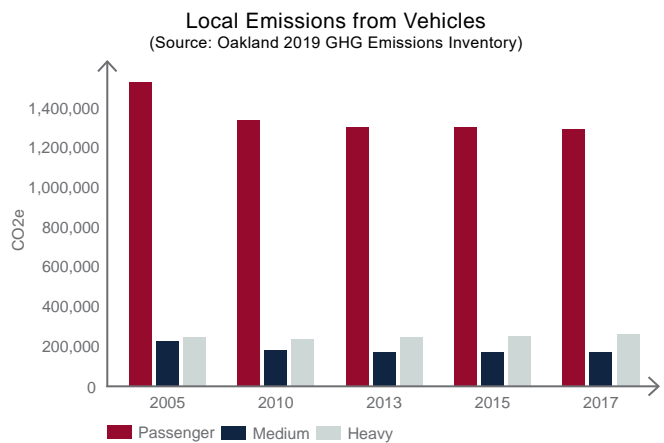
Transportation and land use policies are fundamental to how we live and move around in Oakland, and they directly influence each other. If housing is built far from jobs and basic services, residents are likely to drive more, increasing greenhouse gas emissions. If transit and active mobility options are inaccessible or unaffordable, cars will be the only option. Land use policy can contribute to inequities in Oakland, but it is also one of the City’s strongest tools for fighting climate change and supporting frontline communities.

Cars and Trucks Account for Two-Thirds of Local Emissions

Oakland cannot meet its climate goals without changing how people get around in our city. Cars and trucks burning gasoline and diesel create most of our local GHG emissions, as well as other air pollutants that disproportionately harm frontline communities. Light-duty passenger vehicles, the cars of most residents and commuters, are the single largest source of GHG emissions in Oakland. Diesel emissions from trucks contribute more heavily to serious health impacts like asthma and cancer. While trucks contribute fewer GHG emissions than passenger vehicles citywide, truck routes are largely concentrated along corridors serving the Port of Oakland, directly impacting health outcomes of frontline communities in West Oakland and along the 880 Highway corridor.

To reduce the carbon and pollution impacts of vehicles, the City must help as many Oaklanders as possible to move around Oakland without cars. Active transportation (walking and biking) and public transportation are the top priorities. For those who must use vehicles (including cars, trucks, buses, and delivery vehicles), electrification is the key. Electric vehicles will tap into East Bay Community Energy’s clean electric grid, supporting more widespread clean energy, improved public health outcomes, and robust options for mobility and commerce.

“Mobility” refers to having a range of reliable transportation options that support wellbeing and enable all people to safely, equitably, and efficiently access the services and resources they need.



How you prioritize mobility strategies depends on where you are. Different strategies are appropriate for different community needs and contexts. Here is an example of what an urban mobility prioritization framework might look like.

TRANSPORTATION + LAND USE



While this is a general framework, this ECAP recognizes that mobility choices are complicated. Travel needs vary across neighborhoods. The Greenlining Institute's Mobility Equity Framework – a process that includes a Community Needs Assessment, Mobility Equity Analysis, and Community Decision-Making – can help identify high and lower-priority transportation options that equitably respond to community characteristics.

Delivery vehicles add diesel and GHG emissions throughout Oakland's road network; this source of emissions may increase as online retail grows. The City has limited opportunity to regulate medium- and heavy-duty trucks, but can influence these emissions through Port policies, electric vehicle infrastructure, and other mechanisms.

Finally, Oakland must plan for an equitable and low-carbon future against the backdrop of a rapidly changing mobility

landscape. The arrival of shared mobility, including bikes, scooters, mopeds and cars, has helped thousands of Oaklanders access public transit and live car-free. Yet despite rapid growth, only a small fraction of total trips are taken using shared mobility.

Mass adoption of electric and autonomous vehicles will have even greater impacts that are not yet clear. Autonomous vehicles could increase traffic congestion and vehicle miles traveled. Or, they could improve mobility by eliminating the need to own and store a personal vehicle. Policies and programs related to all new mobility options must proactively address equity impacts and align with Oakland's GHG reduction goals. Oakland has been a national leader in shared and electric vehicle adoption. The City must invest heavily in infrastructure to continue and accelerate that transition.



Community Leadership

The Original Scrapper Bike Team is comprised of East Oakland youth who creatively restore and refurbish "scrapper bikes" at their neighborhood repair facility. In 2019, In collaboration with Oakland's Department of Transportation, the Scrapper Bike Team painted a street mural on 90th Avenue in East Oakland as part of the East Oakland Planning for Paving Initiative. The project also includes upgraded curb ramps, pedestrian safety zones, and high-visibility crosswalks.

Centering Equity

Frontline communities face higher health costs from exposure to poor air quality, and they pay a greater percentage of their income and time using infrequent and unreliable public transit services. Better transportation options can improve health outcomes and economic opportunities for frontline communities through reduced air pollution and wider access to regional jobs. Frontline communities have disproportionately experienced negative impacts from transportation and land use, and solutions to restore equity to these groups should be prioritized, incentivized, and subsidized in the City's climate strategy.

The housing affordability crisis has meant that transportation *is* housing for the increasing number of residents living in vehicles or in parking areas. Building more affordable housing near transit is a critical action for Oakland. Transportation and land use solutions also must be designed to minimize impact on the most vulnerable residents.

Climate solutions will be most effective when they are developed together with frontline communities so that they respond to specific needs and concerns. The Greenlining

TRANSPORTATION + LAND USE



Institute's *Mobility Equity Framework* and the City's own *Racial Equity Implementation Guide* should be used whenever the policies in this ECAP are implemented to ensure community voices are heard and addressed, that unintended consequences are avoided, and racial

disparities are remedied. Additional coordination with equity-based planning efforts like the *Community Air Protection Program* (also known as *AB 617 Action Plans*) will further support integrated and collaborative solutions.



Measuring Success

- Housing units built near high quality transit lines
- Affordable housing units built near transit
- % Increase in non-auto related mode share (active mobility and public transit)
- ZEV Adoption, overall and in frontline communities
- Public ZEV charging infrastructure installations
- Total mobility infrastructure investment in frontline communities



Advocate

- For MTC to dedicate a portion of toll revenue to public transit and air quality improvements in Oakland frontline communities
- For AC Transit to roll out its electric bus fleet in frontline communities first and to provide more frequent and reliable service at a lower cost to low income residents
- For new mobility providers to ensure equitable access to services in disadvantaged neighborhoods
- For Federal government transportation resources to support low-carbon mobility and active transportation networks in frontline communities
- For regional road pricing efforts such as a regional express lane network that facilitate regional express bus networks and minimize personal automobiles in Oakland
- For transportation network companies and state regulators to manage and reduce the carbon impacts from ride-hailing services and operations





ACTIONS

- TLU-1** **Align All Planning Policies & Regulations with ECAP Goals & Priorities**
- TLU-2** **Align Permit and Project Approvals with ECAP Priorities**
- TLU-3** **Take Action to Reduce and Prevent Displacement of Residents & Businesses**
- TLU-4** **Abundant, Affordable, and Accessible Public Transit**
- TLU-5** **Create a Zero Emission Vehicle (ZEV) Action Plan**
- TLU-6** **Establish Temporary and Permanent Car-Free Areas**
- TLU-7** **Rethink Curb Space**
- TLU-8** **Expand and Strengthen Transportation Demand Management Requirements**
- TLU-9** **Ensure Equitable and Clean New Mobility**
- TLU-10** **Expand Neighborhood Car Sharing**



TLU-1

Align All Planning Policies & Regulations with ECAP Goals and Priorities

Lead Agency	Climate Benefit	Cost	Benefits
PBD			

In the course of scheduled revisions, amend or update the General Plan, Specific Plans, Zoning Ordinance, Subdivision Regulations, Parks Master Plan, and appropriate planning policies or regulations to be consistent with the GHG reduction, adaptation, resilience, and equity goals in this ECAP. Specifically, appropriate planning policies should study the following strategies and should incorporate such policies that are found not to have adverse environmental or equity impacts:

- Remove parking minimums and establish parking maximums where feasible, ensuring public safety and accessibility.
- Require transit passes bundled with all new major developments.
- Revise zoning such that the majority of residents are within 1/2-mile of the most essential destinations of everyday life.
- Provide density bonuses and other incentives for developments near transit that provide less than half of the maximum allowable parking.
- Update the Transit Oriented Development (TOD) Guidelines to further prioritize development of housing near transit, including housing for low, very low, and extremely low-income levels.
- Require structured parking be designed for future adaptation to other uses.
- Institute graduated density zoning.
- Remove barriers to and incentivize development of affordable housing near transit.
- Incorporate policies addressing sea level rise, heat mitigation, and other climate risks into zoning standards and all long-range planning documents. Revise these policies every five years based on current science and risk projections.
- Identify and remove barriers to strategies that support carbon reduction, adaptation, resilience, and equity goals, including community solar and energy storage.





Photo: Boston Properties

Going Deeper

Oakland cannot meet its GHG reduction targets unless all long-range planning policies and regulations take aggressive action to enable sustainable transportation modes. This will include building more high-quality and affordable housing near transit, placing daily needs within short distances from homes, and ensuring that development occurs at densities that support investments in walking and cycling infrastructure. The land use system throughout Oakland, not just in the downtown area, must modernize to achieve these targets.

Our network of homes, businesses, parks, and schools, as well as the infrastructure that links them, must allow community members to meet their needs without driving. Residents, workers, and visitors in Oakland need choices to accomplish this, whether in active mobility (walking and biking), shared mobility (buses, trains, and ride sharing), or more efficient delivery of goods and services. There are many opportunities to integrate planning and transportation policies in ways that produce climate-friendly and equitable outcomes. This Action identifies many of the ways in which these outcomes can be generated, and will serve as a

guiding principle that Oakland’s approach to creating a low-carbon future will be one in which City departments, the community, and key stakeholders work collaboratively toward common goals.

This approach includes planning for housing, particularly for low-income residents, in ways that improve health and provide safe, accessible options for navigating the community. It includes planning for new infrastructure to support more frequent use of buses, trains, and ferries. It provides clear guidance that climate equity is foundational in land use and transportation decisions. A climate-friendly future, where GHG emissions are reduced and climate change adaptation is built into project designs, requires the successful implementation of this Action Item to become reality.

“I think there are multiple pathways towards a sustainable transportation sector in Oakland and all possibilities must be weighed for environmental, economic and social benefits.”



TLU-2

Align Permit and Project Approvals with ECAP Priorities

Lead Agency	Climate Benefit	Cost	Benefits
PBD		\$\$\$\$	
<p>Amend Standard Conditions of Approval (SCAs), as well as mitigation measures and other permit conditions, to align with the City’s GHG reduction priorities stated in this ECAP. Explore, through the Planning Commission, adoption of a threshold of significance for GHG impacts to align with this ECAP. In applying conditions on permits and project approvals, ensure that all cost-effective strategies to reduce GHG emissions from buildings and transportation are required or otherwise included in project designs, including infrastructure improvements like bicycle corridor enhancements, wider sidewalks, crossing improvements, public transit improvements, street trees and urban greening, and green stormwater infrastructure. Where onsite project GHG reductions are not cost-effective, prioritize local projects benefiting frontline communities.</p>			

Going Deeper

Cities have authority to place conditions on regulatory approvals to ensure that best practices are utilized and coordinated. This authority can be leveraged to ensure GHG reductions in all developments. The City works with project designers of new private and public construction to ensure consistency with adopted policies, typically in the form of standard conditions of approval (SCAs). SCAs are a key tool in implementing climate-friendly solutions related to transportation and land use challenges, and will be central to the ECAP’s success.

Similarly, the City issues permits for construction of new homes and businesses, improvements to existing buildings, and replacement of electric and natural gas appliances. These offer opportunities to gradually transition buildings in Oakland to produce fewer emissions, and will be a key mechanism for transitioning away from natural gas systems in buildings (Actions B-1 and B-2).

The City’s California Environmental Quality Act (CEQA) compliance process includes review of GHG impacts based on thresholds of significance. Projects that exceed any CEQA thresholds are required to implement mitigation measures and/or comply with the City’s SCAs. By aligning the CEQA thresholds, SCAs, and permit/project

approvals with ECAP priorities, the City can effectively use its regulatory authority to cost-effectively lower emissions and improve equity. This will be accomplished not only through design changes on buildings and infrastructure, but also in directing impact fees and other credit-based compliance pathways to projects in the Oakland community. Frontline communities have many opportunities to reduce emissions and improve health outcomes through reinvestment in tree plantings, vertical and rooftop gardens, electric replacements for natural gas systems, installation of electric vehicle chargers, and more. This Action aligns the City’s focus on providing local prioritization for GHG reduction activities, providing a crucial funding mechanism for local projects that help the City achieve its needed environmental outcomes.

“Make biking, walking and scooters safe for all -- build protected bike lanes and safe pedestrian crossings, enforce traffic laws, and eliminate dangerous driving.”



TLU-3

Take Action to Reduce and Prevent Displacement of Residents and Businesses

Lead Agency	Climate Benefit	Cost	Benefits
EWDD		<p>\$\$\$\$</p>	
<p>Leverage City resources and partnerships to prevent residential and business displacement, and preserve and expand existing affordable housing. Specifically:</p>			
<ul style="list-style-type: none"> • Expand support of Community Land Trusts, Community Development Corporations, and limited equity cooperatives to prevent displacement of residents and businesses, prioritizing tenants at highest risk for displacement. • Leverage new State funding, as well as identify ways to generate additional local funds, to provide ongoing capital financing for housing acquisitions and rehabilitation to preserve existing affordable housing and convert market-rate housing to affordable housing. • Ensure that all programs funding housing preservation align with climate goals, such as electrifying and weatherizing buildings. • Develop business anti-displacement programs that align with climate goals, such as increasing neighborhood-serving retail and electrifying and weatherizing buildings. • Develop resources and incentives to support local entrepreneurs whose businesses are helping Oakland meet its climate goals, with an emphasis on entrepreneurs from frontline communities. • Prioritize City support for community wealth building projects in Opportunity Zones, particularly where those projects align with ECAP goals. • Prioritize workforce training dollars and business support for businesses that help meet ECAP goals, especially locally-owned and minority-owned businesses, and businesses primarily employing or creating wealth for frontline community members. 			



Photo: Greg Linhares, City of Oakland



Going Deeper

Housing and business displacement can exacerbate climate change by increasing the distances that people must travel to access jobs and services – travel that is too often done by car. Displacement is also fundamentally inequitable, creating social dislocations and primarily impacting those who are already cost-burdened. Oakland in particular is experiencing a high rate of displacement as a result of regional forces. This action aims to address both housing and business displacement by expanding existing services from the City’s Housing and Community Development (HCD) and Economic and Workforce Development (EWDD) Departments. It complements other actions throughout this ECAP by working to ensure that market impacts of the transition to a low-carbon economy improve living conditions and create employment opportunities for existing Oaklanders.

“We are an economically diverse community and our multifamily housing projects should reflect that diversity. Why can’t a software engineer live next to a barista or a bus driver next to a financial analyst?”

“Community and member-owned enterprises are resilient and sustainable in a way that private for-profit businesses and even non-profit organizations are not. It is critical that people are active stakeholders in these projects and that they can have a say about their objectives and priorities.”



TLU-4

Abundant, Affordable, and Accessible Public Transit

Lead Agency	Climate Benefit	Cost	Benefits
DOT		<p>\$\$\$\$\$</p>	

The City will work with public transit agencies to replace autos with public transit as a primary transportation mode for trips beyond walking distance, ensuring convenient, safe, and affordable public transit access within Oakland and to neighboring cities for all Oaklanders. Specifically:

- By 2023, the City shall work with public transit agencies to develop short- and long-term strategies to increase public transit ridership by at least 3% per year each year through 2050. Strategies will be based on modifying existing routes and creating new routes for increased reliability, frequency, speed, and efficiency; improving safety at bus stops, prioritizing Deep East and West Oakland; reducing travel times; and ensuring robust, quality service on routes that serve Deep East Oakland and West Oakland.
- To facilitate route efficiency, the City shall work with AC Transit to evaluate the need for new or changed routes in Oakland on an ongoing basis. AC Transit and the City will work as partners, with the City committing to improving travel time and passenger experience along major public transit corridors, and to implementing national and international best practices for prioritizing public transit on Oakland streets while accommodating other modes. The City shall work with public transit providers to ensure that economic disruptions of any roadway reconfigurations are minimized.
- The City shall work with public transit agencies, community organizations, and community institutions to ensure that all Oakland residents, regardless of location and disability status, can access the public transit network. To ensure accessibility and adequate service in hard to reach areas, the City and public transit agencies will consider supplementing the central transit network with zero-emission, short-distance, neighborhood-level transportation services such as shuttles, prioritizing areas with high percentages of zero-car or low-car households, persons with disabilities, low-income households, and senior citizens.



Photo: Oakland Department of Transportation





Photo: BRT ACT Transit

Going Deeper

Public transit is a core element of an equitable, low-carbon city. Improving its frequency, reliability, safety, and network is a top priority for Oaklanders of all income levels. Less than a tenth of Oaklanders use public transit as their primary commute mode, in part because the frequency of service, hours of operation, and access are not equitably distributed.

Low-income people and nonwhite residents are disproportionately reliant on the bus system. African Americans are three times more likely than Whites to lack access to a car. Yet majority-African American and majority-Latino census tracts have the lowest bus frequency compared to the citywide average. Trips to central Oakland from Deep East Oakland, which has an above-average percentage of zero-car households, are generally longer than from elsewhere in the city. The new Bus Rapid Transit line will reduce this disparity, but not eliminate it.

While entities including AC Transit and BART have primary control over Oakland's public transit, the City can influence service through cooperative projects, capital

improvements, and advocacy. AC Transit is required to review major service and fare decisions for their impact on low income people and people of color, and has committed to prioritizing East Oakland in service improvements. The City will work closely with AC Transit and other providers to expand and improve service throughout Oakland, focusing especially on the populations that will benefit most from safe, accessible public transit: low income people, African Americans, residents of West and Deep East Oakland, seniors, people with disabilities, and youth.

Reducing transit costs is an important equity concern. AC Transit has committed to continuing participation in regionwide efforts to standardize youth fares, create reduced low-income fares, and create coordinated fares and schedules for trips using more than one transit agency.

“Yes! Public transit is a public good, and should be as close to free as possible.”
 “Transit access is an urgent environmental justice issue.”



TLU-5

Create a Zero Emission Vehicle (ZEV) Action Plan

Lead Agency	Climate Benefit	Cost	Benefits
DOT		\$\$\$\$	

By 2021, develop a ZEV Action Plan to increase adoption of electric vehicles and e-mobility while addressing equity concerns and prioritizing investment in frontline communities. The plan must set ambitious targets for ZEV infrastructure and must be coordinated with other land use and mobility options so that ZEV ownership is not necessary for access to ZEV trips, and ZEVs increase as a percentage of all vehicles while overall vehicle miles traveled decreases. The plan must address the following sectors: medium and heavy-duty vehicle electrification, including trucks and delivery vehicles; personal vehicle charging infrastructure in multifamily buildings, including affordable buildings; curbside charging; school and transit buses; and coordination with private and public fleet operators.

Going Deeper

Not all Oaklanders can stop using motor vehicles. Individual needs make car ownership a necessity for some, while delivery trucks, fleet vehicles, and other medium- and heavy-duty vehicles, including trucks serving the Port of Oakland, are necessary in today's economy. Fortunately, clean technology options exist today for all of these applications, and more are introduced every year. As options expand and costs drop, more Oaklanders and local businesses will be able to shift to ZEVs.

The Bay Area holds the highest rate of ZEV ownership in the United States. According to 2018 DMV registrations, at least 1.7% of cars in Oakland are ZEVs. However, four key barriers hinder further expansion:

1. Perception: Historically, ZEV ownership was reserved for the rich. That is no longer the case. Between the proliferation of used electric cars and incentive programs like Clean Cars for All, Californians of all income levels can buy or lease a ZEV. These programs must be marketed in culturally appropriate ways, and drivers need assurance that they will be able to safely and affordably charge the ZEVs that they own or use. Low income and sensitive populations benefit more than anyone



Photo: EVgo



Oakland Maritime Support Services (OMSS) provides a range of trucking services, such as parking, that alleviate street congestion in West Oakland while also reducing emissions, noise, and other impacts of truck activity in the community. In June 2018, OMSS began operating an Orange EV pure-electric terminal truck.

from vehicle electrification, because of the associated reduction in air pollution and the lower lifetime costs of vehicle ownership. The City must work to ensure that ZEV ownership and infrastructure development do not cause or exacerbate housing displacement.

2. Multifamily charging: Particularly in older and/or affordable apartment buildings, installation of charging infrastructure faces numerous challenges, from electrical capacity to space allocation.
3. Curbside charging: In commercial districts and urban neighborhoods with many apartment buildings, public vehicle chargers are crucial to facilitate ZEV use. However, regulatory and technical barriers make installation of curbside chargers a challenge.
4. Trucks: Fleet operators need incentives to bridge price premiums of new technologies, as well as strategically located charging infrastructure.

The ZEV Action Plan will address each of these factors. It will also identify building code updates needed to maximize charging opportunities in existing buildings. Finally, it will establish policies and programs to ensure that electric vehicle ownership does not become a liability in cases of power outages, and – through collaboration with East Bay Community Energy – help to ensure that the electric grid is resilient to and benefits from a dramatic increase in electric vehicle charging.

“We need more programs that promote used electric cars among lower income residents in single family homes. Those vehicles are low cost and could be charged overnight without fancy chargers. Could advertise at DMV. Right now electric cars have the stigma of being expensive and a thing only rich people do. [We need an] image campaign.”



TLU-6

Establish Temporary and Permanent Car-Free Areas

Lead Agency	Climate Benefit	Cost	Benefits
PBD, DOT		\$\$\$\$	
<p>Establish temporary open and car-free streets areas to assess feasibility of creating permanent car-free areas citywide. Use car-free areas for active transportation, parks and parklets and green infrastructure, pop-up community and commercial activity, and other uses that address community needs. Develop and plan car-free areas together with community members to ensure that community needs and equity impacts are adequately addressed.</p>			



Photo: Greg Linhares, City of Oakland





Photo: Oakland Department of Transportation

Going Deeper

One of many ways to promote active transportation – walking and biking – is to let people see what their streets would look and feel like without cars, filled with people enjoying the full breadth of the street on foot. This can take the form of festivals like Oakland’s annual Art and Soul festival or the weekly First Friday events, where certain downtown streets are blocked off and Oaklanders can enjoy art, music, and other activities. Such events can be used not only as festivals, but also to explore what it might be like to reserve certain streets permanently for active mobility and cultural activation.

In the midst of the COVID-19 crisis, the City led an initiative that provided this opportune glimpse into a transformed Oakland with more walkable and bikeable streets, with far fewer cars. The City’s Slow Streets program closed nearly 10% of Oakland’s streets to through traffic in an effort to encourage socially distant outdoor physical activity while reducing barriers to recreation and open space for frontline

communities. The City will continue learning from this initiative to explore transforming its streets to prioritize active mobility and social cohesion, working with local groups to ensure culturally-appropriate measures and avoid unintended consequences.

“Convert either Telegraph or San Pablo to permanently and entirely for bikes/scooters/ skateboards + buses. Having sections of the city, including side streets downtown, that are completely blocked off to single occupancy vehicles can increase pedestrian traffic and reduce VMT.”

“More car-free spaces. Focus on getting around without cars - transit, safety, walk/ bike-ability.”



TLU-7

Rethink Curb Space

Lead Agency	Climate Benefit	Cost	Benefits
DOT		<p>\$\$\$\$</p>	

Prioritize use of curb space throughout the city by function. In order of priority, allocate curb space for mobility needs for public transit and active transportation, such as walking and biking; access for people and commerce (loading zones and short-term parking); activation; and storage for long-term parking. Prioritize curb space based on surrounding land use and mobility needs, per the City’s adopted Bike and Pedestrian Plans. Where on-street parking is provided, revise pricing, availability, and location of parking to encourage active transportation, public transit, and clean vehicles without increasing cost-burden to low-income residents and other sensitive populations such as seniors. Use parking revenues to fund public transit and active transportation improvements in frontline communities. Specifically:

- Update parking pricing strategies for publicly accessible on- and off-street parking to adequately address demand and encourage mode shift.
- Require parking costs to be unbundled from residential and commercial leases.
- Enforce business compliance with parking cash-out requirements.
- Eliminate time limits, expand hours of meter operation, and implement demand-based pricing for on-street parking.
- Improve parking monitoring and enforcement.
- Establish Parking Benefit Districts with revenues to improve multi-modal access, public transit, and walkability of the commercial district.
- Build no new off-street, City-owned parking.
- Adopt an equitable fee structure in residential parking permit zones.





Going Deeper

In order to shift to more sustainable transportation modes, the City must remove existing subsidies for driving. Parking policy is inequitable by design: by reserving public lands for cars, drivers are subsidized at the expense of people without access to cars. The road network provides valuable public land that can be used for numerous, climate-positive uses. Fully capturing the value of this asset and redistributing those funds to invest in transit improvements and active transportation infrastructure for frontline communities is one of the few areas where the City can directly influence transportation choices.

The City's Department of Transportation (OakDOT) comprehensively updated its Bicycle Master Plan, [Let's Bike Oakland](#), in 2019. Building on a robust equity framework and deep community engagement, Let's Bike Oakland aims to increase access to key neighborhood destinations, increase health and safety, reduce housing and transportation costs, and boost community collaboration. In 2017, the

City adopted the revised [Pedestrian Plan](#), outlining a five-year work plan of specific, high-priority, and cost-effective improvements, programs, and policies. Together, these two plans establish a framework for complete streets and active mobility in Oakland. Recognizing the importance of significantly shifting people away from private auto trips – one of the top five strategies needed for Oakland to meet its climate targets – this action builds on these plans to reimagine how “the curb” can provide community benefits in a low-carbon world.

“Part of making biking and scooters safer has to be addressing use of the curb space by Lyft/Uber and delivery vehicles. They make unexpected turns and block bike lanes. Also, separated bike/ped lanes are a must for making safe transportation possible.”



TLU-8

Expand and Strengthen Transportation Demand Management (TDM) Requirements

Lead Agency	Climate Benefit	Cost	Benefits
PBD, DOT		\$\$\$\$	
<p>Increase TDM performance requirements for new developments where feasible to support the mode shifts necessary to achieve a low carbon transportation system. Expand the TDM program to include requirements for existing employers. Fund ongoing monitoring and enforcement of TDM requirements.</p>			

Going Deeper

Transportation Demand Management is the set of City policies and programs for helping the community access and use its transportation infrastructure, including streets, sidewalks, bike lanes, transit stations, and bus stops. TDM helps the City look for opportunities to make it easier for residents to use low carbon options like transit or cycling, and can provide ways to better integrate the different systems of transportation that people use to navigate Oakland. This Action commits the City to using

TDM to help people reduce their reliance on gas-consuming cars by ensuring that both new development and existing businesses provide for needed infrastructure to make biking, walking, transit, and other forms of shared mobility more accessible for their employees and customers. By expanding this infrastructure and ensuring that it is maintained and accessible, this Action will help make Oakland a safer, cleaner, and more convenient City for everyone.



Photo: Oakland Department of Transportation





TLU-9

Ensure Equitable and Clean New Mobility

Lead Agency	Climate Benefit	Cost	Benefits
DOT			

Ensure that new mobility platforms and technologies equitably support City carbon reduction goals, including integrated planning for vehicles, public transit, and active transportation networks and amenities. Specifically:

- Demonstrate that new mobility programs, including ride share programs, align with and support GHG reduction and equity goals in this ECAP.
- Apply Greenlining Institute's Mobility Equity Framework and the Racial Equity Impact tool developed by Oakland's Department of Race and Equity to policies and programs related to new mobility.
- Increase use of Intelligent Transportation Systems to give priority to transit and clean vehicles.
- Provide incentives for walking, biking, carpooling, and ride sharing, and disincentives for fossil fuel-based on demand delivery.
- Require carbon emission reduction plans for charging and rebalancing of micromobility fleets.
- Facilitate the establishment of Transportation Management Associations to enable distribution of public transit passes and invest in increased public transit and other mobility strategies, such as walking, biking and micromobility that can reduce vehicle miles travelled.
- Explore potential for a "mobility wallet" to pay residents to take carbon- and space-efficient travel modes.



Photo: Oakland Department of Transportation





Photo: Oakland Department of Transportation

Going Deeper

New mobility – including shared bikes and scooters, mobility-as-a-service, and automated vehicles – is a rapidly evolving sector. Many technologies and services in this category could not have been imagined five years ago. The City must have flexible but clear policy frameworks that enable it to adapt and respond appropriately to these new options, and to ensure that their distribution, costs, benefits, and impacts are equitable throughout Oakland. This action aims to facilitate new clean and equitable mobility modes, particularly those that enable more Oaklanders to move safely around the city without driving. It is also meant to ensure that Oakland can effectively respond to and anticipate new, market-disruptive options that have potential to impact – either positively or negatively – both equity and emissions.





TLU-10

Expand Neighborhood Car Sharing

Lead Agency	Climate Benefit	Cost	Benefits
DOT		<p>\$\$\$\$</p>	

Expand the Neighborhood Car Sharing program, ensuring that all shared vehicles are electric vehicles by 2030 and that shared vehicle services address the needs of families, people with disabilities, and frontline communities. Coordinate program expansion with New Mobility programs, EV infrastructure planning, and with revised parking policies. Where feasible, work with partners including developers and property managers to provide dedicated EV car sharing services in multifamily affordable housing buildings to increase access and reduce the car cost burden to lower-income families.

Going Deeper

While many Oaklanders may still rely on an automobile on occasion, this need can often be met with shared vehicles, reducing the need for private vehicle ownership. Shared vehicle platforms must be accessible for low-income and low-tech Oakland residents and prioritized in low-income neighborhoods, particularly Deep East Oakland, with low vehicle ownership and low access to reliable and rapid public transit.

“Local building code should be amended to reduce overall parking requirements for new developments. Savings for developers should be utilized on EV infrastructure and EV car sharing programs.”

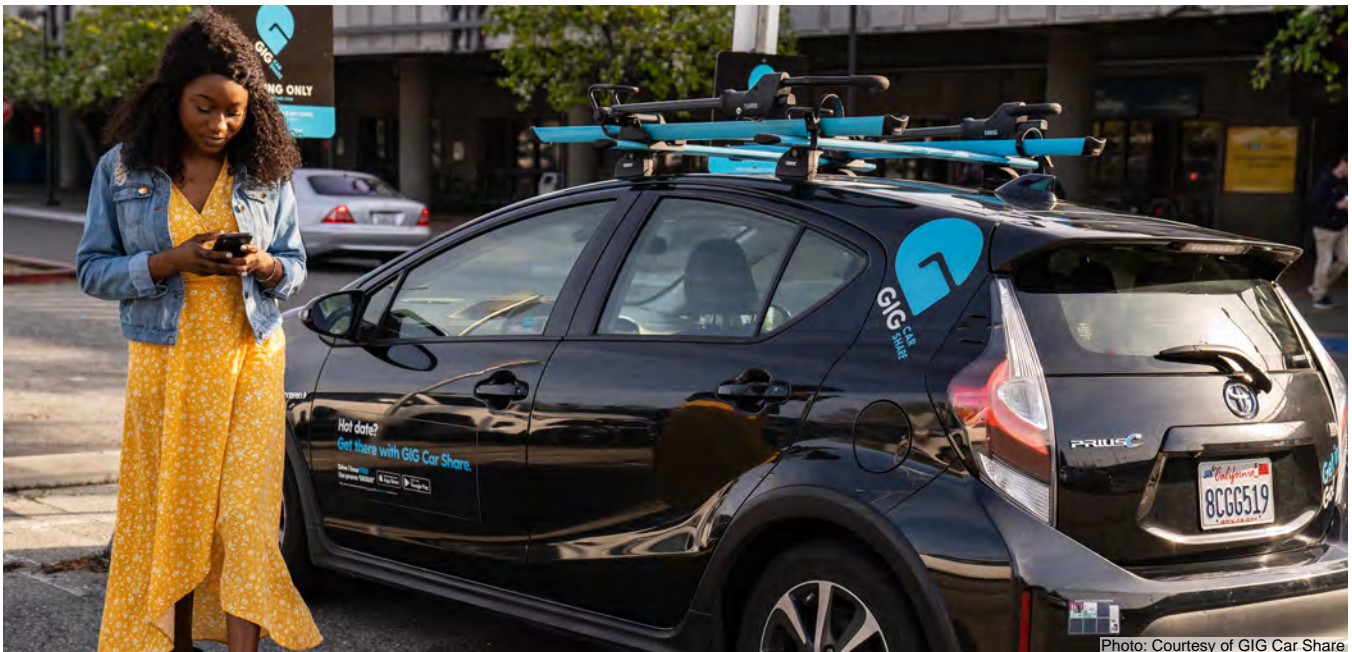


Photo: Courtesy of GIG Car Share

BUILDINGS



Vision

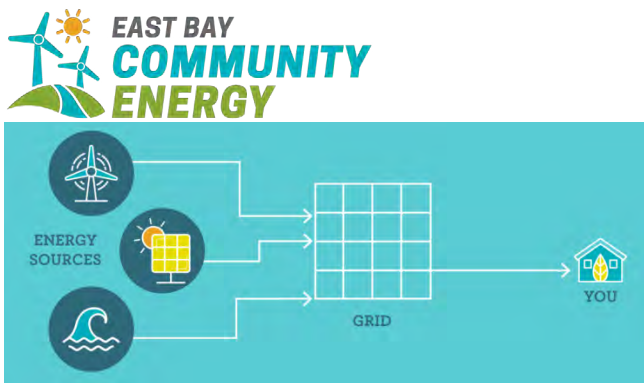
Leveraging a clean electric grid, all buildings in Oakland have transitioned away from onsite fossil fuel use, creating safe and healthy interior spaces that are resilient, efficient, and accessible, prioritizing the needs of low-income and sensitive populations.



Cleaner Electricity

Buildings emit greenhouse gases indirectly by using electricity produced at power plants, and directly by burning fossil fuels for space and water heating, cooking, and clothes drying. California has been a leader in reducing emissions from electricity, which in 2018 was 46% carbon-free statewide. Oakland has gone even farther, with East Bay Community Energy (EBCE) supplying electricity to 97% of Oakland customers. In 2018, 90% of EBCE's electricity

was carbon-free. The trend is clear: electricity is getting cleaner, faster. To demonstrate its leadership in this area, in 2018 the City began providing electricity for all City-owned buildings from 100% carbon-free sources through EBCE. Oakland's climate models show that a 100% clean electric grid is necessary to achieve our climate targets in 2030 and 2050.



In 2018, Oakland joined East Bay Community Energy (EBCE), a mission-driven partnership of cities and counties that is now the default electricity provider for all Oakland buildings. In 2019, EBCE electricity was more than 90% carbon-free and by 2030 it is expected that 100% of EBCE electricity supply will come from carbon free sources. All customers have the option of “opting up” to 100% carbon-free energy for a nominal fee, helping EBCE to meet their clean energy targets even sooner.

Natural Gas: the Unknown Polluter

Unlike electricity, natural gas burned within our homes and buildings cannot be made clean. Natural gas, which is primarily methane, creates GHG emissions when it is burned, and even more when it leaks throughout the gas distribution system. These leaks have severe climate impacts because **methane is a potent GHG, more than 80 times stronger than carbon dioxide in its potential to trap heat in the atmosphere.**

Natural gas also poses a threat to public health and safety. Burning it creates indoor air pollutants like carbon monoxide, formaldehyde, and nitrogen dioxide, all of which contribute to respiratory ailments. These impacts are compounded in small, poorly-ventilated spaces like older apartments. Children living in homes with gas cooking are 42% more likely to have asthma. Additionally, natural gas presents combustion risk for buildings, especially during and after major earthquakes.

The Role of Energy Efficiency

Reducing overall energy use is also important. California has been a national leader in energy efficiency: energy use has stayed level even as population and the economy have grown. While there are many well-funded state and regional programs to promote energy efficiency, they have only recently begun expanding to address the comprehensive climate, safety, and health impacts of the larger natural gas infrastructure. The City of Oakland can leverage these programs, and work with State and regional providers to strengthen them further.

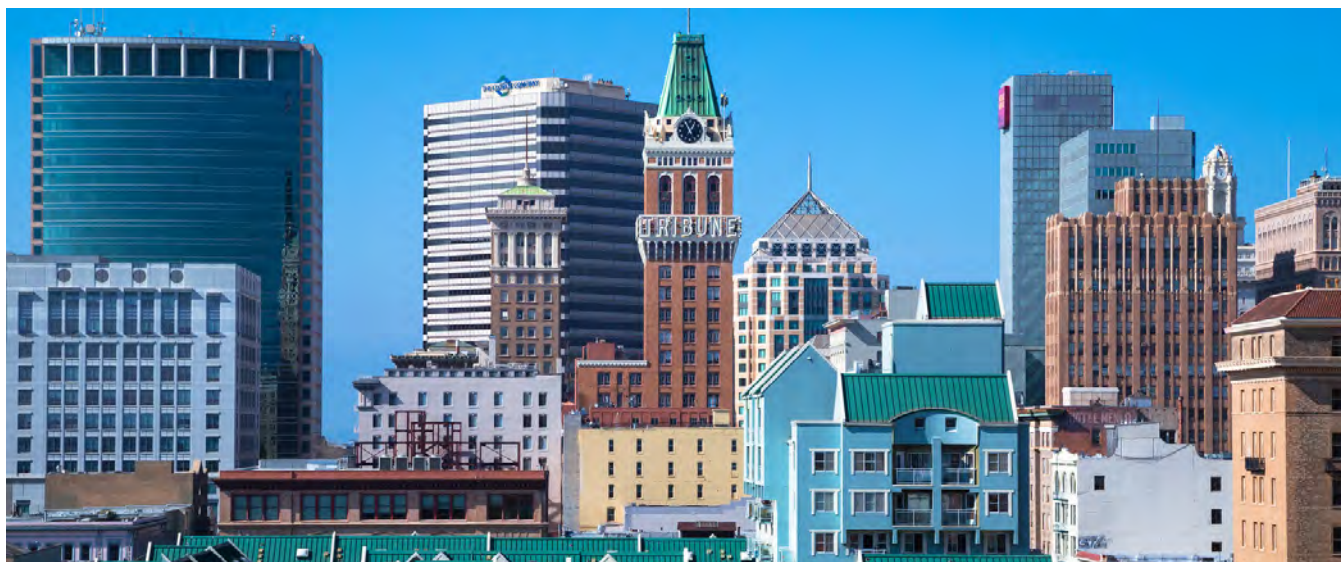




Centering Equity

Oakland cannot meet its climate goals without shifting quickly away from natural gas use. State policies and lower prices of renewables mean that substituting natural gas with electricity is one of the quickest, safest, and least expensive pathways to eliminating GHG emissions from buildings.

“Electrification” means ensuring that all mechanical systems run on electricity. In buildings, this means powering all energy systems, like cooking and heating, with electricity.



Costs and Economic Benefits

Utility rates for natural gas are increasing faster than those for electricity. Nonetheless, in 2019, gas remains generally cheaper than electricity, making the choice of cleaner, more efficient electric alternatives difficult for many. Thus, efforts to electrify buildings must be done properly to ensure that frontline communities are not financially burdened. Low-income and cost-burdened households have less ability to pay upfront costs, so financial assistance must remain a core component of reducing building carbon emissions. Combining electrification with efficiency and weatherization, like insulation upgrades, can build resilience and lower costs. Programs must be designed and implemented with appropriate protections to ensure that renters aren't burdened – instead enjoying the safety and comfort impacts of upgrades – and that upgrades are done comprehensively so that they don't exacerbate moisture problems. All Oakland residents and businesses should benefit from air quality improvements of building electrification, without adding to existing concerns of displacement and rising rents.

Switching from fossil fuel to local, carbon-free renewable energy sources can also bring economic benefits to low-income communities. Installation and maintenance of onsite solar energy systems, battery back-up systems, and local wind farms all support good green jobs. Community-owned solar energy is a strategy that many Oaklanders support for its potential to allow renters and frontline community members to financially benefit from shared installations. These strategies are important, though often outside the City's direct control. EBCE is supporting ongoing efforts to install local renewable energy and energy storage to increase local resilience. With a clean electric grid, community-owned solar will not significantly reduce GHG emissions, but may provide opportunities for wealth-building to co-owners. The City can support these efforts by modernizing planning, zoning, and building codes, and other regulations, to remove barriers to these important efforts (see ECAP Action TLU-1).





Health & Safety Benefits

Modern electric systems and appliances are more efficient than older gas technologies, and in some cases offer lower overall installation costs and utility bills. They also offer improved air quality and less exposure to pollutants known to exacerbate asthma and other pulmonary diseases, particularly among vulnerable populations like children and seniors. Heat pumps add air conditioning capacity in areas with heat stress, and induction cooking is safer with lower exposure to hot surfaces and no open flames. Eliminating natural gas in buildings can lower the risk of fire after earthquakes, and reduce the likelihood of childhood asthma.

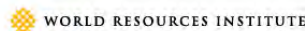


Photo: Rise

Highly Potent Short-Lived Climate Pollutants—Sources and Impacts

POLLUTANT	SOURCES	MAJOR IMPACTS
BLACK CARBON	black coal diesel exhaust biomass for cookstoves	local regional
METHANE	natural gas livestock landfills	global
TROPOSPHERIC OZONE	methane carbon monoxide nitrogen oxide volatile organic compounds	local regional
HYDROFLUORO-CARBONS	air conditioning refrigeration	global

Source: The Climate and Clean Air Coalition.
 Notes: Black carbon and tropospheric ozone also have a small global impact; methane also has small local and regional impacts.



Short-Lived Climate Pollutants

Short-lived climate pollutants (SLCPs) are greenhouse gases that remain in the atmosphere for less time than carbon dioxide (CO₂), but whose heat-trapping potential is far greater. Methane is a predominant SLCP. While atmospheric levels of CO₂ have increased 30 percent from pre-industrial levels, methane levels have increased 125 percent. Globally, the primary sources of methane emissions are decomposing organic matter; exposed permafrost (itself a result of climate change); livestock farming; and natural gas leakage from the points of extraction, throughout the distribution pipeline, and from appliances in our homes. Methane emissions are included in the City's GHG emissions inventories.

Another powerful class of SLCPs is refrigerants – the chemicals that make our air conditioners and refrigerators function. Though used in small quantities, refrigerants can be up to 9,000 times

stronger than CO₂ in warming the atmosphere. Refrigerants can be managed well, by preventing leaks from appliances and ensuring that units are disposed of properly. Oakland's GHG emissions inventories do not track refrigerant leakage, because there is no methodology to do so. While the California Air Resources Board is acting to reduce the climate impact of refrigerants, this is an emerging area for city leadership and action.





Measuring Success

- # of building electrification retrofits
- # and type of retrofits in frontline communities
- Citywide natural gas use
- Establishment of a refrigerant management program, with verifiable results for reduced climate impacts from refrigerant leakage
- Estimated reduction in GHG impact from embodied carbon standards



Advocate

- For additional funding for energy efficiency programs in frontline communities
- For faster adoption of zero-carbon electricity generation through EBCE
- For additional funding to eliminate natural gas systems in existing homes, particularly in disadvantaged neighborhoods
- For additional mechanisms to bring about community-owned or influenced clean energy systems, including community solar + storage and virtual net metering
- For new technologies and policies to prioritize low carbon refrigerants and ensure proper refrigerant disposal



Photo: GRID Alternatives

Community Leadership

Oakland-based non-profit GRID Alternatives has been installing no-cost solar electric systems for low-income homeowners and renters since 2004. In 2017, GRID partnered with the East Bay Asian Local Development Corporation (EBALDC) to bring solar power to the Marcus Garvey Commons in West Oakland, which will provide \$177,000 in long-term energy cost savings for low-income tenants and prevent the emission of 364 tons of greenhouse gas over its lifetime.

Rising Sun Center for Opportunity is an Oakland equity-centered nonprofit that prepares low-income individuals for careers in construction and the clean economy, focusing on youth, women, and people in reentry. Rising Sun has also served over 3,000 Oakland homes by delivering free energy efficiency services to households and training local youth to provide “Green House Calls” to primarily low-income homeowners and renters.





ACTIONS

- B-1 Eliminate Natural Gas in New Buildings**
- B-2 Plan for All Existing Buildings to be Efficient and All-Electric by 2040**
- B-3 Prevent Refrigerant Pollution**
- B-4 Reduce Lifecycle Emissions from Building Materials**
- B-5 Require All Major Retrofits of City Facilities to be All-Electric**



B-1

Eliminate Natural Gas in New Buildings

Lead Agency	Climate Benefit	Cost	Benefits
PBD		\$\$\$\$	
<p>By 2023, prohibit new buildings and major renovations from connecting to natural gas infrastructure.</p>			

Going Deeper

The transition to all-electric buildings must begin with new construction where it is easiest and most cost-effective. In 2019, costs for all-electric new construction were already either on par with or less than those for mixed-fuel (i.e. electricity plus natural gas) construction. By ensuring that all new buildings are constructed without gas, the City will send a strong market signal to retailers, construction workers, contractors, repair technicians, and more that they need to prepare for a rapid transition to all-electric appliances and infrastructure. For example, this means ensuring that products are available at retail

sites; that mechanics, plumbers, and electricians are familiar with heat pump technologies; and that real estate professionals are comfortable marketing all-electric homes and buildings. As of early 2020, 28 California jurisdictions have banned or significantly curtailed the use of natural gas in new construction, so the trend is clear. Oakland's requirements will be developed in collaboration with EBCE, the Bay Area Regional Energy Network, and other local cities to ensure regional consistency and to leverage the contractor training and incentive opportunities that already exist.



Photo: City Ventures





B-2

Plan for All Existing Buildings to be Efficient and All-Electric by 2040

Lead Agency	Climate Benefit	Cost	Benefits
PBD		<p>\$\$\$\$</p>	

By 2022, develop a policy roadmap to achieve decarbonization of the existing building stock by 2040, without additional cost burden or displacement risk to frontline communities. The roadmap must address:

- Equitable process and outcomes, including avoiding bill increases, ensuring benefits flow to renters, and local green jobs;
- Incentives and requirements;
- Regulatory obstacles;
- Phasing of implementation;
- Financial assistance for low-income residents and businesses, including on-bill financing;
- Opportunities for integration of distributed renewable energy generation and energy storage; and
- Opportunities and needs for energy efficiency and building envelope upgrades, taking into account local, state, and regional energy efficiency incentive programs and focusing particularly on renters, low-income populations, and populations with a disproportionate risk of housing and business displacement





Photo: Rising Sun Center for Opportunity

Going Deeper

Widespread and efficient all-electric buildings, powered by a clean electric grid, will reduce emissions while facilitating further emissions reductions from vehicle electrification. Modern electric appliances perform more efficiently and effectively than electric appliances from past decades. Electric heat pumps can provide heating, air conditioning, and water heating, and heat pump clothes dryers can replace their gas-powered counterparts that are less efficient. Induction stoves provide improved cooking performance than gas stoves while also improving health and safety by eliminating burn risk and indoor air pollution. A successful building electrification effort must be paired with energy efficiency and weatherization, to ensure that energy bills remain low and unnecessary power is not added to the grid.

This Action envisions a methodical, 20-year transition for all existing buildings in Oakland, to ensure that the shift is equitable and families and small businesses do not face

cost increases, risk of displacement, or insurmountable disruptions. Numerous policy levers and incentive programs exist to facilitate the transition, including \$2.1 billion in statewide energy efficiency funds that are now available to support building electrification, as well as financial support through programs like On-Bill Financing. Wherever possible, these retrofits should be paired with renewable energy and energy storage, to minimize operating costs and increase energy resilience. ECAP Action A-2, Enhance Community Energy Resilience, complements this effort by ensuring that buildings and neighborhoods are resilient in the face of power shutoffs.





B-3

Prevent Refrigerant Pollution

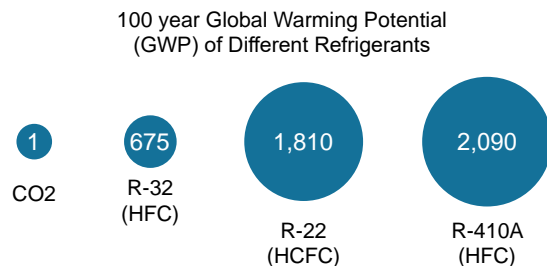
Lead Agency	Climate Benefit	Cost	Benefits
OPW		\$\$\$\$	
<p>By 2023, develop a refrigerant management program that:</p> <ul style="list-style-type: none"> Establishes a phaseout timeline for high-GWP refrigerants in existing buildings; Integrates with existing local and regional energy efficiency and building electrification programs as appropriate; Ensures enforcement of performance measures; Identifies financial assistance for low-income residents and businesses; and Aligns with refrigerant management strategies adopted by the State of California. 			

Going Deeper

Refrigerants are one of the most challenging topics to address in climate change. They are critical components of a variety of clean energy systems, but are also potential generators of GHG emissions. Refrigerants are used in the heat pumps that constitute the most efficient heating and cooling systems on the market today; they are also found in water coolers, cars, refrigerators, and other appliances. These substances often have exceptionally high global warming potential (GWP), and their leakage and improper disposal is one of the largest sources of GHG emissions in the world. Eliminating fossil fuel use in buildings will mean an increase in the use of refrigerants. This, in turn, will increase the need to properly manage and dispose of such substances. This Action aims to avoid introducing new climate challenges from electrified buildings, as well as from the many existing systems that already use refrigerants.

Project Drawdown, one of the most scientifically rigorous analyses of how to reduce GHG emissions, concludes that reducing the refrigerant leakage has more potential to reduce climate change than any other action; it also notes that 90% of refrigerant leakage is due to improper disposal. This Action provides for improved oversight

and management of refrigerants in City facilities and vehicles, creates resources for community members to address the challenge, and supports scaled solutions beyond Oakland. A refrigerant management program can leverage numerous existing energy efficiency and clean energy incentives, rebates, and technical assistance programs to lower costs and better manage data. The City has not previously tracked refrigerant leakage in its GHG emissions inventory, missing an important piece of our emissions story. This program will help Oakland track and report on emissions associated with refrigerant leakage, and ensure that the conversion of buildings to all-electric systems does not result in unintended emissions.



Source: Values for 100 year global warming potential (GWP) from IPCC Fourth Assessment Report. Comparative 100 year GWP: HFC410A, 2,090; HFC32, 675.



B-4

Reduce Lifecycle Emissions from Building Materials

Lead Agency	Climate Benefit	Cost	Benefits
PBD		\$\$\$\$	

By 2023, adopt a concrete code for new construction that limits embodied carbon emissions. In subsequent building code updates, implement improved embodied carbon performance standards including additional materials and material-efficient building practices, with exemptions for cost barriers as needed to prevent these changes from directly increasing housing or rent costs. Ensure requirements are at least as stringent as the State of California procurement standards in effect at the time of the building code adoption. Explore ways of supporting local market development for low-lifecycle-emission and carbon-storing biogenic building materials.

Going Deeper

Building materials have significant GHG emissions associated with their procurement, manufacturing, and transportation, collectively known as embodied carbon or upstream emissions. As buildings get more energy efficient and are powered by low-carbon sources, embodied emissions become a larger portion of the lifecycle emissions for which they are responsible. These emissions have not historically been the focus of reducing GHG emissions in buildings, but they are an important part of the City’s strategy to make our buildings cleaner, safer, and more resilient.

As the City identifies strategies for reducing embodied carbon in building construction and renovations, including through building code requirements, care must be taken to ensure that new requirements do not increase construction costs, and that the overall building stock can remain affordable for existing Oaklanders. Green building techniques include minimizing embodied carbon, increasing the use of natural materials, and moving towards more regenerative processes and materials. These are often pathways to affordability because lifetime operating costs – including utility bills – are minimized through space and appliance efficiency, healthier indoor air, and reduced need for heating and cooling. The City will work with partners such as StopWaste to identify best practices for reducing embodied carbon while maximizing affordability. This Action also has strong potential to

contribute to new green job pathways, which the City can support by promoting local training programs.

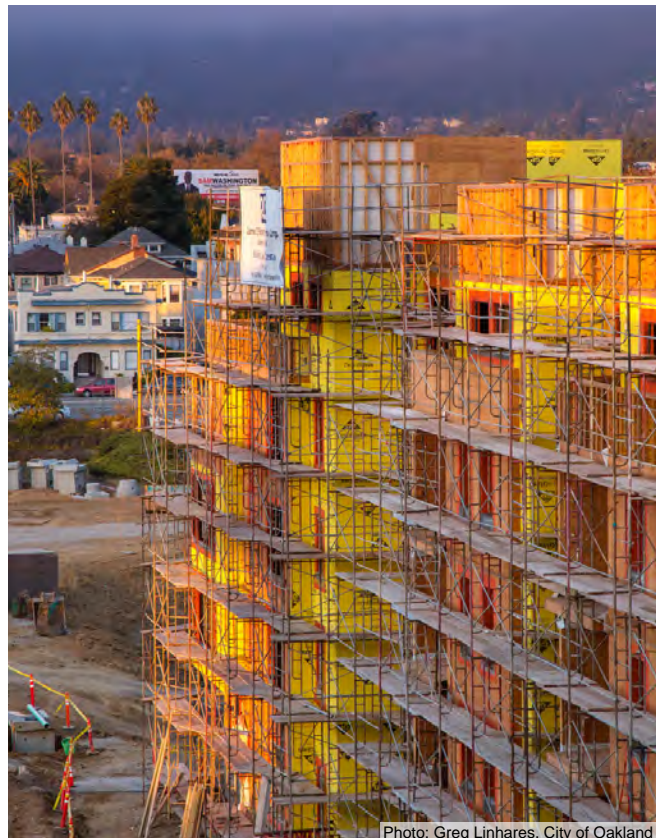


Photo: Greg Linhares, City of Oakland



B-5

Require All Major Retrofits of City Facilities to be All-Electric

<p>Lead Agency OPW</p>	<p>Climate Benefit </p>	<p>Cost \$\$\$\$</p>	<p>Benefits </p>
<p>Effective immediately, retrofits of City-owned or controlled buildings shall not install any new natural gas infrastructure or equipment. All major retrofit projects shall eliminate gas infrastructure from the building and integrate energy storage wherever technically feasible and appropriate.</p>			

Going Deeper

Eliminating emissions associated with natural gas is critical to meeting the City’s GHG reduction goals. Market-ready alternatives for natural gas systems are available for all functions of City facilities, and are in many cases cheaper than gas-based systems. The City will demonstrate its leadership on this issue by ensuring

that all major retrofits to its facilities include no new infrastructure or systems utilizing natural gas. Paired with the City’s existing commitment to use 100% carbon-free electricity through East Bay Community Energy’s Bright Choice program, this will facilitate the City’s transition of its buildings to be carbon-free.



Photo: Kai Pham



MATERIAL CONSUMPTION + WASTE



Vision

Oakland has eliminated disposal of organic materials to landfill and strengthened edible food recovery. By providing robust support for a circular economy and promoting low-carbon consumption, Oakland is reducing lifecycle emissions and boosting the local economy.

MATERIAL CONSUMPTION + WASTE



The cycle of consuming and disposing of materials in Oakland accounts for a small portion of local emissions, but a full 39% of lifecycle emissions. “Material consumption and waste” includes all food and goods that we consume or purchase, and whether, when, and how we throw them away. While much of this category is tied to individual purchasing decisions, those decisions are constrained by what products are available and affordable, how easy they are to reuse or repair, and the availability of systems and professionals to fix, redistribute, or locally manufacture the things we need.

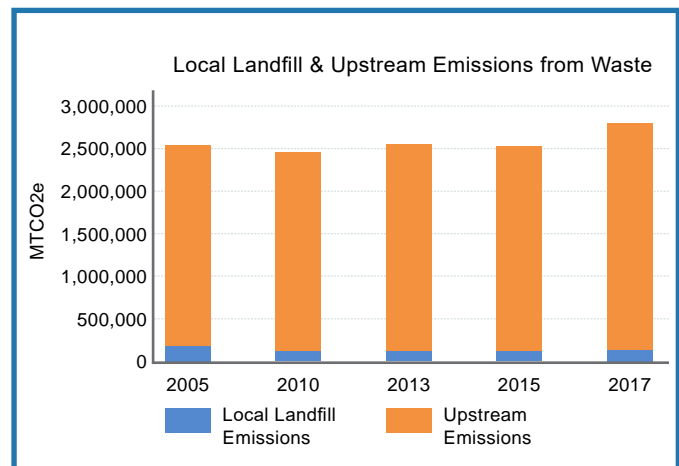
Everyone has a part to play in a transition to a low-carbon materials economy: Producers can adopt clean and circular practices, consumers can use their purchasing power to demand lower-carbon goods and food, and governments can establish the conditions and systems that support circular business models and products. This complex web creates a challenge and an opportunity for the City and community to build strategies that reduce waste and cultivate a low-carbon, circular economy. Reducing overall consumption and boosting the amount of materials that stay local can reduce global emissions and contribute to a healthy, more equitable Oakland.

While Oaklanders have had access to composting and recycling services for decades, and service provision and requirements increased significantly in 2015, compostable and recyclable materials still end up in the landfill. The City is committed to continuing and increasing its public education and enforcement to eliminate disposal of organic and recyclable materials to landfill.

Lifecycle Emissions and How to Disrupt Them

Lifecycle emissions are everything created upstream (prior to purchase and use) of the products we consume. Every item that is purchased creates emissions on its way to the consumer. Raw materials are harvested, parts are manufactured, products are packaged and shipped; all of these processes are usually powered by fossil fuels. Many industrial practices as well as large-scale conventional agriculture and livestock farming produce alarmingly high rates of greenhouse gasses. Diverting material from landfills to be composted, recycled, or reused is important, but it is the last opportunity to solve the problem, not the first.

To reduce lifecycle emissions, this ECAP includes actions that empower residents to meet their needs while eliminating wasteful purchases. For example, disposable single-use plastics will not be needed if infrastructure for reusable food service ware is more widespread. Boosting repair and reuse industries will reduce the need to buy new goods, while supporting local jobs and economic growth. Actions to encourage reuse of building materials and establish physical spaces for repair economies further support these goals.



While Oakland's landfill emissions decreased from 2005 to 2017, upstream consumption emissions (emissions involved in the extraction, manufacture, and transport of anything we buy and use) increased. This shows that our purchasing habits have a far larger impact on global emissions than the decisions we make when we throw things away.



MATERIAL CONSUMPTION + WASTE



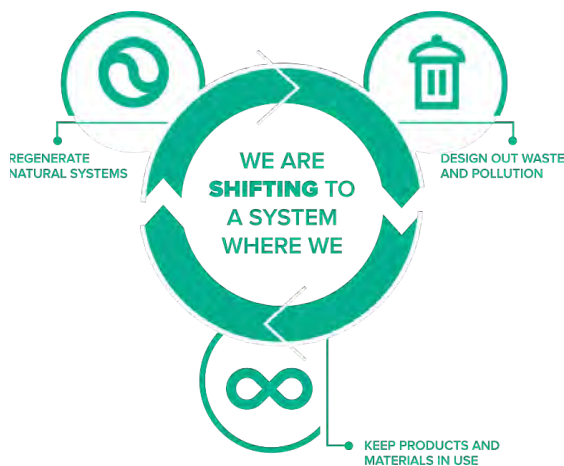
Wasted Food and Organic Material

When organic materials (such as food scraps or yard waste) end up in landfills, they release methane, a potent GHG that traps over 80 times more heat than carbon dioxide. When they instead become compost that is added to the soil, that same organic matter can help pull greenhouse gases out of the atmosphere and contribute to healthy soils. Although Oaklanders already have access to infrastructure for residential and commercial composting, compostable organics, including edible food, still end up in landfills.

To support both local and lifecycle emissions reduction, full participation by residents, businesses, and institutions in reducing wasted food and in compost collection systems is necessary, with systems that are easy to understand and access. Fundamentally, compostable material should be managed as an important resource rather than “waste.” Finding innovative ways to get surplus food into the hands of the hungry not only reduces emissions, but also helps meet basic needs of food-insecure communities.

Supporting a Circular Economy

For the City to meet its GHG goals and California’s waste diversion requirements, additional investments are needed to cultivate the local circular economy. Oakland’s climate actions will help replace the linear process of make-take-waste with a circular reuse system that avoids landfill disposal altogether. This ECAP includes mandatory requirements in areas where the City has direct control, and requires further evaluation of areas for potential future action.



Circular Economy refers to a system in which nothing is wasted. All materials are repurposed and kept in use, instead of being disposed. Through better design and consideration of a product lifecycle, circular economies keep products in use, regenerate natural systems, and eliminate the need for disposal. Many circular solutions, like repair, reuse, sharing, or cooperative production, can build community resilience while helping everyone meet their needs with fewer overall resources.



Photo: Jamie Facciola, Kay Chesterfield



MATERIAL CONSUMPTION + WASTE



Centering Equity

Frontline communities – in Oakland and globally – are disproportionately impacted by pollution from industrial manufacturing and wasteful disposal practices. Oakland has the opportunity to benefit from circular economic opportunities, which can particularly benefit frontline communities. These range from new local industries using regenerative materials to a strengthened repair economy. Improved compost, recycling, and edible food recovery infrastructure can lead to healthier streets and social spaces for all communities, especially those who lack permanent housing. Food recovery systems can help fight climate change while also contributing to food security and community health.

This sector also has tremendous potential to create jobs, especially in frontline communities. Composting jobs –

from collection to distribution – are well-paying and do not require higher education. In addition to addressing food insecurity and public health, the City can facilitate job creation and support local economies by building infrastructure to support edible food recovery and repair and reuse activities. The repair and reuse industry has historically been operated through social enterprises that not only hire and train people with barriers to traditional work, but also provide access to affordable essential goods. The sharing economy – particularly when cooperatively owned or community-supported – can reduce expenses and build community wealth. In addition to creating local jobs, a robust circular economy can help Oaklanders meet their material needs with less consumption and expense, while also building community.



Measuring Success

- # of community repair, resale, and sharing facilities
- % of such facilities in frontline communities
- tons of edible food recovered and redistributed



Advocate

- For strengthened extended producer responsibility legislation
- For additional State action to ban or limit the most harmful and least recyclable plastic products
- For carbon footprint labeling on food, consumer products, and building material



Photo: Food Shift

Community Leadership

Oakland-grown Food Shift is a multi-pronged social enterprise that rescues “imperfect” food destined for disposal and transforms it into nutritious meals and job opportunities. Staffed by formerly unsheltered apprentices, the Food Shift Kitchen saves, sorts, and processes over 1,000 pounds of produce each week that would otherwise be wasted. Most of this food is redistributed to food-insecure people in the East Bay.

Held throughout Alameda County, including at the Oakland Public Library, Fixit Clinics help people disassemble, troubleshoot, and repair their broken electronic items in the hopes of keeping them out of the landfill. Fixit Clinic is supported by local jurisdictions and mini-grant funds disbursed by StopWaste, an Alameda County regional agency.





ACTIONS

- MCW-1** Eliminate Disposal of Compostable Organic Materials to Landfills
- MCW-2** Strengthen Infrastructure and Partnerships for Edible Food Recovery
- MCW-3** Eliminate Single-Use Plastics and Prioritize Reuse in Food Preparation, Distribution, and Sale
- MCW-4** Support the Reuse, Repair, Recovery, and Refurbishment Economy
- MCW-5** Expand Community Repair Resources
- MCW-6** Establish a Deconstruction Requirement



MCW-1

Eliminate Disposal of Compostable Organic Materials to Landfills

Lead Agency	Climate Benefit	Cost	Benefits
OPW		\$\$\$\$	
<p>Fully fund and implement the requirements of California SB1383 (Short-Lived Climate Pollutants: Organic Waste Methane Emissions Reduction), reduce surplus food waste, and eliminate disposal of compostable organic materials to landfills. Ensure robust engagement with businesses and institutions, including schools, and continued residential outreach to reduce wasted food and effectively keep compostable material out of the landfill-bound waste stream. Work closely with franchise hauler to ensure that the compostable material stream is uncontaminated so that compost created is high-quality.</p>			

Going Deeper

California Senate Bill 1383 (2016) established methane emissions reduction targets across the state. Methane is a short-lived climate pollutant, meaning it stays in the atmosphere for less time than carbon dioxide (CO₂), but its heat-trapping potential is more than 80 times stronger. A primary source of methane emissions is decomposition of organic matter in landfills. To comply with SB 1383, cities must follow prescriptive actions to ensure organic material is not landfilled. Organic materials include food scraps, plant debris, paper, cardboard, wood, lumber, textiles, and carpet. Two major strategies to divert organics from landfills align with Oakland’s climate and resilience priorities. The first is ensuring that all edible food is recovered and diverted from landfill, to be consumed by Oakland’s most food-insecure residents. The second is working with Oaklanders to ensure that any inedible organic material is composted. Compost is a critical element of healthy soil, and thus critical to a thriving natural ecology. As the availability of high-quality compost increases through SB 1383 compliance, the City is exploring opportunities to work with community organizations to ensure more locally-generated compost is returned to the local soil.

residents, and schools conserve resources, conducts ongoing education about bay-friendly gardening, which encourages compost application to any landscaping. Several local organizations, such as Planting Justice Nursery and City Slicker Farms, conduct community education and support urban agriculture and local composting. The Oakland Unified School District has launched gardens at several schools, giving children hands-on experience turning their food scraps into healthy soil.

Composting and diverting organic materials from landfill can also be done at home and at small scale. StopWaste, a local agency that helps Alameda County’s businesses,



Photo: StopWaste



MCW-2

Strengthen Infrastructure and Partnerships for Edible Food Recovery

Lead Agency	Climate Benefit	Cost	Benefits
OPW		\$\$\$ \$	
<p>Support existing capacity, and develop new capacity, to recover edible food that is otherwise wasted, and distribute that food for human consumption. Engage with stakeholders including local food donation, recovery, and collection organizations to build robust collection and food storage capacity, and reliable distribution systems to the neediest populations. Engage with food generators such as supermarkets, wholesale distributors, large hotels, and institutions, to donate surplus edible food that food recovery partners want or will accept, and to ensure food generators comply with the Edible Food Recovery requirements of SB 1383. Inform edible surplus food generators about strategies and best practices for preventing wasting surplus food.</p>			

Going Deeper

Strengthening Oakland’s edible food recovery programs is an important part of ensuring that all Oaklanders, particularly the most food-insecure people such as unsheltered individuals, children, people with disabilities, and the elderly, have consistent access to food. During the COVID-19 crisis, the City launched a partnership with World Central Kitchen to deliver meals to unsheltered Oaklanders. While that program focused on fresh food from local restaurants, it established a new network for food distribution to help those in need. That network, along with efforts from Oakland organizations like the

[HOPE Collaborative](#), can be replicated or expanded to include recovered food from grocery stores and other institutions. This Action is also critical to reducing the emissions that occur when edible food is discarded and sent to the landfill. While there are various local efforts in edible food recovery, City efforts have the potential to strengthen capacity and improve equitable outcomes.

“Climate-friendly food related businesses can be part of the vision for a local green economy.”



Many schools in Oakland Unified School District have implemented systems to help students share unwanted food, ensuring that nothing is wasted. Photo Credit: Stop Waste



MCW-3

Eliminate Single-Use Plastics and Prioritize Reuse in Food Preparation, Distribution, and Sale

Lead Agency	Climate Benefit	Cost	Benefits
OPW		\$\$\$\$	

By 2023, work with StopWaste and regional partners to pass an ordinance to reduce the prevalence of single-use plastic in Oakland and to ensure that reusable food service ware is the default in dining. Specifically:

- Require reusable food service ware for all dine-in establishments.
- Mandate that any single-use food service ware (plates, bowls, cups) and accessories (straws, utensils, condiment cups) are BPI certified compostable fiber, except where certain materials may be deemed medically necessary or necessary to ensure equal access for persons with disabilities.
- Require that any single-use accessories (straws, utensils, condiment cups) are only available on demand.

By 2025, in coordination with StopWaste and regional partners, the City shall expand on its ban of expanded polystyrene food containers to other categories of single-use plastic and disposable food service ware as needed to meet the City’s Zero Waste goals, and to ensure that all materials going to compost facilities within Alameda County are truly compostable.

Going Deeper

Single-use plastic packaging and products are a particularly acute source of both local and global pollution. Manufactured petrochemical-based items, from plastic soda bottles to single-use forks, cause severe air and ground contamination for communities living near the factories producing them. Single-use plastic items have made their way to the deepest parts of the ocean, contaminate recycling streams, and litter our streets. While cities have little control over the manufacturing and proliferation of these items, they are forced to pay the costs of managing the resulting litter and pollution. Local governments can make a difference by strategically banning certain products, encouraging reusable products wherever possible, and advocating for extended producer responsibility (EPR), where manufacturers take responsibility for the full social and environmental lifecycle costs of their products, from material extraction through disposal.



Photo: StopWaste



Photo: StopWaste

StopWaste is a public agency governed by the Alameda County Waste Management Authority (ACWMA), the Alameda County Source Reduction and Recycling Board, and the Energy Council. It provides Alameda County cities and the County with technical assistance, research, and collaboration to reduce waste and move toward a circular economy. As the implementing entity of the ACWMA, StopWaste also develops countywide policies where regional consistency is most critical and where cities lack the resources to develop, roll out, or enforce regulations individually. As of 2020, StopWaste is exploring development of policies to reduce the prevalence of single-use plastics throughout Alameda County.

Importantly, this Action does not concern only petrochemical-based plastic, but the “disposable default” in general. This Action addresses all disposable ware and food prep materials, including plastic and bioplastic. We must not substitute allegedly-compostable products

that are not actually compostable, such as bioplastic or paper containers lined with plastics. These products either contaminate the compost stream, or emit methane in landfills, and reinforce a wasteful economy. Rather than switching from plastic to another single-use material, this Action prompts a transition to an economy whose default is materials that can and will be fully reused.

Any City policy regulating or aiming to reduce single-use items will include exemptions for people with disabilities, such as ensuring that those who need plastic straws in order to consume liquids can access them easily.

“Banning single-use plastic is a no-brainer. Let’s be a leader in this as a city!”



MCW-4

Support the Reuse, Repair, Recovery, and Refurbishment Economy

Lead Agency	Climate Benefit	Cost	Benefits
OPW		\$\$\$\$	

By 2025, create a community reuse and repair program to increase waste diversion, reduce material consumption, and create green jobs. Specifically:

- Explore creating or designating live/work or other spaces dedicated to material repair and upcycling, and selling of repaired and upcycled goods.
- Remove land use and other barriers to developing businesses that reuse or repair consumer goods, where doing so will not adversely impact the surrounding residential neighborhood.
- Develop resources to support direct donation to charitable organizations.
- Increase public awareness of and access to opportunities for reuse, product rentals, repair, and donation.
- Support, regulate, and expand citywide reuse infrastructure.
- Establish a methodology to assess benefits of reuse and repair programs to goals for waste diversion, GHG emissions, and economic development.
- Partner with local vocational programs and/or OUSD to launch at least one high school or community college-level Repair Arts Academy.
- Develop a grant, recognition, or incentive program to celebrate and encourage local repair businesses or leaders.



Photo: Jamie Facciola





Photo: Greg Linhares, City of Oakland

Going Deeper

The City can play a significant role in establishing a culture of repair and reuse in Oakland. In a similar effort, New York’s Department of Sanitation (DSNY) created [DonateNYC](#), a platform to support reuse and donation activities. This Action follows in those footsteps, marshaling Oakland’s municipal resources to enable reuse and repair businesses to grow and flourish, and to evaluate their environmental and economic impacts.

The Institute for Self-Reliance estimates that for every 10,000 tons of used goods, landfilling creates six jobs, while reuse activities create 296. Reuse and repair require diverse skills at all levels, and can provide jobs across the supply chain of a circular economy. Moreover, the reuse and repair industry has a history of operating as social enterprises that not only hire and train people with barriers to traditional work, but also provide access to affordable essential goods.

Public-private and community partnerships will be critical

to success. Unlike recycling, which has benefitted from consistent public messaging, reuse and repair have not received the same level of investment, and will benefit from educational campaigns around what they are, why they matter, and how to access providers. Public education can challenge the culture of “make-take-waste,” and revive the place of repair among culturally desirable vocations. The City’s Economic and Workforce Development Department is committed to supporting repair and recovery businesses as part of their overall economic development activities. Care must be taken to ensure that this Action is implemented in coordination with the City’s Planning and Building Department, and in concert with zoning and other requirements to ensure that new or expanded businesses do not negatively impact surrounding communities.

“Reuse + Recycle is great, but how do we stress reduce first and foremost?”





MCW-5

Expand Community Repair Resources

Lead Agencies	Climate Benefit	Cost	Benefits
OPL, EWDD		\$\$\$\$	

Expand the City’s existing tool lending library services to at least 5 other Oakland Public Library branches, recreation facilities, community centers, or other community sites by 2030, prioritizing East and West Oakland and low-income neighborhoods. Ensure tool lending facilities support repairable household items and active mobility modes, including bicycles. Explore potential for onsite community partnership programming to teach repair skills and promote local repair businesses.

Going Deeper

Oakland’s [Tool Lending Library](#) (TLL), located at the Oakland Public Library (OPL) Temescal Branch, offers more than 5,000 tools for loan, plus how-to resources. It also hosts workshops, such as plumbing repairs, power tool safety, and more. The TLL has its roots in building resilience: It was first established as a Home Resources Collection to help residents with their rebuilding projects after the 1991 Oakland Hills Firestorm. The City expanded it in 2000 with support from a Community Development Block Grant. Today, the TLL is one of OPL’s most popular and unique services. OPL also partners with the Original Scraper Bike Team in East Oakland to provide resources for bicycle repair and customization at the Martin Luther King, Jr. Branch and the 81st Avenue Branch.

By enabling Oaklanders to conduct their own repairs, the TLL builds personal resilience and increases the likelihood that people will repair items rather than sending them to landfill. Expanding it beyond the Temescal neighborhood will broaden access, empowering more Oaklanders to save money and “take control of their stuff.” It can also provide an opportunity to promote local Oakland repair businesses, boosting an important green jobs sector.

In the last decade, there has been a rise in repair fairs, fix-it clinics, and other small-scale events that empower people to repair broken or worn items. This trend represents a small counterpoint to the waste, pollution, and resource depletion of a global economy based on

planned obsolescence. This action supports and provides space for such activities, building community and skills along the way.

OPL is considering multiple options for expanding the TLL. Options include establishing more brick-and-mortar locations at other library branches; expanding OPL’s [Bike Library](#) to include a mobile TLL; and partnering with Oakland’s Parks, Recreation, and Youth Development Department, OUSD, or others to host TLL pop-ups and repair cafes. In all cases, expansion must be accompanied by community outreach to ensure that locals are aware of the services and that offerings are culturally appropriate.



Photo: StopWaste





MCW-6

Establish a Deconstruction Requirement

Lead Agency	Climate Benefit	Cost	Benefits
PBD		\$\$\$\$	
<p>Establish a deconstruction requirement to reduce demolition waste from construction and renovation and facilitate material reuse. Regulate hauling and processing of construction and demolition debris to ensure that salvageable materials are identified and removed for reuse instead of being recycled or disposed to landfill.</p>			

Going Deeper

Deconstruction is the process of dismantling buildings to salvage components for reuse and recycling, thus minimizing landfill disposal. Deconstruction can be applied in varying degrees to optimize recovery of usable materials. The benefits are numerous:

- Conservation of finite, old-growth forest resources
- Employment and job training opportunities
- Local economic activities for manufacturing and reprocessing salvaged materials
- Reduced lifecycle GHG emissions

Current practices in recycling and disposal of construction and demolition debris contribute to loss of resources through material degradation (“downcycling”) and increase raw material extraction, contributing to GHG emissions. The U.S. Environmental Protection Agency has sponsored pilot projects and developed resources for jurisdictions adopting deconstruction requirements. The City of Portland, Oregon currently leads the way on deconstruction policies. Oakland can leverage Portland’s lessons in creating local requirements, amending the City’s Construction and Demolition Waste Reduction and Recycling Ordinance, OMC 15.34, to require Deconstruction for certain public and private projects.

This Action will enhance local jobs and economic development, and is predicated on private sector action. Local developers will be responsible for implementing deconstruction and building the local market. Local businesses will benefit from the improved availability

of materials and sales that are not possible without deconstruction. Several local businesses already exist to serve the market, and most have capacity to expand their offerings. Staff will need to develop public engagement materials to educate the industry and clients on the benefits of deconstruction.

Combined with Action B-4 (Reduce Lifecycle Emissions from Building Materials), this Action stands to dramatically reduce the regional GHG emissions that result from construction in Oakland.



Photo: StopWaste

ADAPTATION



Vision

While Oakland continues its efforts to slow and reverse climate change, resilient infrastructure and risk reduction measures are in place to address the immediate and foreseeable climate risks to health and safety, particularly in frontline communities.

ADAPTATION



Even if global GHG emissions ended tomorrow, Oakland would still be impacted by climate change. Carbon in the atmosphere will continue to influence sea level rise, wildfires, and other threats. The longer it takes to eliminate human-caused carbon emissions, the more those risks will increase. Frontline communities feel the impacts of climate change first and worst, a trend that will be amplified without corrective and protective action.

Oakland has already seen how vulnerable our community is to natural disasters. The 1989 Loma Prieta Earthquake, 1991 firestorm in the Oakland Hills, increasingly frequent smoke days from Northern California wildfires, and the early 2020 COVID-19 pandemic and economic slowdown have had dramatic – and at times disastrous – impacts on our local economy and frontline communities. The COVID-19 pandemic reinforced not only the disproportionate vulnerability of our frontline communities to illness and economic shocks, but also the need for a greater focus on resilience. Local food recovery agencies saw the need for their services triple, while both food donations

and volunteers declined. City staff in the Economic and Workforce Development Department stopped their normal work to field desperate calls from local businesses that had been forced to shut their doors. The virus itself hit communities of color the worst, with African Americans in Alameda County nearly twice as likely as the general population to test positive in the first few months of the pandemic. While COVID-19 was not directly tied to climate, its effects parallel those of climate-related impacts. Oakland must prepare for future such events and enhance the ability of all communities to withstand inevitable shocks.



**Global Covenant of Mayors
Adaptation Badge**





Climate Hazards in Oakland

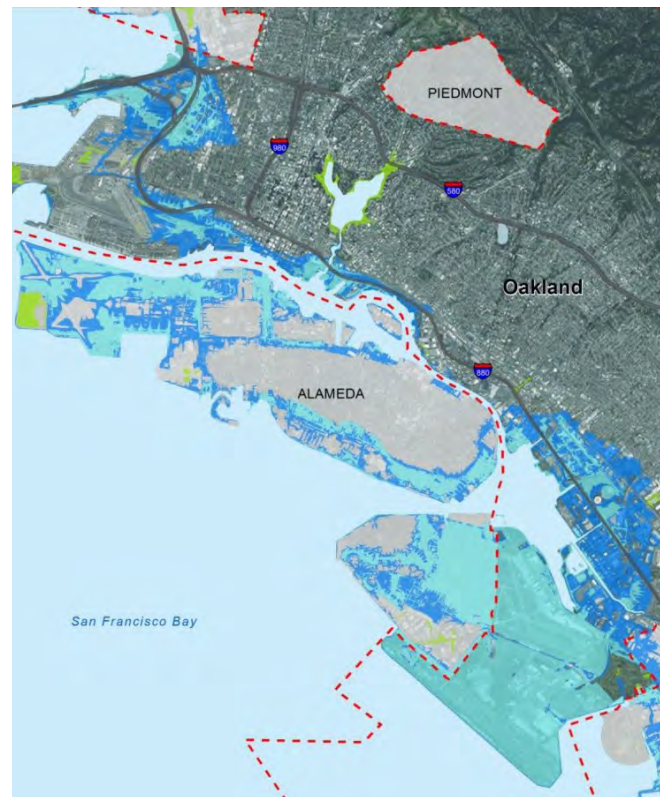
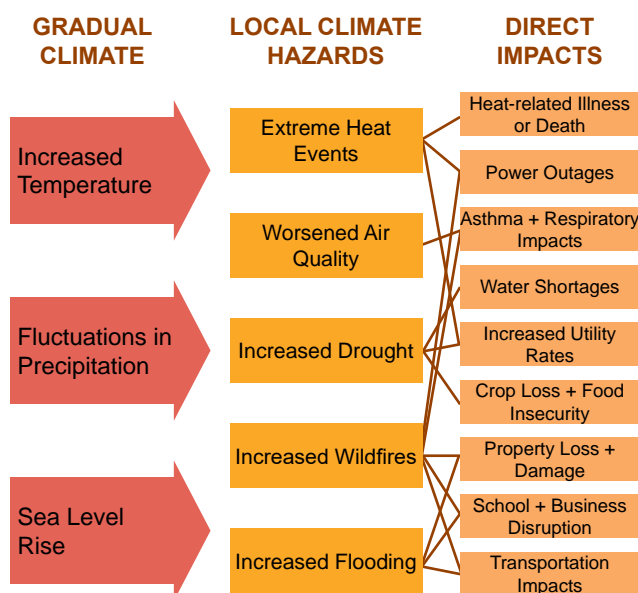
The main direct climate risks to Oakland are extreme heat, flooding, and wildfires. Oakland residents are also susceptible to regional climate impacts, such as drought and food system shocks. Oakland also must adapt to indirect climate change impacts. For example, residents and businesses will intermittently lose electricity as the region contends with public safety power shutoffs during wildfire seasons; children may miss more school days as threats like smoke inundation increase; and natural disasters exacerbated by the climate crisis can cause economic shocks that disproportionately impact frontline communities and housing-insecure families.

Oakland currently experiences physical impacts from climate change that are expected to worsen in the coming decade as warming of the atmosphere and oceans continues. Key climate-related hazards in Oakland result from changes in precipitation (leading to worsened flooding, erosion and landslides, infrastructure threats, property damage, and increased droughts); increasing temperatures (leading to extreme heat and increased risk of fire); and sea level rise (leading to increased flooding, coastal infrastructure threats, and increased exposure to groundwater and soil contamination). The compounded impacts of these hazards on all communities, and on frontline communities particularly, are profound, ranging from exacerbated

respiratory diseases from smoke inhalation during fires, to job and housing displacement when homes or infrastructure are destroyed by floods. Local sources of climate emissions also produce direct health impacts, as fossil fuels burned in Oakland – from natural gas in our homes to gasoline in our cars – produce harmful byproducts that cause asthma and other respiratory conditions.

These impacts are amplified among the frontline communities that are already vulnerable due to lower incomes and housing insecurity, elevated rates of illness and disease that come from living along heavily polluted corridors, and reduced access to opportunity resulting from transit dependence, linguistic isolation, or lower educational attainment.

The map below illustrates 4 and 6 ft of sea level rise in Oakland.



Map approximating 48 and 72 inches of sea level rise. Image from Oakland Sea Level Rise Roadmap - Figure 4.





Building Resilience in Everyday Life

Building resilience to climate change does not only mean responding to the disasters and emergencies we know are coming. It also means strengthening personal and neighborhood-level resilience during normal times, so that communities and families are better able to prepare for inevitable shocks and stressors. Building “everyday

resilience,” which includes increased social cohesion, reduced housing and food insecurity, and equitable civic engagement, helps communities not only survive but also thrive post-disaster. Everyday resilience also reinforces the City’s commitment to invest in underserved neighborhoods and ensure that local resources are equitably deployed.

Leveraging Existing City Resources

The City has many important resources that can be augmented to support climate resilience and adaptation. For example, Oakland’s park and recreation system is a strategic network on the frontlines of climate resilience. With over 30 recreation centers, 130 parks, and 2,000 acres of parkland, it provides ecosystem services and green infrastructure that capture carbon in the atmosphere and mitigate air pollution. Parklands are critically important to producing cleaner air while keeping communities safer,

and can reduce the impact of heatwaves, flooding, and smoke events. Oakland’s parks and park services are a trusted resource and are largely accessible to most Oaklanders, meaning they can increase equity and build the community capacity needed for climate resilience. The proximity of many of Oakland’s parks to underserved and environmental justice communities makes them a strategic asset for supporting climate resilience.



Photo: Oakland Parks and Recreation Foundation

Centering Equity

Frontline communities in Oakland feel the impacts of climate change first and worst. Sea level rise will increase flooding in West Oakland and near the Coliseum – communities that are predominantly African American and Latino. Heat impacts will be most severe in areas with low tree canopy coverage and for those in substandard housing, which will disproportionately affect residents of color. Lower-income residents tend to have less access to cars and reliable transit, which affects capacity to evacuate or relocate in times of disaster. And having fewer financial resources means that it will be more challenging to rebuild or repair homes after wildfires or floods. Any solution to increase

resilience must center equity, which includes co-creating solutions with frontline communities and prioritizing investments in frontline communities, to respond to current stresses while preparing for future risks.

Resilience hubs and green infrastructure not only protect frontline communities from climate risks, but are also everyday community resources that provide education and training, access to nature and open space, community connections, and green jobs. Both can be co-designed with local communities, and therefore may take different forms based on local needs and stakeholders.

ADAPTATION



Measuring Success

- # and service area of Resilience Hubs created
- Incorporation of Vulnerability Assessment and Adaptation Plan into Local Hazard Mitigation Plan
- # and total investment of green infrastructure projects completed
- Implementation of recommendations of Adaptation Plan

Advocate

- For CalTrans to revise the Active Transportation Program evaluation criteria for streetscape project funding to reward incorporation of green infrastructure
- For CalTrans to increase investments in green buffers along major freeways
- For California Cap and Trade funding to be used for supplementing transportation projects with green infrastructure
- For increased California Cap and Trade and Utility funding to support residential energy storage paired with renewable and clean energy



Photo: Planting Justice

Community Leadership

Oakland's **urban farms** build local resilience while increasing food security. **City Slicker Farms** leads the urban farming and food justice movement in West Oakland, having transformed a vacant brownfield site into a thriving community park and farm. City Slicker has built more than 400 backyard and community gardens since 2001, and their West Oakland Farm Park is a vibrant community hub on land that was once heavily contaminated. In Deep East Oakland, **Planting Justice Nursery** (PJ) hires and trains formerly incarcerated people at their two-acre Rolling River tree nursery in the Sobrante Park neighborhood. In partnership with **Sogorea Te' Land Trust** (STLT), an urban indigenous women-led community organization, PJ facilitated the transfer of the Rolling River Nursery's plot back into Chochenyo and Karkin Ohlone stewardship. This partnership recognizes Oakland's Ohlone history and grants STLT access to the land in perpetuity.

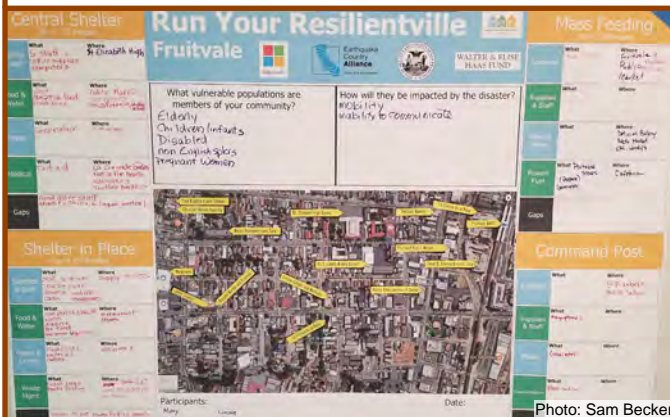


Photo: Sam Becker

In 2017, a group of Fruitvale non-profits, small businesses, faith-based organizations, residents, and City Agency stakeholders joined forces to leverage available services and deepen resident engagement in vulnerable communities. The result was the **Resilient Fruitvale initiative**, which conducted a neighborhood-level risk hazard and vulnerability assessment, launched a mini-grant program to fund disaster preparedness training, and established a neighborhood-level community outreach network in preparation for all types of emergencies.





ACTIONS

- A-1 Fund Creation and Operation of Resilience Hubs**
- A-2 Enhance Community Energy Resilience**
- A-3 Fund and Implement Citywide Vulnerability Assessment and Comprehensive Adaptation Plan**
- A-4 Wildfire Risk Reduction**
- A-5 Identify and Reduce Financial Risks from Climate Change**
- A-6 Expand and Protect Green Infrastructure & Biodiversity**



A-1

Fund Creation and Operation of Resilience Hubs

Lead Agencies	Climate Benefit	Cost	Benefits
OPW, Resilience		\$\$\$\$	
<p>Increase community resilience by (1) supporting community engagement and community-led disaster preparedness training, prioritizing frontline communities first; and (2) developing protocols and enhancing building systems to enable trusted community-serving facilities – including libraries, recreation and community centers, and parks – to reliably serve their communities as places of refuge during smoke days, extreme heat, and power outages. By 2022, identify and prioritize specific resilience needs and gaps in frontline communities, and assess feasibility of establishing Resilience Hubs at both municipal and community facilities in areas with prioritized gaps. By 2025, partner with established community resilience groups to co-develop and pilot three Resilience Hubs: community-serving facilities that support residents year-round and support resource distribution and onsite services before, during, or after a natural hazard event. Identify ways that the City can support decentralized community facilities to serve residents who are unable to travel to centralized resilience hubs during disasters and emergencies.</p>			

Going Deeper

Local governments can improve community resilience by creating physical spaces, with supportive infrastructure and resources, to help people prepare for and recover more quickly from adverse events. Such resilience hubs must respond to local priorities, vulnerabilities, and climate hazards, and support community-building and every-day resilience during normal times. A resilience hub should include design elements that address likely climate risks: energy-efficient systems, all-electric design, solar energy with storage, vehicle charging, food

storage and distribution capacity, air and water filtration, and communications. Any new or expanded resilience hubs will undergo project-level environmental review.

Whether developed on City property or in coordination with community organizations, resilience hubs should leverage trusted spaces, like community centers, libraries, schools, or houses of worship. Oakland’s recreation centers, for example, can be brought up to 21st Century community needs by providing filtered and



Photo: Tim Daw Photography. Mural by Oakland School for the Arts



Photo: Zoe Laventhol

cool air for climate-intensified heat, smoke, and poor air quality days. Recreation Center Directors and Recreation Advisory Councils (RACs) can provide community leadership, develop protocols, and implement strategies to protect thousands of children and community members during critical events, plus provide programming to prepare communities for adversity.

Disaster preparedness training is one example of critical programming. Communities of Oakland Respond to Emergencies (CORE) is a free, robust training program developed by the City's Fire Department after the 1989 Loma Prieta Earthquake. It has helped more than 32,000 Oaklanders gain skills to be self-reliant and care for each other during and after emergencies.

Full-scale resilience hubs serve multiple community needs, and provide logistic spaces for residents and first responders during disasters and emergencies. It is not

feasible for the City to rapidly deploy this scale of facility to all Oakland neighborhoods, yet all Oaklanders must have access to resilience resources. By better understanding vulnerabilities in frontline communities, the City will be able to remove barriers and streamline processes for small-scale resilience building, particularly in neighborhoods far from official hubs. Distributed resilience resources are particularly vital during pandemics, when the need for services increases but central gatherings compound risks. Partners will continue to work collaboratively over the ECAP implementation period to build on early pilots and expand the network of resilience hubs to more underserved neighborhoods.

“Resilience Hubs can integrate not just adaptation but also climate solutions and community engagement.”



A-2

Enhance Community Energy Resilience

Lead Agency	Climate Benefit	Cost	Benefits
OPW		\$\$\$\$	
<p>Work with EBCE to develop a program and timeline for increasing resilience to power losses, including Public Safety Power Shutoffs (PSPS), and climate-driven extreme weather events for low-income, medically dependent, and elderly populations through installation of renewable energy and onsite energy storage with islanding capabilities, following appropriate project-level environmental review. Include energy efficiency building upgrades in any program, leveraging local and regional incentives. This program may include grants, incentives, rebates, and/or integration with other energy programs.</p>			

Going Deeper

As climate-driven weather events become more frequent and volatile, Oakland’s residents, businesses, and buildings are increasingly vulnerable. Impacts include structural damage, power outages, and health consequences. This Action focuses on resident vulnerability during disaster-induced power losses and Public Safety Power Shutoffs (PSPS) that occur as a precautionary measure during high fire danger events.

Power losses pose a serious threat to Oaklanders, particularly those who are low-income, medically dependent, elderly, or who have disabilities. For many, losing food, heat, or medical equipment due to power outages can be life-threatening. Backup generators can be used during power losses, but they are often expensive and energy-inefficient, and are themselves sources of emissions and pollution.

Community energy resilience, via local renewable energy generation combined with energy storage, can help Oaklanders withstand power loss events. This action also supports community-owned solar, a community priority that allows renters and neighbors to financially benefit from shared solar energy installations.

Reinforcing this action is California’s 2019 Energy Code, Title 24 Part 6, which took effect on January 1, 2020. This code requires solar photovoltaic systems on all new single-family and low-rise homes, and permits community

solar as an alternative to rooftop systems. In partnership with the California Energy Commission, EBCE, and others, the City will help communities leverage resources for local renewable energy and energy storage in compliance with State and local building codes. In doing so, the City aims to remove the bureaucratic and cost barriers of building community energy resilience.

“Energy efficiency coupled with LOCAL renewable solutions (e.g. community solar, rooftop solar, battery storage, etc.) that clean air, create a healthier community, and invest in the local economy is essential.”



Photo: Harbor House



A-3

Fund and Implement Citywide Vulnerability Assessment and Comprehensive Adaptation Plan

Lead Agency	Climate Benefit	Cost	Benefits
PBD		<p>\$\$\$\$</p>	
<p>Complete and/or update emergency plans, including the Local Hazard Mitigation Plan (LHMP), matching Federal requirements, including hazard identification and climate risk assessment. In conjunction with the update or adoption of the LHMP, complete a citywide vulnerability assessment and comprehensive adaptation plan, addressing climate risks using forward-looking projections and including community stakeholder engagement. Use results of these plans to identify existing and trusted community-serving facilities, including recreation and community centers and parks, as well as locally-trusted private facilities, to serve as shelter, evacuation, and/or clean air centers for future climate emergency events, prioritizing resources in frontline communities. Implement key recommendations of these plans by 2025 to address major climate risks in frontline communities first. Update these documents every 5 years with evolving climate and risk projections and adaptation best practices.</p>			



Photo: Sam Becker



Going Deeper

From developing the Preliminary Resilience Assessment (2016), Resilient Oakland Playbook (2016), and Preliminary Sea Level Rise Road Map (2017), the City has amassed strong initial information on climate risks facing Oakland. Each of these documents was developed in collaboration with regional, governmental, academic, and grassroots partners. Additional information has come from community-driven processes and plans, such as the East Oakland Neighborhoods Initiative (EONI) and the West Oakland Community Action Plan (WOCAP). These efforts have produced useful but limited priorities for addressing climate risks; actions consistent with these priorities are underway or in development as of 2020.

Nonetheless, a more granular and comprehensive vulnerability assessment and adaptation plan will be needed to develop detailed responses to neighborhood-level risks – and to do so in ways that maximize public resources. This is particularly important for disproportionately impacted communities: transit-dependent populations such as the

elderly, children, and people with disabilities; outdoor and informal workers; low-income communities; indigenous people; undocumented immigrants; and incarcerated populations. In developing this assessment, the City will prioritize community needs and insights, and identify hyper-local and informal resources that can be built upon to grow neighborhood resilience.

Local Hazard Mitigation Plans (LHMP) are an important tool for this effort, as cities are required to update them every five years through a broad survey of risks and mandated community engagement. Cities are not required to conduct comprehensive adaptation plans as part of their LHMPs, so this will either be an added component or a companion plan.

“Create neighborhood-based emergency preparedness planning curriculum, prioritizing East & West Oakland residents.”





A-4

Wildfire Risk Reduction

Lead Agencies	Climate Benefit	Cost	Benefits
OFD, Finance			
<p>Adopt and fully implement a Vegetation Management Plan for high-fire risk areas. Continue to update and enforce the Oakland Fire Code to require building owners in high-risk areas to maintain defensible space and implement fire prevention measures. Increase wildfire safety requirements for new construction or major renovations in high fire risk areas.</p>			

Going Deeper

The Oakland hills include areas described as the Wildland Urban Interface (WUI), which are characterized by hot and dry fall seasons, high winds, dense flammable vegetation, steep and varied terrain, hill slope development, and limited accessibility for emergency responders. These areas have been designated by the State of California as being within the High or Very High Fire Hazard Severity Zones (HFHSZ and VHFHSZ).

Climate change is creating warmer weather, longer and more frequent periods of drought, and other changes that increase these risks. The Vegetation Management Plan will cover more than 1,400 acres of City property plus approximately 300 miles of roadside. Vegetation management activities conducted on these lands currently include goat grazing on nine sites covering approximately 1,300 acres; vegetation clearing along 16 roadways (58 miles); monitoring for vegetation clearance along approximately 300 miles of road within the Vegetation Management Plan’s area (16.5 square miles); and brush clearance on critical City-owned properties (~332 acres). The Vegetation Management Plan includes many strategies that can be employed in reducing potential fire fuels. Oakland residents previously utilized a parcel tax to fund this work, but the measure expired and has yet to receive reauthorization by voters.

Funding the Vegetation Management Plan is critical to protecting residents and structures from wildfire damage and destruction. It is also important for protecting residents throughout the city and region from the impacts

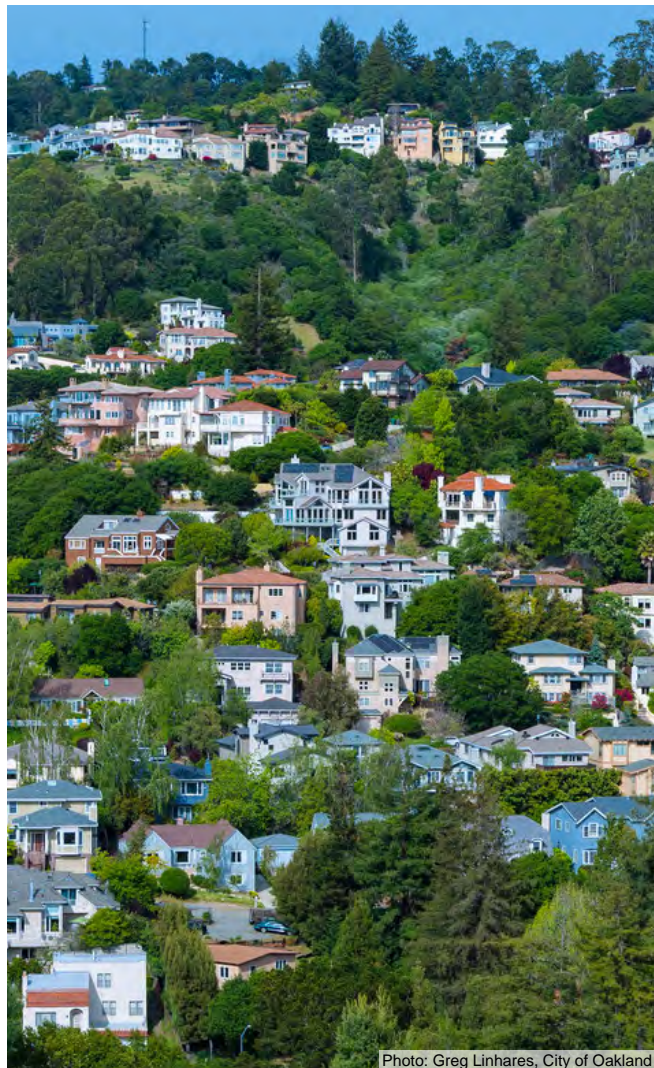


Photo: Greg Linhares, City of Oakland



Photo: Greg Linhares, City of Oakland

of another wildfire. This Action calls for the full funding of this Plan. Ensuring implementation of this Action will protect residents, reduce risks of catastrophic fires, provide additional green jobs, and ensure parks and open spaces in hillside areas remain accessible for the entire community.

In addition to the City's efforts to manage wildfire risk on its own property, and those that may be implemented through the Vegetation Management Plan, the City also adopts amendments to the California Fire Codes, which require owners of both public and private properties in the High and Very High Fire Hazard Severity Zones to take additional safety measures to reduce the likelihood of wildfires and to prevent their spread. Examples of these safety measures include installing sprinklers on new structures or those undergoing a major remodel, and maintaining defensible space around buildings. Defensible space is defined as an area around a building where vegetation, trash and debris, and other types of flammable fuels have been treated, cleared, or reduced to slow the spread of fire. Low-cost

measures like maintaining defensible space or screening attic vents can help protect Oakland's housing stock and increase fire safety community-wide.

The Oakland Fire Code not only establishes building and property maintenance standards, but also provides for their enforcement. The Oakland Fire Department (OFD), Fire Prevention Bureau, Vegetation Management Unit coordinates the City's vegetation inspection efforts in the HFHSZ and VHFHSZ. Property owners in the Oakland hills receive an annual inspection by OFD. Although properties are inspected once a year, they are expected to maintain defensible space year-round. This Action not only calls upon the City to maintain stricter building standards in the Oakland Fire Code for Oakland properties located in the HFHSZ and VHFHSZ, but also to provide appropriate staffing and resources for enforcement of those standards.





A-5

Identify and Reduce Financial Risks from Climate Change

Lead Agencies	Climate Benefit	Cost	Benefits
OPW, Resilience		\$\$\$\$	
<p>By 2024, evaluate existing and potential financial risks posed by climate change to both City and community. Recommend strategies to mitigate these risks as available and appropriate, including options for insurance products, green infrastructure bonds, real estate strategy and other appropriate mechanisms.</p>			

Going Deeper

Following a string of intense hurricanes and wildfires in 2017, credit ratings agencies reported that state and local governments' exposure to climate risk could affect their credit ratings. In 2018, the City began to disclose climate risks in its bond offerings, identifying potential risk associated with sea level rise, rising energy costs, and other climate-related factors. As these impacts continue to worsen, the failure to adequately prepare for and mitigate the effects of climate change could negatively affect Oakland's credit rating, increasing the cost of borrowing for City projects and services. These cost risks may extend to the community as well, where it is unclear how lenders will respond to projected areas of sea level rise, increased fire risk, and other climate-related impacts. These risks have the potential to limit the ability of Oaklanders to purchase and refinance homes, borrow money for businesses, or otherwise access capital, particularly in flatland neighborhoods where climate impacts are felt first, worst, and hardest. For example, insurance premiums are increasing steeply in California, and policies are being discontinued for homes with high wildfire risks.

This Action clarifies the need for evaluating these risks and developing a coordinated approach to managing their impacts. There are a variety of ways in which the City can address such risk, including purchasing of insurance products against these risks, utilizing green bonds or other investment tools to reduce risks, and adding

resilience elements to the planning and construction of infrastructure in high-risk areas. Understanding and reducing these indirect financial risks is an important way that Oakland can prepare for a changed climate while continuing its essential services. This effort will be undertaken in coordination with multiple stakeholders, both internal and external to the City.



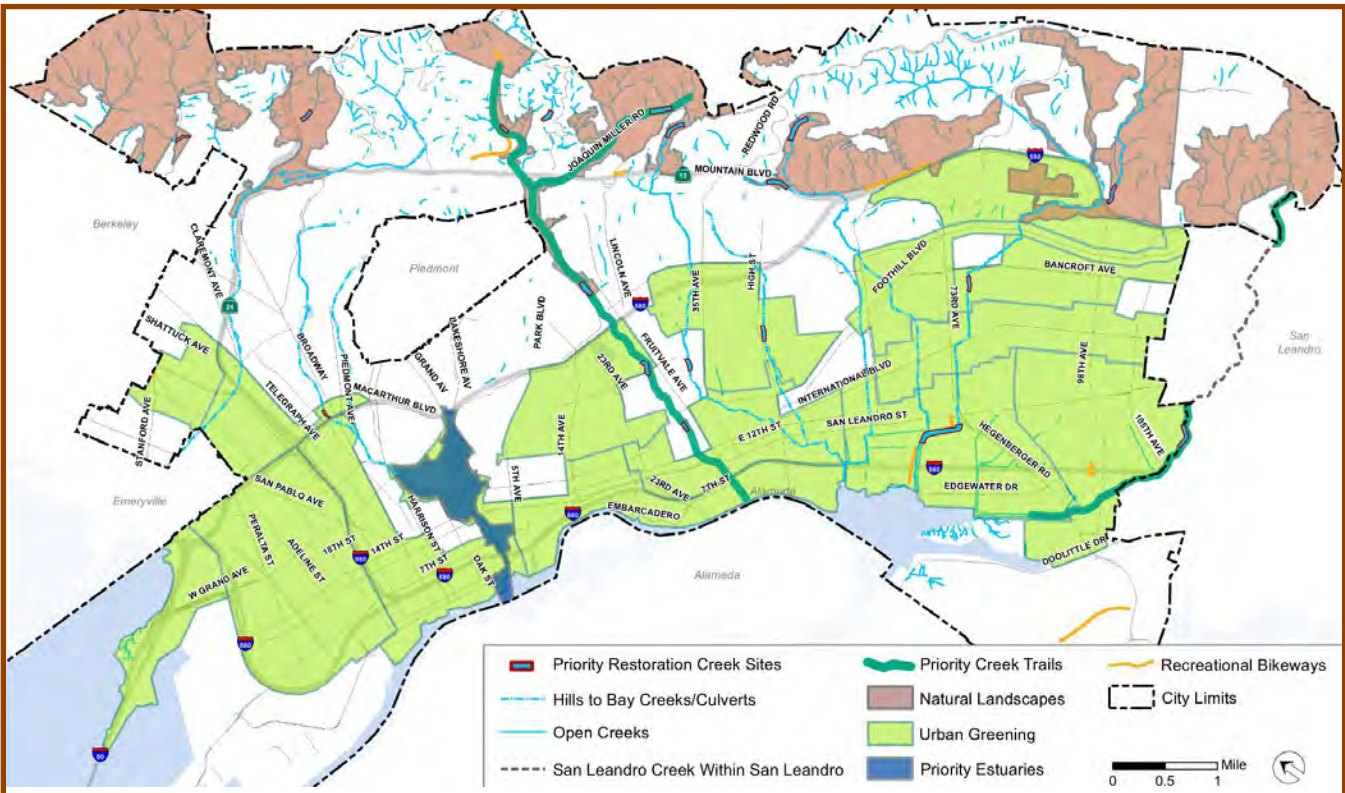


A-6

Expand and Protect Green Infrastructure & Biodiversity

Lead Agencies OPW, OES, Resilience	Climate Benefit 	Cost \$\$\$\$	Benefits
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Fund and implement a green infrastructure program for the installation and maintenance of projects and existing civic resources such as the parks system and public spaces, to improve stormwater management, support biodiversity, reduce air pollution exposure, and increase access to natural spaces, including trees. Prioritize investment in frontline communities, and particularly in residential neighborhoods dominated by concrete and asphalt with limited green space and elevated air pollution, in Priority Conservation Areas, and in areas where green infrastructure, including trees and other types of vegetated buffers, can effectively address stormwater management issues and reduce air pollution exposure among sensitive populations. By 2023, identify funding to expand green stormwater infrastructure citywide.



In 2015, Oakland City Council adopted new Priority Conservation Area (PCA) designations throughout Oakland. Designated PCAs are eligible for certain funds for creek and habitat protection and urban greening, for the benefit of community health, recreation, climate, and resilience. This map shows all Oakland PCA Designations recommended by the Association of Bay Area Governments. Created by the City of Oakland Planning and Building Department, July 13, 2015.





The Black-Crowned Night Heron became Oakland's official city bird in 2019. These birds are active around Lake Merritt (established in 1870 as the first official wildlife sanctuary in the United States), the Oakland Estuary, and the urban areas that surround.

Going Deeper

Green infrastructure can help mitigate flooding and urban heat islands while providing more community benefits than traditional gray infrastructure. This includes access to nature, habitat protection, and cleaner air and water. Oakland can build on its success with past creek restoration and watershed improvement projects to invest in flood protection and green space for frontline communities.

Green infrastructure can also provide spaces for urban agriculture, supporting local food security and community-building. Development and maintenance of green infrastructure also represent a powerful source of green jobs, particularly for youth.

When green infrastructure is designed based on site conditions and with pollution mitigation in mind, it can become a powerful natural buffer to protect vulnerable people from nearby sources of air pollution. Green buffers are most effective when placed immediately adjacent to the pollution source (generally a freeway or industrial

facility), but are also effective when placed next to the specific population they are meant to protect – such as the many elementary schools situated along Interstate 880, or the residential neighborhoods that have developed near industrial facilities in East Oakland.

Similarly, different types of green infrastructure are better suited for different applications – such as mitigating air pollution or stormwater inundation, or supporting community access. In planning and designing green infrastructure, in addition to performing the required environmental review, City staff will work with the local community to identify the overlapping needs that confront individual projects.

“Green Infrastructure is one of the most critical things Oakland can do to address temperature, health, flood mitigation, & so many other things.”

CARBON REMOVAL



Vision

From traditional to innovative approaches, the City partners with the community to remove carbon from the air, reducing Oakland's overall GHG emissions as well as enhancing community resilience, strengthening public health, and building the green economy.

CARBON REMOVAL



Unlike other climate strategies focused on reducing the amount of GHGs we emit, carbon removal (also known as sequestration) refers to **pulling carbon dioxide out of the atmosphere**. Reducing the creation of GHG emissions is still the best way to fight climate change, but there is increased awareness that carbon removal is also necessary to avoid the worst climate impacts. For example, planting one million trees would capture 35,000 metric tons of carbon dioxide annually – less than 2% of Oakland's average emissions. Carbon removal is nonetheless an important strategy to capture surplus carbon dioxide in the atmosphere, which cannot be done by reducing emissions alone. In fact, there is now widespread agreement that any strategy to limit warming to 1.5 degrees Celsius – which climate scientists agree is the threshold beyond which catastrophic climate change is inevitable – must include carbon removal alongside reduction of emissions.

Working with Nature

The most basic approaches to carbon removal entail working with nature to accelerate biological processes that capture carbon from the atmosphere and turn it into living material. Several biological approaches to carbon removal have potential in Oakland:

- Preservation and expansion of the urban forest
- Compost and mulch application in open spaces
- Aquatic vegetation restoration
- Preserving and restoring waterways

These approaches lead to other important benefits, including shade, stormwater retention, flood control, increased food security, and increased habitat for insects and birds. They can also help address inequities in historic

resource allocation, especially access to open space and nature. For example, the urban forest is a critical community asset. Urban trees reduce heat stress, improve stormwater infiltration, and increase access to nature, among other benefits. To address existing inequities, Oakland must prioritize protecting the trees it already has, while increasing investment in tree plantings in frontline communities with lower canopy coverage, such as deep East Oakland. Similarly, transitioning from grey to green infrastructure brings numerous benefits. OUSD adopted the Living Schoolyard Board Policy to transform asphalt-covered schoolyards into vibrant green spaces. Living schoolyards improve student and community health and learning outcomes through native tree-planting and environmental and climate literacy curricula.



Photo: Tim Daw Photography



CARBON REMOVAL



New Approaches

With proximity to agricultural lands, riparian and aquatic environments, top research universities, workforce development programs, a wealth of indigenous ecological knowledge, and existing industrial space, Oakland can explore ways to further carbon removal technology and research, and invest in local projects. This is a new industry,

comprised of both ancient and new technologies. Its exploration must prioritize ways to create jobs for frontline communities, as well as identify resources to ensure long-term investment. New development projects in Oakland could be one source of revenue for local projects.

The Powerful Benefits of Healthy Soils

Learn more about Regenerative Agriculture and Carbon Farming at cecsb.org/carbon-farming









 <p>↑ improved profitability</p> <p>↑ Improve planet health and yields</p>	 <p>↑ mitigation of climate change</p> <p>↑ Sequester & reduce greenhouse gases</p>	 <p>↑ a more resilient community & ecosystem</p> <p>↑ Improved biological diversity</p>
 <p>↑ improved ecosystem health</p> <p>↑ Reduce sediment erosion & dust</p>	 <p>↑ reduced water demand</p> <p>↑ Increased water infiltration</p>	 <p>↑ improved community health</p> <p>↑ Improved water & air quality</p>



Photo: Max Bouvatte





Oakland Creeks

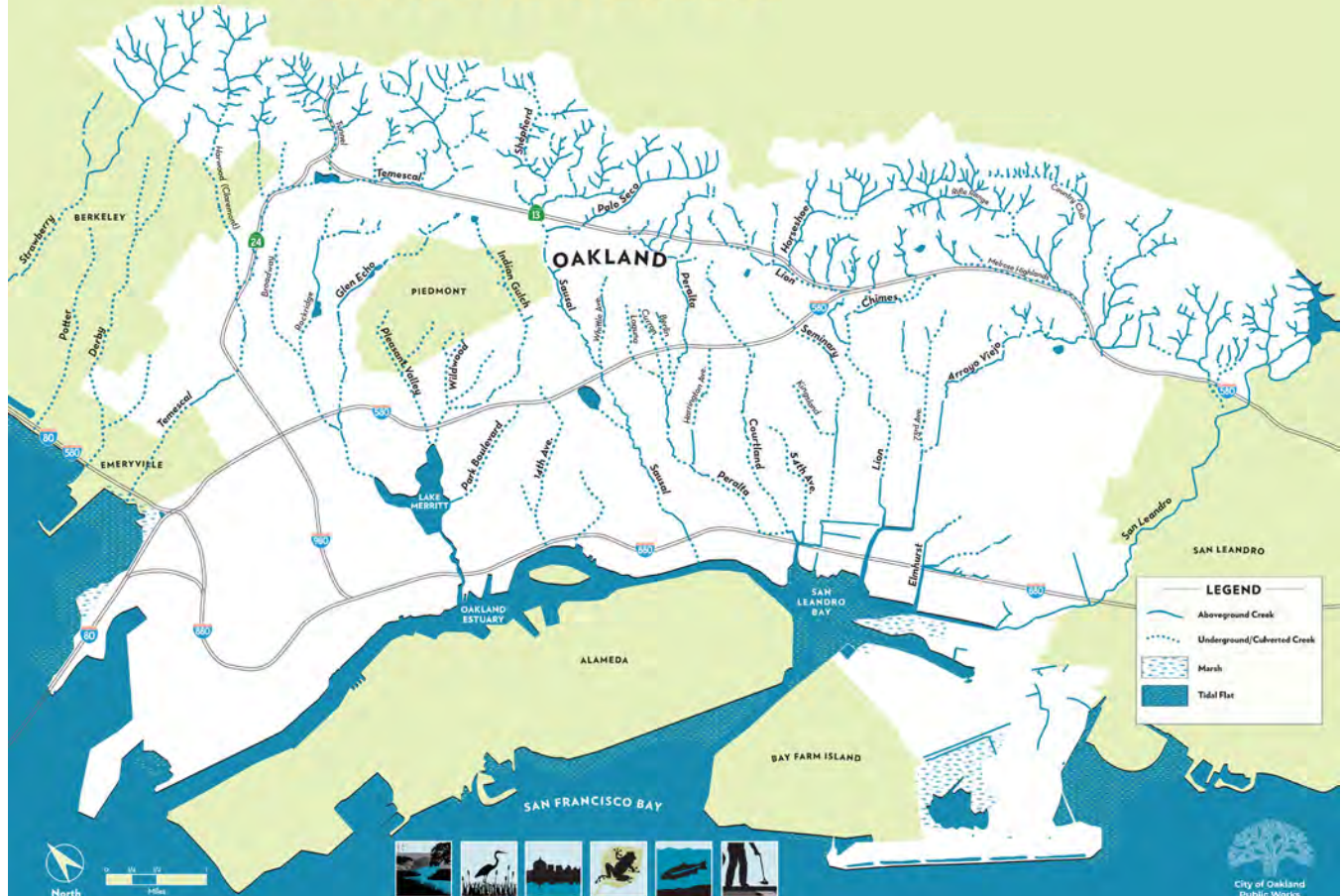
A Riparian corridor includes a watercourse – a creek, stream, or river – and the area alongside it where vegetation typically found near watercourses flourishes. Numerous plant species have evolved to thrive along creeks and streams, and form a rich ecosystem that includes low-lying plants and trees, and provides habitat for many animals including insects and birds. Healthy riparian corridors in urban areas naturally absorb rain and stormwater.

In Oakland, they are valued assets for open space and aesthetic value, cultural and historic importance, habitat and water quality protection, and storm drainage, as part of our natural heritage. New development in Oakland can recognize the value of our creeks by preserving, protecting, and enhancing them, and improving creek access for Oakland residents.

OAKLAND'S CREEKS

Oakland's extensive creek network flows from the hills to San Francisco Bay. Parts of Oakland's creeks have been culverted in underground pipes to accommodate urban development. Culverted creek sections are represented by dotted lines on the map. Some Oakland creek segments still flow wild and free, and some culverted stretches are being daylighted and restored. In the heavily urbanized Oakland landscape, creeks are some of the last remnants of wild habitat, and they serve as critical wildlife refuges, migratory stopovers, and corridors between open spaces and parks. Oakland's creeks also carry all the water, and all that's washed down with it (such as sediments and pollutants) from the city to the bay through more than 12,000 storm drains.

There are many ways to enjoy, protect, and restore Oakland's creeks and watersheds. Join thousands of volunteers who pitch in with Oakland Adopt a Spot, Oakland Creek to Bay Day, Earth Day, and throughout the year to clean up creeks, storm drains, and watersheds. Find out more at www.oaklandcreeks.org.



CARBON REMOVAL



Centering Equity

Biologic carbon removal strategies include restoring healthy ecosystems, which provide many physical and mental health benefits in stressed environments. Strategies like urban forestry can contribute to important community needs and priorities, such as providing shade and respite in heat-stressed areas, stabilizing indoor temperatures and lowering utility bills, improving student performance, and mitigating flooding. Planting and maintaining trees and gardens have strong job creation potential, especially for youth and others who are struggling in the local economy. Many of the approaches discussed above can mobilize community participation and be an onramp to meaningful resilience activities in Oakland's most stressed communities.

Even with these benefits, Oakland must carefully embed equity in considerations of its carbon removal efforts. Evidence suggests that poorly planned urban forestry efforts can exacerbate gentrification. Oakland must work to ensure that the benefits of carbon removal and habitat restoration are felt by existing Oaklanders, without contributing to displacement.

Most of the strategies proposed in this section provide opportunities to increase green jobs, from tree planting and maintenance to research and development of technological solutions. The City's approaches to promoting these activities will prioritize job training and employment pathways in frontline communities wherever possible.



Measuring Success

- # Trees planted
- Canopy coverage in frontline communities per CalEnviroScreen 3.0
- City funding dedicated to proactive urban forest maintenance and tree preservation
- # Riparian rehabilitation projects completed
- Investments in local projects
- Amount of compost placed and distributed by City



Photo: Doug Zimmerman



Photo: Friends of Sausal Creek

Community Leadership

As a volunteer-based nonprofit, **Friends of Sausal Creek (FOSC)** is committed to connecting local residents to Oakland's Sausal Creek Watershed through equity-driven programs that increase creek accessibility and promote stewardship. Every year, the environmental education program serves more than 1,000 low-resourced K-12 students through experiential field trips – such as native plant identification, bird watching, and water quality testing – and hands-on restoration opportunities such as removing invasive species and planting native plants. Through this program, those with previously limited exposure to Oakland's natural open spaces learn about, enjoy, and engage in protecting the Sausal Creek Watershed and its significant environmental benefits to the community.





ACTIONS

- CR-1** **Develop Local Carbon Investment Program**
- CR-2** **Expand and Protect Tree Canopy Coverage**
- CR-3** **Rehabilitate Riparian Areas and Open Space**
- CR-4** **Explore Carbon Farming**
- CR-5** **Assess Feasibility for Sequestration Incubator**
- CR-6** **Explore Regional Aquatic Sequestration Opportunities**



CR-1

Develop Local Carbon Investment Program

Lead Agencies	Climate Benefit	Cost	Benefits
EWDD, PWD, OPW		<p>\$\$\$\$</p>	
<p>By 2023, Establish a program for both voluntary and compliance GHG mitigation fees to be invested locally. Prioritize projects in frontline communities, such as tree planting and urban greening, including in parks; building electrification; creek restoration; and neighborhood EV car share. Partner with Oakland businesses to establish a “Carbon Neutral Oakland Business” designation, with any offset or “Polluter Pays” fees invested locally, with priority benefit to frontline communities.</p>			

Going Deeper

There are many local investment opportunities that can reduce GHG emissions, create good green jobs, and enhance equity. Planting trees, replacing natural gas appliances with high-quality electric alternatives,

constructing electric vehicle charging stations, and restoring creeks and parks are just some examples of projects that benefit the climate while improving public health. Identifying funding to assist these projects is a



Photo: Hyphae Design Labs





Photo: Tim Daw Photography

key goal of the ECAP, and the basis for this Action.

Compliance credits are one option. In addition to requiring new developments to reduce their carbon footprint through project design, the CEQA enables cities to require the purchase of GHG compliance credits on projects that produce GHG impacts above a certain threshold. Historically, project applicants have had the ability to purchase required compliance credits anywhere in the United States. Through this Action, the City will create a program to direct compliance credits first to projects in Oakland, particularly in frontline neighborhoods. This would create a funding stream for eligible carbon removal and other climate action projects, targeting projects that produce the most local value.

Beyond compliance credits, this Action directs the City to work with partners such as the Alameda County Green Business Program to recognize businesses that achieve carbon neutrality. Businesses could purchase voluntary

credits to offset their emissions, with the fees going to support an identified set of local project types that produce local climate benefits. This would give progressive businesses a new way to support their communities, and facilitate equity-focused climate reinvestment in neighborhoods. In developing this program, City staff would work with local community organizations to identify eligible projects and prioritization criteria.

This Action would not allow polluters to add additional emissions or otherwise harm the community; compliance credits and voluntary fees cannot occur in lieu of environmental or code compliance. This Action refers to funding that has historically left Oakland, or that does not yet exist. It would provide appropriate recognition for businesses that invest locally, align investments with neighborhood projects that reduce GHG emissions, and improve the quality of homes, parks, creeks, and other public areas.





CR-2

Expand and Protect Tree Canopy Coverage

Lead Agencies	Climate Benefit	Cost	Benefits
OPW, Resilience		\$\$\$\$	

By 2022, create a fifty-year Urban Forest Master Plan that:

- Prioritizes strategies to address disparities among neighborhoods in tree canopy coverage;
- Ensures that carbon sequestration is a major factor in tree planting targets, selection of tree species, and tree management practices;
- Establishes a clear and sustainable funding mechanism for ongoing tree maintenance; and
- Establishes a protocol and goals for community partnerships for tree planting and maintenance.

Going Deeper

Increasing tree canopy coverage is an important strategy for reducing urban heat islands – dense areas dominated by concrete and asphalt where temperatures exceed those of the surrounding area – in addition to providing numerous other benefits. This Action supports the West Oakland Community Action Plan (WOCAP) strategy of establishing a “comprehensive, area-wide urban canopy

and vegetation plan that identifies locations that trees can be added and maintained, such as parks and along Caltrans’ rights-of-way and develops a plan to protect existing trees that reduce exposure to air pollution emissions in West Oakland.” Urban greening and tree planting was also a top-10 priority from the East Oakland Neighborhoods Initiative.





In 2018, the City of Oakland was awarded a \$1 million urban forestry grant by the California Department of Forestry and Fire Protection (CalFire). With this funding, the City will develop a complete street and park tree inventory; perform community engagement to establish city-wide urban forestry goals; create a 50-year Urban Forest Master Plan; plant and care for 700 new trees in frontline communities; and update the City's Tree Protection Ordinance.

With secured funding, this Action will ensure collaboration across City departments and with local community organizations to improve the City's urban forest, prioritizing neighborhoods most impacted by air pollution and the urban heat island effect. The Urban Forest Master Plan will further address the needs of these neighborhoods by supporting integration with the City's ongoing green infrastructure efforts, enhancing green buffer zones with strategically-placed trees to reduce air pollution exposure. It will support green jobs in tree planting and maintenance; examine the risks of gentrification and displacement of

urban greening projects; and work with the community on tree planting, maintenance, and management practices. It will also support native tree planting wherever possible.

“Planting trees and increasing green spaces has numerous other benefits - urban beautification, reduced pollutants in our streets and homes, and other health benefits. Imagine Oakland after a 1 million tree planting effort.”

“Focus on greening should be in the flat lands and MUST be paired with a clear maintenance program so we do not invest in trees and then see them destroyed. This should be done in concert with the community and help support low-income neighborhoods.”





CR-3

Rehabilitate Riparian Areas and Open Space

Lead Agencies	Climate Benefit	Cost	Benefits
OPW, Resilience		<p>\$\$\$\$</p>	
<p>Secure funding to continue and expand programs to restore creeks and provide ecosystem services in coordination with stormwater management planning, prioritizing investment that reduces climate risks in frontline communities. Include funding for ongoing maintenance and public access.</p>			

Going Deeper

This Action aligns with the community priority of restoring creeks to reduce flood risks from sea level rise and allow for nature access and active mobility. Oakland's many creeks and riparian areas provide important health, ecological, and cultural benefits to residents. They sequester carbon, filter air pollution, maintain and enhance biodiversity, stabilize flood cycles, and provide

outdoor space for recreation, education, and respite. However, these benefits are not equitably distributed among all Oaklanders, especially residents in Deep East Oakland and in flatland neighborhoods where creeks have been covered or improperly managed. Despite the many community and environmental benefits, funding and resources for creek restoration are inadequate.



Photo: Oakland Parks and Recreation Foundation



Photo: Lech Naumovich

Through this Action, the City aims to identify and sustain funding and resources for its creeks and riparian areas. It also aims to ensure public health and safety for residents, visitors, and the unsheltered community; create good, green jobs supporting these activities; expand walking and biking paths; and increase community access to and appreciation for nature -- prioritizing frontline communities first and foremost. In implementation, the City will address concerns over the health and safety of those who frequent and who live in these areas to best protect the people, land, and wildlife.

Numerous community organizations and indigenous groups have deep knowledge of and commitment to caring for Oakland's riparian network. The City will work with these organizations and community leaders in implementing this Action.

The City will also build on its existing work of daylighting covered creeks wherever feasible, including through the

Measure DD-funded acquisitions program. This program has done important work to date, largely in flatland communities, including Coliseum, Lyon Creek, Cortland Creek, and Peralta Creek. With additional funding, the City will be able to continue and expand its creekside and watershed-beneficial projects beyond when Measure DD expires.

“Day-lighting urban streams and providing the potential for riparian growth and establishment is an important way to sequester carbon and improve water quality from urban run-off.”

“We should be living in cooperation with local ecosystems”





CR-4

Explore Carbon farming

Lead Agencies	Climate Benefit	Cost	Benefits
PDB, OPW		\$\$\$\$	

Explore potential for carbon farming on vacant public or private land, throughout the City’s parks and open space system, and in coordination with other public landowners in Oakland. Explore creation of requirements and incentives and prioritize investments in frontline communities where feasible. By 2025, establish a pilot carbon farming project to evaluate carbon removal opportunities.

Going Deeper

Applying compost to soil – also known as carbon farming – can substantially increase the amount of carbon stored in the soil while enhancing vegetation growth. It can also increase water-holding capacity, reducing fire risk from tree-covered areas in the Oakland hills. Carbon farming appears to offer the best potential for carbon removal in Oakland. It also supports other community priorities such as organic urban agriculture and neighborhood composting, in turn enhancing local food security. To date, most efforts to quantify the carbon removal potential of compost application have focused on rangelands; more analysis is needed to understand its specific potential in dispersed urban parcels.

Carbon farming also offers opportunities for the City to develop stronger community partnerships for improving soil health for urban greening, learning best practices from traditional and indigenous ecological knowledge, supporting green jobs, providing environmental education, and removing barriers to urban agriculture and food co-ops. The City will invest in carbon removal projects in frontline communities in collaboration with local organizations, while investing in strategies to prevent unintended displacement and gentrification. The City can also apply lessons learned from indigenous and community groups to landscaping and community gardens on its own facilities, increasing the carbon removal potential and community benefits of all green spaces.

“I think the more green space (wetlands, urban forests, urban agriculture) available to absorb intense precipitation events and purify the surrounding air and water pathways, the more resilient the city will be to the coming climatic shocks.”

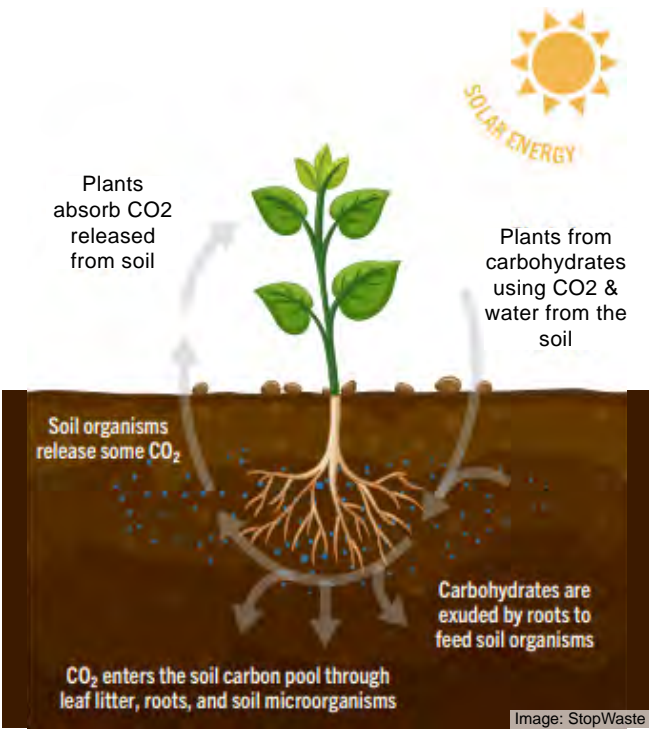


Image: StopWaste





CR-5

Assess Feasibility for Sequestration Incubator

Lead Agency	Climate Benefit	Cost	Benefits
EWDD		\$\$\$\$	

By 2025, evaluate the potential for a Carbon Sequestration Incubator in Oakland to incubate and develop green jobs in urban agriculture, urban forestry, aquatic and riparian restoration, engineering technology, and/or other forms of carbon removal. Assess market opportunities, policy drivers, potential locations, and existing businesses and nonprofits that may benefit from collaborating in such a space.

Going Deeper

Carbon sequestration takes many forms, from tree planting to hi-tech applications. Doing any of these activities at scale and in ways that build jobs and wealth for Oaklanders will take focused investment. The City’s Economic and Workforce Development Department (EWDD) is committed to working with partners within and outside City government to assess how Oakland’s resources – from light industrial spaces to vocational training programs – can be part of a new ecosystem of technology and business development in this emerging sector. To effectively leverage carbon sequestration activities toward the City’s climate goals, rigorous tracking must be used to measure carbon reduction and predict the sequestration potential of various approaches.

A carbon sequestration incubator could take many forms, including a dispersed resource network. Two existing Oakland incubators that could be used as models are the Powerhouse, a firm owned and led by women, which supports entrepreneurs focused on solar and clean energy technologies; and the Kapor Center’s Innovation Lab, which provides resources to nascent organizations and businesses led by and committed to underrepresented communities.

Carbon sequestration stands to become a growth industry as more ambitious climate targets are implemented, and Oakland is well positioned to be a leader. Partners must assess potential technologies and business models to ensure that they maximize equity

and avoid harming frontline communities. For example, projects pursuing enhanced photosynthesis can recruit and train employees from neighborhoods with high rates of unemployment, or from among high-risk youth; while those studying more industrial approaches must ensure that new technologies will not create byproducts that burden communities or increase displacement. To maximize local benefits, partners should engage with people-of-color-led, community-based organizations representing and serving frontline communities.

“Increasing anxiety over climate change among youth should be mitigated by offering options for training and programs to actively engage in regenerative soil improvement and both growing food and planting/maintaining trees throughout all areas of Oakland.”



Photo: Max Bouvatte



CR-6

Explore Regional Aquatic Sequestration Opportunities

Lead Agency	Climate Benefit	Cost	Benefits
OPW		\$\$\$\$	
<p>Coordinate with other Bay Area municipalities, non-profits, and agencies to develop a regional approach to aquatic sequestration in San Francisco Bay by 2030.</p>			

Going Deeper

Aquatic ecosystems have potential to rapidly remove carbon from the air, a critical strategy in carbon sequestration. For example, seagrass has the potential to remove a large amount of carbon; however, it requires specific conditions of water depth and clarity, salinity, and minimal disruption. Finding a suitable

location may be challenging due to Port activity, water quality in Lake Merritt, and competing uses along much of Oakland's waterfront. Aquatic approaches are likely better approached as a regional Bay Area collaboration among multiple jurisdictions.

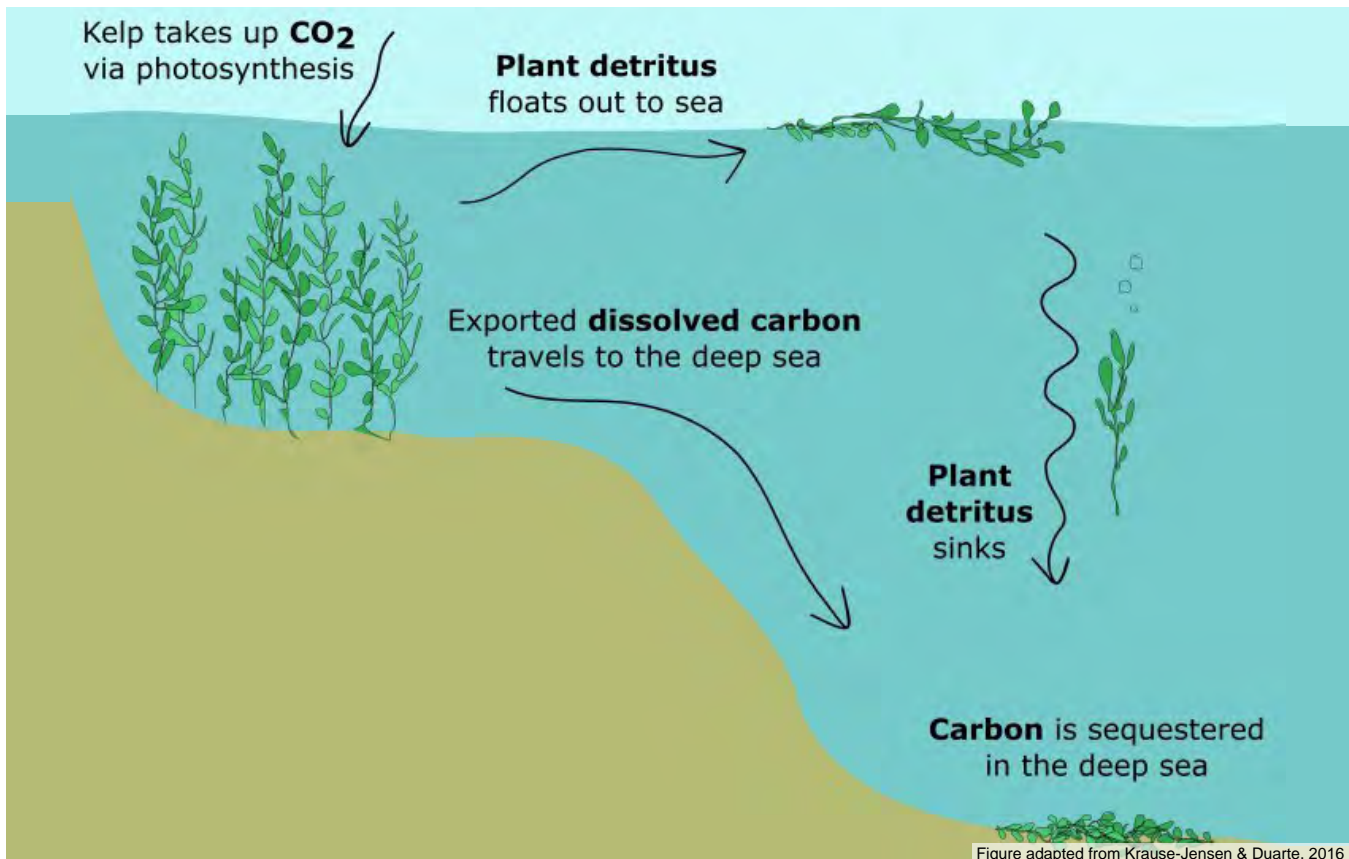


Figure adapted from Krause-Jensen & Duarte, 2016

CITY LEADERSHIP



Vision

Oakland City government demonstrates climate leadership throughout its operations, and supports deep engagement on climate action within the community.



CITY LEADERSHIP



Oakland's Climate Emergency and Just Transition Resolution acknowledged the severity of the climate crisis and the City's intent to be a leader on equitable climate action. While local emissions from City operations are small compared to community-wide emissions, the City controls them directly. Most of Oakland's municipal emissions come from buildings and vehicles that the City owns and operates. To reach its GHG reduction targets, City buildings and vehicles must be retrofitted or replaced with low-emissions technology.

The City's policies and procedures influence a much broader set of climate impacts. Some of these are more intuitive, such as reducing the amount of employee air travel or purchasing reusable instead of disposable items. Others may be less obvious. The City can reduce vehicle emissions by deploying services like street sweeping and parking enforcement more efficiently. Rethinking City procurement policies can reduce waste, support low-carbon alternatives, and strengthen the local economy. How the

City carries out every day municipal services matters as much as what those services are.

Celebrating local leadership can inspire more community action. Oakland has many examples of community leadership on climate issues. Their stories can provide ideas for new programs and inspiration for new leaders, as they demonstrate the importance of community efforts in solving the climate crisis, and show Oaklanders' dedication to improving our future.



The City as an Advocate

Finally, although many areas for climate action are within the City's direct sphere of control, many others require action from and collaboration with other agencies and jurisdictions. Ride hailing companies are regulated by the California Public Utilities Commission. Air quality enforcement is the purview of Bay Area Air Quality Management District. The

Bay Conservation and Development Commission oversees land use decisions in coastal zones. Oakland must continue to strengthen relationships with these and other agencies and work together to achieve a low carbon future that benefits frontline communities.





Centering Equity

The City established an Office of Race and Equity in 2016 to maintain diversity, eliminate racial disparities, and achieve racial equity. This Office coordinates across City Departments and has developed tools and resources like the Racial Equity Impact Guide (see Appendix C) to help City policies and programs achieve equitable outcomes, such as increasing City staff diversity and improving contracting policies. As staff develop programs and

policies in accordance with this ECAP, this guide must be used to ensure that the needs of frontline communities are prioritized. Equity impact tools are especially important because the climate crisis demands innovative actions whose impacts to frontline communities may not be fully understood. As the City evolves its own internal policies and practices, frontline communities should benefit first from efforts to reduce climate pollution and enhance resilience.

City Success Since 2012 Energy + Climate Action Plan

In partnership with Oakland's Planning Bureau, twelve community-based organizations make up the East Oakland Neighborhoods Initiative (EONI) to deliver equity-based planning for Deep East Oakland. In 2019, EONI conducted a year-long community outreach process to identify the primary concerns, goals, and priorities for East Oakland communities and stakeholders.

The City's Environmental Stewardship programs maintain Oakland's public spaces through volunteer cleaning, greening, and beautification. This includes the Adopt a Spot and Adopt a Drain programs, and three annual clean-up events where thousands of Oaklanders come out to clean and green The Town. 2019 saw more than 7,000 volunteers across the three major events.

In June 2018, East Bay Community Energy (EBCE) became the official electricity provider for commercial and municipal accounts in most of Alameda County. Locally governed, EBCE provides its customers with higher percentages of renewable & carbon-free energy compared to PG&E and invests in energy-related programs within its participating communities, while putting its revenue back into the local economy. The City of Oakland "opted up" its municipal accounts to 100% carbon-free service, significantly reducing greenhouse gas emissions and increasing carbon-free energy use in the community.



Measuring Success

- # City buildings retrofitted to eliminate natural gas use
- # Oaklanders, and frontline communities specifically, directly engaged in ECAP implement activities
- % of City fleet powered by clean energy
- Reduction in GHG emissions from City operations
- % of contracts mandating reduction or elimination of fossil fuel usage



Advocate

- For stronger climate education as part of curriculum in public schools
- For greater intergovernmental support for community-based climate activities in support of greenhouse gas reduction, resilience, adaptation, and equity goals of this ECAP.
- For divestment of City-provided or controlled funds, including retirement/pension funds and municipal capital revenues, from fossil-fuel companies





ACTIONS

- CL-1 Evaluate and Reduce Climate Impacts of City Expenditures and Operation**
- CL-2 Phase Out Fossil Fuel Dependency in All City Agreements and Contracts**
- CL-3 Accelerate City Fleet Vehicle Replacement**
- CL-4 Explore Creation of Public or Green Bank**
- CL-5 Establish the Oakland Climate Action Network to Support Inclusive Community Engagement on ECAP Implementation**



CL-1

Evaluate and Reduce Climate Impacts of City Expenditures and Operation

Lead Agency	Climate Benefit	Cost	Benefits
CAO		\$\$\$\$	
<p>By 2022, develop a GHG Impact Analysis for incorporation into budget, capital, and work plans at the departmental level. By 2023, adopt the Good Food Purchasing Policy or similar climate-friendly food policy for all food purchased by the City for City business/events, as part of City contracts for events and activities, and at food service establishments operating on land under the jurisdiction of the City, to ensure that all such food has minimal carbon impacts and maximum health, equity, and local economic benefits. By 2024, track annual embodied GHG emissions related to City expenditures for construction, building maintenance, travel, and food. By 2025, establish maximum GHG performance thresholds for these and other appropriate City purchases.</p>			

Going Deeper

There are many areas of opportunity to reduce emissions in local government, particularly by examining where and how a city spends its budget. Purchases of office supplies, food, and other materials have potential to become significantly less carbon-intensive. To demonstrate its leadership in identifying and reducing the climate impacts of its operations, the City will comprehensively assess how its spending and work plans contribute to the climate crisis. This analysis is intended to help reduce air travel, facilitate low-carbon construction projects, ensure that the food supply chains used for City business and on City properties are low-carbon and equitable, and more. This Action can be a tool for building trust with the community, providing opportunities for all departments to engage in climate-friendly actions, and ensure that the City capitalizes on its full potential to lower its carbon footprint.



Photo: Greg Linhares, City of Oakland



Photo: OPL Staff





CL-2

Phase Out Fossil Fuel Dependency in All City Agreements and Contracts

Lead Agency	Climate Benefit	Cost	Benefits
CAO			
<p>Explore ways to eliminate fossil fuel reliance in all agreements and contracts entered into by the City of Oakland, including utility and contractor franchise agreements, facility and infrastructure design and construction contracts, and other agreements in which fossil fuels will be directly or indirectly utilized to conduct the City’s business.</p>			

Going Deeper

The City can reduce its overall carbon footprint not only through cleaning and greening its operations, but also by working with companies that implement its projects and programs to do the same. This Action commits the City to explore how its vendors, contractors, and associated companies utilize fossil fuels to complete work on behalf of Oakland. Based on this review, the City will create a strategy to phase out fossil fuel use for all those working

under City agreements and contracts. This approach will ensure that City contractors are rapidly transitioning to clean technologies for vehicles, construction equipment, supply chains, and more. City Sustainability and Contract Compliance staff will work with the Department of Race and Equity in implementing this action to ensure that local firms and workers of color are not disproportionately burdened by this action.





CL-3

Accelerate City Fleet Vehicle Replacement

Lead Agency	Climate Benefit	Cost	Benefits
OPW		<p>\$\$\$\$</p>	
<p>By 2030, ensure that over 50% of the City’s fleet uses alternative fuels, with 100% of all non-emergency response sedan purchases being zero emission vehicles. By 2030, triple the number of electric vehicle chargers dedicated to fleet vehicles compared to 2020. By 2025, develop a feasibility study to identify zero emission and alternative fuel solutions for all City heavy-duty and emergency response vehicles and equipment.</p>			

Going Deeper

Oakland City Council adopted the Green Fleet Resolution in 2003, detailing the City’s commitments for the procurement, operation, and management of fleet vehicles to improve efficiency and reduce emissions. Since 2010, all new non-emergency response City vehicle acquisitions have been alternative fuel or hybrid, and as of early 2020, 12.7% of Oakland’s municipal fleet is efficient vehicles, including hybrid, plug-in hybrid, and battery electric. All of the City’s diesel fleet vehicles have run on renewable diesel since 2015; in 2019, the City began deriving that fuel from raw materials sourced

from Oakland itself. The City and its partners gather waste cooking oils from restaurants and cafeterias in the Oakland metropolitan area and convert them to fuel the city’s fleet. By repurposing “waste” and supporting jobs that collect and treat it, Oakland has established a circular fuel economy that supports the local economy while reducing emissions and pollution. Efforts to continue and accelerate conversion of the City’s vehicle fleet to efficient and low- or zero-emission will occur in concert with TLU-5 (Create a Zero Emission Vehicle Action Plan).





CL-4

Explore Creation of Public or Green Bank

Lead Agency	Climate Benefit	Cost	Benefits
Finance		\$\$\$\$	
<p>Explore, with other East Bay cities and regional partners, creation of a regional Public Bank or Green Bank for the purposes of fossil fuel divestment in City investments and local equitable and climate-friendly reinvestment. Identify options and potential for using this mechanism or others to fund climate action activities.</p>			

Going Deeper

This Action builds on previous analysis funded by Oakland and other cities in determining the scale, timeline, and feasibility of a regional Public Bank or similar institution. In 2017, Oakland City Council provided \$75,000 to support a public bank feasibility study. The Cities of Berkeley and Richmond, as well as Alameda County, contributed to the effort. The study was inconclusive, indicating that a regional public bank held promise but leaving a number of questions unanswered. In 2019, California’s Public Banking Act, AB 857 officially opened the door for cities and counties to create public banks for the purpose of ensuring that local public funds are invested locally.

Establishing a public bank was a top priority among Oaklanders in the ECAP community engagement process. Depending on its structure and operating requirements, a Public bank may provide the City with a mechanism to

divest its resources from fossil fuel companies, provide low-interest loans to member municipalities, and serve as a source of funding for climate action and other activities.

A number of challenges remain, such as how such a bank would be capitalized given Oakland’s low budget liquidity, and how many jurisdictions beyond Oakland would need to participate in order to reach a viable scale. Meanwhile, the City’s Finance Department is monitoring efforts of the City and County of San Francisco and the City of Los Angeles, which are also considering formation of local public banks or similar mechanisms. As of early 2020, Public Bank East Bay advocates are seeking outside funding to create an independent Business Plan, which they hope will resolve the outstanding questions about an East Bay public bank’s formation.



Mural: Trust Your Struggle Collective





CL-5

Establish the Oakland Climate Action Network to Support Inclusive Community Engagement on ECAP Implementation

Lead Agency	Climate Benefit	Cost	Benefits
OPW		\$\$\$\$	

Launch a long-term, inclusive community engagement structure for ECAP implementation. Partner with local community organizations for ongoing collaboration, communication, and mutual accountability in alignment with the City’s climate and resilience goals. Specifically:

- Enhance internal City processes and build grassroots organizational capacity for collaboratively leading and executing equitable climate action, responsive to the evolving needs of frontline communities.
- Ensure that the most impacted frontline communities are appropriately identified and resources for climate action and resilience are equitably distributed based on data and through a continuous climate equity analysis.
- Develop and implement strategies for broad, inclusive engagement on climate and resilience action, ensuring that frontline community members are engaged through outreach methods and partnerships that are accessible, multi-lingual, appropriate for multiple ages and abilities, and geographically dispersed.
- Partner with local grassroots organizations to develop leadership within their communities on climate and resilience issues.

Going Deeper

A formal structure for ongoing, inclusive community engagement will authentically involve local community organizations and Oaklanders in implementing the ECAP. This action builds on overwhelming voices from community members: Oakland’s grassroots can and must lead alongside and in partnership with the City in responding and adapting to the climate crisis. Additional expertise for this Action comes from Environmental / Justice Solutions, the Greenlining Institute, and the City’s Department of Race and Equity and Resilience Office; direct input from the ECAP ad hoc Community Advisory Committee; and recommendations from the ECAP Equity Facilitator’s [Racial Equity Impact Assessment and Implementation Guide](#).



Photo: Alonzo Young

Inclusive community engagement must be built on a



Photo: Alonzo Young

foundation committed to equity and informed by data. Understanding which communities are frontline for a given action or need – such as which neighborhoods or demographics are most vulnerable to flooding, air pollution, or traffic deaths, or who may be harmed by improper implementation of ECAP Actions – will enable the City and community organizations to meaningfully involve those groups in developing and implementing programs that impact them.

The COVID-19 pandemic showed the urgent need for enhanced resilience resources in Oakland’s diverse neighborhoods, and proved how well-positioned local groups were to immediately serve people’s needs. Where the City partnered with World Central Kitchen (WCK) to support local restaurants and deliver food to unsheltered Oaklanders, WCK worked with trusted local grassroots organizations to distribute the meals. By uplifting these organizations and enhancing their capacity to co-deliver programs with the City, this Action can increase partnerships, serve more Oaklanders, and improve efficiency in City operations.

While an Oakland Climate Action Network (OCAN) will evolve during the lifetime of this ECAP, it will fundamentally focus on continuous inclusive community engagement, collaborative planning, and capacity building for both the City and grassroots organizations to ensure strong partnership in climate action. Through internal capacity building, the City will endeavor to make its processes more transparent and accessible, so that local community organizations can more easily engage and collaborate with the City. Organizational capacity building can help local nonprofits and community groups more effectively convey priorities to and partner with the City.

Through OCAN, the City strives to deepen its partnership with the community, remove barriers to collaboration, reduce racial disparities by addressing the varying needs of frontline communities, and ensure equitable implementation of Oakland’s 10-year plan to reduce GHG emissions and adapt to a changing climate.





Vision

The City and Port are partners in identifying best practices in lowering GHG emissions from Port operations, and implementing policies to dramatically improve both resilience and health outcomes resulting from Port activities and buildings on Port land.



The Port of Oakland oversees the 5th largest seaport in the United States, Oakland International Airport (OAK), and much of the land along Oakland's waterfront. More than 1,500 ships visit the Port annually, carrying the equivalent of 2.5 million 20-foot containers. Between 3,000 and 5,000 trucks haul shipping containers daily at the Port. OAK serves more than 14 million passengers per year, as well as processing more than 700,000 tons of cargo. The Port is an essential economic driver for Oakland and the region, but also contributes to pollution in frontline communities through the use of fossil fuels by ships, trucks, and buildings, as well as pollution generated from industrial operations of Port tenants.

The Port also includes a Publicly Owned Utility, supplying retail electric service to its tenants in the seaport, airport, and commercial real estate areas of the Port. In 2011, the Board of Port Commissioners adopted a renewable energy resource procurement plan and a program for enforcement of the renewable portfolio standards (RPS) program, which requires that 33% of the Port's energy portfolio be renewable by 2020 and 50% by 2030.

Through combined advocacy with State and Federal agencies, the City and Port can work together to pilot new low-carbon technologies, secure grant funding for building out clean energy infrastructure, and better understand the pathways for protecting the communities that have the greatest exposure to Port activities. Collaborative investments in green infrastructure and adaptation strategies can enhance community partnerships, while protecting families and ensuring the ongoing economic viability of Port operations.

Local Emissions from the Port

At the seaport, direct local emissions come from onsite sources: container handling equipment (CHE), trucks, rail, and vessels at berth. There are also direct emissions generated from private businesses operating in Port areas, including from trucks, rail service, and industrial operations. While direct emissions from the seaport itself represent a small portion of Oakland's GHG emissions, diesel vehicles concentrated along routes serving the seaport account for almost a tenth of Oakland's emissions. Although both diesel and gasoline engines create emissions, diesel emissions cause more serious health impacts like asthma and cancer risk. These impacts are disproportionately felt by the primarily low-income communities of color living along the Interstate 880 corridor and in West Oakland near the seaport. Emissions from airport and seaport buildings are reflected in the Buildings sector of Oakland's Greenhouse Gas Emissions Inventory, and the Port of Oakland conducts its own GHG emissions inventory periodically.



OWNING OUR AIR

The West Oakland Community Action Plan – A Summary

October 2019

A joint project of the Bay Area Air Quality Management District and the West Oakland Environmental Indicators Project





Lifecycle Emissions from the Port

While jet and aviation fuel use at the airport involve substantial GHG emissions, they are not included as part of local emissions in Oakland's Greenhouse Gas Emissions Inventory. Since the airport serves the entire region, these emissions are instead listed as lifecycle emissions.

Emissions from ocean-going vessels and tugboats also fall into the lifecycle category, since they serve a much broader territory and occur substantially outside of the city's boundary.



Photo: Greg Linhares, City of Oakland

GHG Emissions Reduction Efforts

From 2005 to 2015, the seaport reduced 76% of the diesel particulate matter emissions from trucks and ships. However, GHG emissions have not decreased at a similar rate. Total GHG emissions from Port activities and uses decreased 16.6% between 2005-2017 – a lower rate than overall Citywide GHG emissions.

The Port of Oakland continues to plan for reducing the GHG emissions of both seaport and airport activities. Because the Port operates with an independent Board of Directors, emission reduction strategies and programs related to its operations and management are not included in the ECAP. As a major source of emissions, and as a visible and important part of the local economy and community, the Port can implement strategies that will further the City's efforts to achieve the low-carbon future described in the ECAP.

The Board of Port Commissioners has approved GHG emission reduction goals and programs, to be pursued

separately from the City's efforts, via the Seaport Air Quality 2020 and Beyond Plan. That plan, approved by the Board of Port Commissioners in June 2017 and scheduled to be updated in 2023, sets a zero-emission Seaport as its goal. It focuses on reducing criteria pollutants as well as GHGs. In early 2019, the Port entered into a Memorandum of Understanding with the Port of Long Beach to implement a Zero and Near Zero Emissions Freight Facilities (ZANZEFF) grant project. As part of that project, the Port committed to design and install ten charging stations for battery electric trucks and provide a financial match of at least \$1.25M. Port tenant Shippers Transport Express will receive ten zero-emission Class 8 drayage trucks at its near-dock facility, and Port tenant SSA Marine will receive five zero-emission yard tractors and one zero-emission top handler.

The West Oakland Community Action Plan (WOCAP), developed by the West Oakland community in partnership with the Port of Oakland, the Bay Area Air Quality



Management District, the City of Oakland, West Oakland Environmental Indicators Project (WOEIP), and others, was also released in 2019. This plan was developed responsive to State legislation AB 617 (2017), which required community-focused air quality planning to reduce community exposure to existing sources of poor air quality and related health impacts. West Oakland was identified as a high-priority community for this process. The project's many stakeholders collaborated on new policy and program ideas to drive community-led solutions for cleaner air and lower emissions. The process demonstrated the potential of these partners to work together to improve outcomes related to Port activities.

The WOCAP includes 89 detailed strategies to reduce air pollution and mitigate health impacts, with responsible parties including the Port, City of Oakland, Caltrans, and

others. Because of the plan's overlap with the ECAP, robust implementation of the WOCAP provides an important opportunity to advance climate equity in West Oakland. For example, top WOCAP priorities include urban forestry expansion and maintenance (consistent with ECAP Action CR-2); electric vehicle infrastructure (consistent with ECAP Action TLU-5); and reducing indoor natural gas use (consistent with ECAP Actions B-1 and B-2). The WOCAP also includes a prominent focus on protecting public and environmental health in West Oakland, which will necessitate a holistic approach in line with the ECAP's equity principles. The City of Oakland is committed to maximizing GHG reductions and ensuring equitable outcomes through its role in WOCAP implementation.

WEST OAKLAND POLLUTION SOURCES, TODAY

Cars and Trucks	Port and Rail	Industry	Residential
<p>Heavy-duty trucks and cars travel through West Oakland and on the surrounding roadways and freeways. Truck traffic is also generated by the many businesses, parking lots, port docking facilities, warehouses, cargo staging and handling areas, fuels sales, maintenance facilities, weigh stations, and food services in West Oakland.</p> <p>About 42 percent of local diesel PM impacts and cancer risk come from heavy-duty trucks; about 38 percent of PM2.5 impacts come from road dust.</p>	<p>Port equipment includes cargo equipment, port trucks, locomotives, ocean-going vessels, and harbor craft in the San Francisco Bay. Rail includes passenger rail and the Union Pacific railyard.</p> <p>About 33 percent of diesel PM comes from ocean-going vessels associated with the Port, while 18 percent comes from rail.</p> <p>Thirty percent of cancer risk from local sources comes from ocean-going vessels.</p>	<p>Large industries include East Bay Municipal District wastewater treatment plant, recycling facilities such as Schnitzer Steel, CASS, and California Waste Solutions.</p> <p>Small industries include gas stations, back-up diesel generators, auto-body shops, restaurants, and commercial cooking.</p> <p>About 18 percent of local PM2.5 impacts come from West Oakland permitted sources.</p>	<p>Residential sources include backyard burning, fuel combustion (i.e. water heaters), refrigerators, indoor wood burning, and consumer products (i.e. hair sprays, cleaners, solvents).</p> <p>A nominal amount of TACs and PM2.5 can be attributed to residential sources. However, the impact of residential choices can be substantial. Backyard burning can be greatly affect the health of immediate neighbors.</p>

Centering Equity

Frontline communities disproportionately face direct and indirect pollution burdens from Port operations and Port-related commerce, and have for decades. Effective community organizing, combined with government regulations and other interventions, have improved

conditions considerably. Still, disparities persist for adjacent communities. Ocean-going vessels and heavy-duty trucks both contribute substantial additional health risk in the form of diesel particulate matter. Some West Oakland neighborhoods experience nearly three times





the cancer risk from local pollution sources compared to neighborhoods farther away. These pollutants exacerbate exposure in West Oakland frontline communities due to other sources like manufacturing operations, concrete production, and power generation. Heavy-duty trucks coming to and from the airport and seaport also heavily utilize the I-880 corridor through Oakland, creating similar air pollution for lower elevation areas of both East Oakland and West Oakland.

Actions set forth in the WOCAP directly address these disproportionate impacts for communities living near the

seaport, while advancing the goals and strategies of the ECAP. Similarly, the East Oakland Neighborhoods Initiative (EONI) produced a comprehensive community-driven plan that addresses disparate environmental health and other impacts in communities near the airport and along Oakland's eastern stretch of the 880 Corridor. Robust implementation of the WOCAP, and ongoing partnership with East Oakland neighborhoods in pursuing strategies identified through EONI, can increase community and environmental health and resilience, while ensuring that Oaklanders continue to play the lead role in identifying solutions for their communities.



Photo: Ms. Margaret Gordon, WOEIP co-Director

Community Leadership

The **West Oakland Environmental Indicators Project** has a long track record of organizing community members to advocate for City, Port, and Federal action to reduce pollution in their community. In 2018-2019, WOEIP partnered with the Bay Area Air Quality Management District to create "Owning Our Air: The West Oakland Community Action Plan," responsive to State legislation directing local air regulators to develop plans to improve local air quality via an equitable and community-led process.



ACTIONS

- P-1 Reduce Emissions from Port Vehicles and Equipment**
- P-2 Reduce Emissions from Electricity**



P-1

Reduce Emissions from Port Vehicles and Equipment

Lead Agency	Climate Benefit	Cost	Benefits
Port		<p>\$\$\$\$</p>	
<p>The City of Oakland recommends that the Port Board of Commissioners reduce emissions from Port vehicles and equipment in the following ways:</p>			
<ul style="list-style-type: none"> • By 2022, develop a long-term plan for full electrification of drayage trucks. • By 2024, develop a zero-emissions transportation master plan for all airport operations. • By 2022, develop a plan for sufficient electric charging infrastructure for yard trucks and cargo handling equipment. • Plan electric charging infrastructure as part of a comprehensive backup power and climate resilience effort to insulate the Port of Oakland from the impacts of changing electric power reliability. • Study the feasibility of renewable diesel in Port sources of GHG emissions as an interim strategy on the pathway to all-electric vehicles. • Study the effect of the extra weight of battery electric trucks on the City’s overweight corridor. • Work with State and private businesses to develop and review a renewable hydrogen production, storage, and fueling infrastructure pilot project, to the extent no adverse environmental impacts are identified during project-level review. • Analyze the potential for establishing entry fees for GHG-producing vehicles as a funding source for PEV infrastructure. 			

Going Deeper

Vehicles and equipment utilized to conduct business on Port property are a major source of GHG emissions, and their location adjacent to frontline communities in West and East Oakland provide opportunities to address major health and resilience issues alongside climate change. While the Port of Oakland does not control the operational aspects of the many tenants doing business on Port property, there remain a variety of regulatory, programmatic, and policy options for the Port to continue its leadership in lowering emissions associated with these activities. This Action sets forth realistic timeframes for evaluating potential solutions, planning for adoption of more climate-friendly alternatives, and establishing funding sources to facilitate needed changes while protecting the financial viability of the Port.



Photo: City of Oakland, Bureau of Planning



P-2

Reduce Emissions from Electricity

Lead Agency	Climate Benefit	Cost	Benefits
Port		\$\$\$\$	
<p>The City of Oakland recommends that the Port Board of Commissioners reduce emissions from electricity in the following way:</p> <ul style="list-style-type: none"> By 2023, Port of Oakland should procure 100% carbon-free and nuclear-free electricity for Port operations and all electricity supplied to tenants or other end users. 			

Going Deeper

With the availability of carbon-free electricity on the market already, the opportunity exists for the Port to use its purchasing power to lower emissions via the use of clean power. There are multiple ways to implement this Action, including the purchase of power on open markets, working with local organizations to develop clean power sources in the area, or utilizing power purchase

agreements (PPAs) to help finance clean energy projects that meet the intent of this Action. Equitable outcomes can be ensured through prioritizing local projects, working with local partners to create good green jobs in the construction and operation of clean energy sites, and engaging with local partners to determine how best to move forward with various options.



Photo: Greg Linhares, City of Oakland

FUNDING THE ECAP

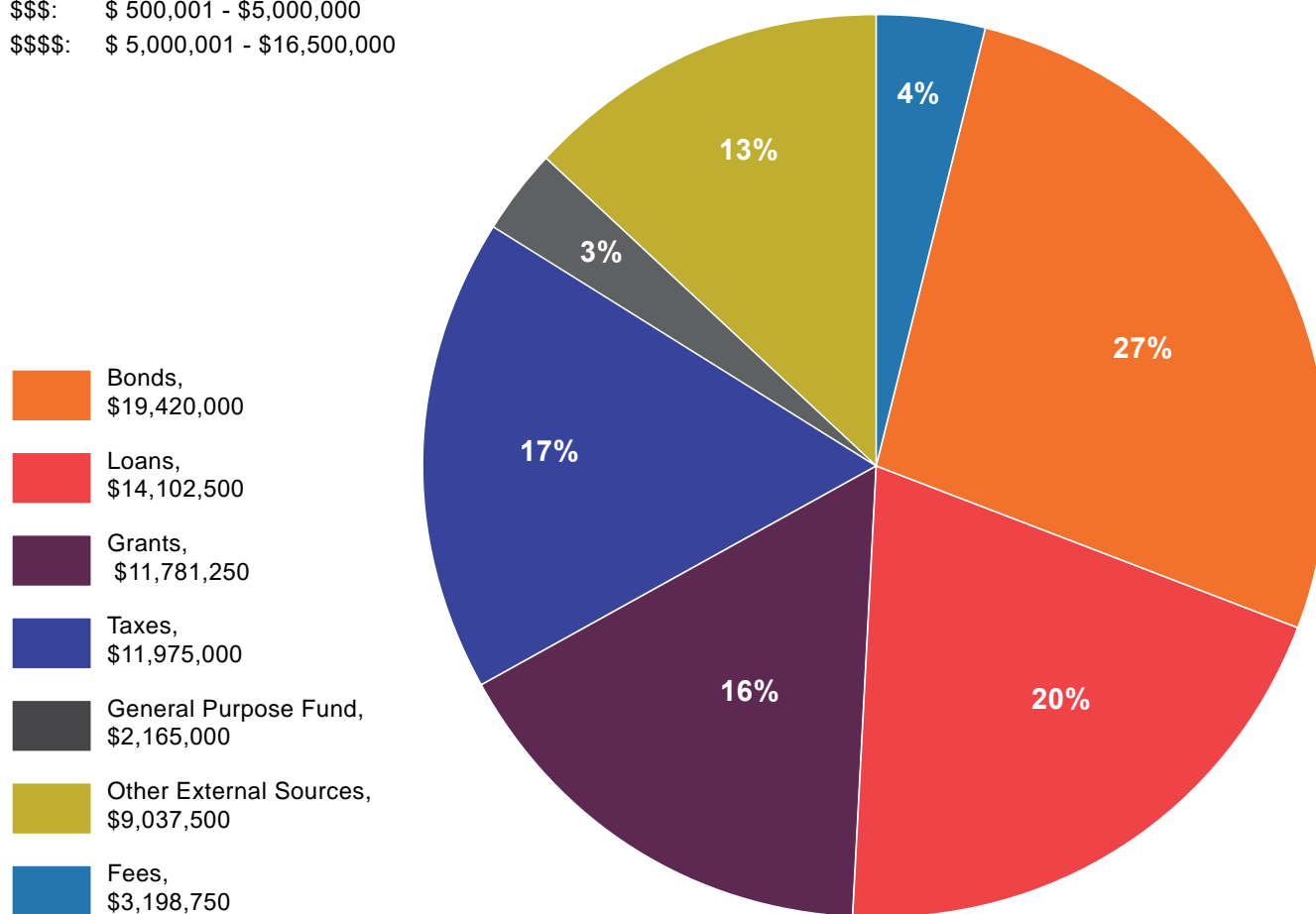


Paying for programs to address climate change is a perpetual challenge for local governments that are always resource-constrained. It can be difficult not only to find enough funding for programs, but also to manage many different sources of funding and the various rules and administration that accompany them.

Fully implementing the actions in this ECAP is estimated to require \$72 million in City funds, representing both direct costs for equipment and services and indirect costs for City staff time. This amount only represents funding that is needed by the City, not costs to be incurred by community members, outside agencies, or private businesses. The figure below shows a high-level breakdown of potential sources of funding for the actions in the ECAP. It is important to note that City budgets, sources of funding, and estimated costs may change substantially over the life of the ECAP, and there are many possible funding pathways. However, all funding pathways involve tradeoffs and must respond to the many other changing priorities and needs of Oakland residents and businesses. This breakdown shows the most likely source of funding for full ECAP implementation.

Throughout the ECAP, the cost range of each potential action is noted:

- \$: \$ 0 - \$200,000
- \$\$: \$ 200,001 - \$500,000
- \$\$\$: \$ 500,001 - \$5,000,000
- \$\$\$\$: \$ 5,000,001 - \$16,500,000



FUNDING THE ECAP



The actions in this ECAP do not necessarily represent the lowest cost pathway to achieve Oakland’s GHG targets. Instead, the actions were chosen to reflect local interests and priorities, address equity and concerns of frontline communities, and to create multiple benefits and values to Oakland in addition to carbon reduction. For example, the most expensive single action in the ECAP is *A-6 Expand and Protect Green Infrastructure & Biodiversity*. While this action will have a small impact on GHG emissions, it produces many other benefits to the community and was a key priority identified by stakeholders in the engagement process.

It is also critical to understand that many climate action strategies can create positive economic benefit in Oakland. Expanding the local green economy and providing pathways to reliable, living wage jobs for residents of frontline communities was a key priority in the development of this Plan. Enhancing green infrastructure can create local green jobs while making that infrastructure more resilient. Investing in businesses that repair household items can both reduce waste and support the local economy. A fuller discussion of green jobs is presented on

Page 17 of this ECAP. Actions in this ECAP also can reduce costs for Oaklanders. For example, removing natural gas from buildings will improve health outcomes and lower energy costs and risks for residents. Making walking and biking safer and more accessible can reduce the costs of moving around Oakland. Additional jobs, lower energy bills, reduced risks, lower health care costs, and improved resilience to climate change are just some of the many tangible benefits to the community that implementation of this ECAP will bring.

Below is a summary of each potential source of funding, with specific examples of funding in each source and with examples of ECAP Actions that could be funded by that source. Many Actions could be funded by multiple sources. Of the total costs of implementation, approximately 21% of the costs are related to staffing positions responsible for the actions, while the remaining 79% consists of costs related to construction, maintenance, equipment purchase, community investment, and other needs. The specific need of each cost is accounted for in this section and is the basis for the determination of available and appropriate funding sources.

General Purpose Fund

This is the primary source of funding for City operations and can be used for any public purpose. It is allocated as part of the overall City budget, approved by City Council every two years. General Fund money is more flexible than other sources in how it can be used, since it is allocated at the discretion of City Council. However, the total amount of funding is very limited, highly variable from year to year, and often already allocated to existing programs. The large number of competing priorities for General Purpose Fund dollars requires that the City seek out other sources of funding wherever possible to increase the likelihood of successful implementation for each action. General Purpose Fund monies may be used for staffing, physical infrastructure, or other implementation costs.

ECAP Actions that could be funded by this source:

MCW-5	Expand Community Repair Resources
A-3	Citywide Vulnerability Assessment & Comprehensive Adaptation Plan
CL-3	Accelerate City Fleet Vehicle Replacement

FUNDING THE ECAP



Bonds

Local governments can sell bonds to investors that raise capital for a specific objective. Unlike loans, bonds are often introduced along with an accompanying funding measure like a parcel tax, which typically allows bonds to be repaid at lower interest rates. Bonds must be repaid over time with interest, so the total cost of getting funding sooner with a bond is much higher than the actual funding the City would receive. Bonds also must be approved by the voters and may have additional oversight or administration requirements.

Examples of this source:

YEAR	TITLE	FOR
2018	Measure D	Improving library services
2016	Measure KK	Street paving, bike & pedestrian safety, affordable housing, energy and climate retrofits
2016	Measure AA	Prevent pollution and restore habitat in San Francisco Bay
2014	Measure BB	Alameda County transportation improvements (including transit, bike, and pedestrian infrastructure)
2014	Measure Z	Special parcel tax & parking tax for police services and violence prevention strategies

ECAP Actions that could be funded by this source:

TLU-7	Rethink Curb Space
B-5	Require All Major Retrofits of City Facilities to be All-Electric
MCW-5	Expand Community Repair Resources
A-6	Expand and Protect Green Infrastructure & Biodiversity

Taxes

Taxes generate revenue to support local, regional, and state operations. Some taxes, while generating local revenue, are limited in flexibility for use by cities like Oakland. Except where prohibited by state law, local governments can create local taxes, but must receive voter approval. Those taxes can be used either for general purposes (e.g. any city service as needed) or specific purposes (e.g. dedicated to funding the ECAP), but specific taxes require a 2/3 approval from voters whereas general taxes require majority approval.

Some existing taxes may have a strong connection with ECAP goals and objectives. One example is the Utility User Tax (UUT), which the City charges on utilities like electricity, natural gas, and telecommunications. Since shifting away from natural gas use is a critical part of achieving Oakland's GHG goals, the UUT could be modified to increase taxes on fossil fuels like natural gas while using the proceeds to help reduce the cost of cleaner technologies or fund climate mitigation efforts. While this is possible, it would still require voter approval, partnership with the energy utilities, and a strong plan to address impacts to equity.

Examples of this source:

- Utility User Tax
- Sales and Use Tax
- Real Estate Transfer Tax
- Measure Q: Parcel tax funding parks and recreation, homeless services, and water projects

ECAP Actions that could be funded by this source:

TLU-3	Take Action to Reduce and Prevent Displacement of Residents and Businesses
B-2	Plan for All Existing Buildings to be Efficient and All-Electric by 2040
A-4	Wildfire Risk Reduction
CR-3	Rehabilitate Riparian Areas and Open Space

FUNDING THE ECAP



Loans

Somewhat like bonds, loans can fund projects by borrowing money from lenders for upfront costs and then paying the loan off over time. While bonds are typically used over longer terms, loans tend to have shorter repayment terms but also more limited funding amounts. Whereas bonds payments are often secured by corresponding revenue measures (e.g. a parcel tax), loans are often unsecured and may have higher interest rates for repayment. However, some loan programs like the On Bill Financing Program allow for zero interest loans when used for a public purpose like energy efficiency retrofits for buildings. One other critical distinction is that cities need voter approval to issue bonds, but not to get a loan from a bank. There are several specific State, regional, and utility loan programs that are available specifically for the types of actions included in the ECAP.

Examples of this source:

- On Bill Financing: Energy utilities provide upfront payments for some energy efficiency upgrades and

allow that loan to be repaid over time on the customer's utility bill

- Infrastructure State Revolving Fund: The State of California provides loans to local governments for infrastructure and economic development.
- California Lending for Energy & Environmental Needs (CLEEN): provides funding to schools, hospitals, and governments for GHG reduction and other programs.

ECAP Actions that could be funded by this source:

TLU-4	Abundant and Accessible Public Transit
MCW-4	Support the Reuse, Repair, Recovery, and Refurbishment Economy
A-1	Creation and Operation of Resilience Hubs
CL-3	Accelerate City Fleet Vehicle Replacement

Grants

This category includes federal, state, utility, regional and local grant programs as well as philanthropic grant funding. Grants are usually given without expectation of repayment, but often still require either matching funds from the City, staff time to administer the grants, or both. Grants are often used to fund programs that are innovative, without a historical track record to evaluate effectiveness. However, grants are also competitive and are not guaranteed source of funding.

In addition to the use of existing grant programs to fund action items, this ECAP includes Action *CL-4 Explore Creation of Public or Green Bank*. If such a bank was established, the general concept is that it would return any profits to the community in the form of grants or low-interest loans. While the successful launch of such a program is not included in this funding plan, it is a tool that would be utilized when and if it became available in Oakland.

Examples of this source:

- CalFire Urban and Community Forestry Grants

- CalRecycle Food Waste Prevention and Rescue Grants
- CA Air Resources Board Carl Moyer Program Grants

ECAP Actions that could be funded by this source:

TLU-5	Create a Zero Emission Vehicle (ZEV) Action Plan
TLU-9	Ensure Equitable and Clean New Mobility
TLU-10	Expand Neighborhood Car Sharing
B-3	Prevent Refrigerant Pollution
A-3	Citywide Vulnerability Assessment & Comprehensive Adaptation Plan
CR-4	Explore Carbon Farming
CR-6	Explore Regional Aquatic Sequestration Opportunities
CL-4	Explore Creation of Public or Green Bank
CL-5	Establish the Oakland Climate Action Network

FUNDING THE ECAP



Fees

The City collects many types of fees: impact fees, user fees, regulatory fees, penalties, franchise fees, and others. For the purposes of the ECAP, these fees have been grouped together into one source of funding. Fees often have a strong connection with a certain activity. For example, a fee for a building permit helps pay the cost of the City staff time to review drawings to ensure compliance with building code. For activities that are related to ECAP action, fees may help to pay for some of the cost of implementing ECAP actions.

Examples of this source:

- Franchise fees
- SB 1383 recovery fees
- User fees

ECAP Actions that could be funded by this source:

TLU-6	Establish Temporary and Permanent Car-Free Areas
TLU-8	Expand and Strengthen Transportation Demand Management (TDM) Requirements
B-2	Plan for All Existing Buildings to be Efficient and All-Electric by 2040
B-4	Reduce Lifecycle Emissions From Building Materials
MCW-1	Eliminate Disposal of Compostable Organic Materials to Landfills
MCW-2	Strengthen Infrastructure for Edible Food Recovery
MCW-3	Eliminate Single-Use Plastics in Food Preparation, Distribution, and Sale
MCW-6	Establish a Deconstruction Requirement
CR-2	Expand and Protect Tree Canopy Coverage
CR-5	Assess Feasibility for Sequestration Incubator

Other External Sources

This category includes several different sources, such as shared program revenue, Port of Oakland budget, enterprise revenues, lawsuit settlement awards, and other sources that may not come directly from the City's budget.

Examples of this source:

- Sale of Carbon Credits
- Voluntary Climate Contributions
- Lawsuit Settlements

ECAP Actions that could be funded by these sources:

TLU-1	Align All Planning Policies & Regulations with ECAP Goals & Priorities
TLU-2	Align permit and project approvals with ECAP priorities
B-1	Eliminate Natural Gas in New Buildings
CR-1	Develop Local Carbon Investment Program
CL-2	Phase Out Fossil Fuel Dependency in All City Agreements and Contracts
P-1	Reduce Emissions from Port Vehicles and Equipment
P-2	Reduce Emissions from Electricity

IMPLEMENTATION TIMELINE

#	Action #	Lead Dept.	Supporting Dept.	2020	2021	2022	2023	2024	2025	2030	2040	2050
TRANSPORTATION + LAND USE												
1	TLU-1	Align All Planning Policies & Regulations with ECAP Goals & Priorities	PBD	PW-SUS, DOT								
2	TLU-2	Align Permit and Project Approvals with ECAP Priorities	PBD	PW-SUS								
3	TLU-3	Take Action to Reduce & Prevent Displacement of Residents & Businesses	EWD, HCD									
4	TLU-4	Abundant, Affordable, and Accessible Public Transit	DOT	PW			✓					✓
5	TLU-5	Create a Zero Emission Vehicle (ZEV) Action Plan	DOT	PW-SUS	✓							
6	TLU-6	Establish Temporary and Permanent Car-Free Areas	PBD	DOT, EWD								
7	TLU-7	Rethink Curb Space	DOT	PBD								
8	TLU-8	Expand and Strengthen Transportation Demand Management Requirements	PBD	DOT								
9	TLU-9	Ensure Equitable and Clean New Mobility	DOT									
10	TLU-10	Expand Neighborhood Car Sharing	DOT							✓		
BUILDINGS												
11	B-1	Eliminate Natural Gas in New Buildings	PBD	PW-SUS			✓					
12	B-2	Plan for All Existing Buildings to be Efficient & All-Electric by 2040	PW-SUS	PBD		✓					✓	
13	B-3	Prevent Refrigerant Pollution	PW-SUS	PW-FAC			✓					
14	B-4	Reduce Lifecycle Emissions from Building Materials	PBD	PW-SUS			✓					
15	B-5	Require All Major Retrofits of City Facilities to be All-Electric	PW	PW-SUS	✓							
MATERIAL CONSUMPTION + WASTE												
16	MCW-1	Eliminate Disposal of Compostable Organic Materials to Landfills	PW-ZWP							✓		
17	MCW-2	Strengthen Infrastructure for Edible Food Recovery	PW-ZWP	HSD, OPRYD								
18	MCW-3	Eliminate Single-Use Plastics and Prioritize Reuse in Food Preparation, Distribution, and Sale	PW-ZWP				✓		✓			
19	MCW-4	Support the Reuse, Repair, Recovery, and Refurbishment Economy	PW-SUS	EWD					✓			
20	MCW-5	Expand Community Repair Resources	OPL	EWD						✓		
21	MCW-6	Establish a Deconstruction Requirement	PBD	PW-ZWP								
ADAPTATION												
22	A-1	Fund Creation and Operation of Resilience Hubs	CRO	PW-SUS			✓			✓		
23	A-2	Enhance Community Energy Resilience	PW-SUS	CRO								
24	A-3	Fund and Implement Citywide Vulnerability Assessment and Comprehensive Adaptation Plan	PBD, CRO	PW-SUS					✓			
25	A-4	Wildfire Risk Reduction	OFD, FIN	CRO								
26	A-5	Identify and Reduce Financial Risks from Climate Change	PW	CRO				✓				
27	A-6	Expand and Protect Green Infrastructure & Biodiversity	PW-WSM	OES, CRO			✓					
CARBON REMOVAL												
28	CR-1	Develop Local Carbon Investment Program	PW-SUS	EWD, PBD			✓					
29	CR-2	Expand and Protect Tree Canopy Coverage	PW-PTS			✓						
30	CR-3	Rehabilitate Riparian Areas and Open Space	PW-WSM	CRO								
31	CR-4	Explore Carbon Farming	PW-SUS	PBD					✓			
32	CR-5	Assess Feasibility for Sequestration Incubator	EWD	PW-SUS					✓			
33	CR-6	Explore Regional Aquatic Sequestration Opportunities	PW-SUS	EWD, PW-WSM						✓		
CITY LEADERSHIP												
34	CL-1	Evaluate and Reduce Climate Impacts of City Expenditures and Operations	CAO	FIN, PW-SUS			✓	✓	✓	✓		
35	CL-2	Phase Out Fossil Fuel Dependency in City Agreements / Contracts	CAO	PW-SUS								
36	CL-3	Accelerate City Fleet Vehicle Replacement	PW-FL						✓	✓		
37	CL-4	Explore Creation of Public or Green Bank	FIN	PW-SUS								
38	CL-5	Establish the Oakland Climate Action Network to Support Inclusive Community Engagement on ECAP Implementation	PW-SUS	DRE	✓							
PORT OF OAKLAND												
39	P-1	Reduce Emissions from Port Vehicles and Equipment	Port			✓		✓				
40	P-2	Reduce Emissions from Electricity	Port				✓					
Total # of Actions Needed to Be Completed By Target Year:				2	1	5	9	3	8	5	1	1

Abbr.	Department	Abbr.	Department	Abbr.	Department
CAO	City Administrator's Office	OES	Office of Emergency Services	PW-FAC	PW - Facilities
CRO	Office of Resilience	OFD	Oakland Fire Department	PW-FL	PW - Fleet
DOT	Oakland Department of Transportation	OPL	Oakland Public Library	PW-PTS	PW - Parks and Tree Services Division
EWDD	Economic and Workforce Development Department	OPRYD	Oakland Parks, Recreation, & Youth Develop	PW-SUS	PW - Sustainability Program
FIN	Department of Finance	PBD	Planning and Building Department	PW-WSM	PW - Watershed & Stormwater Mgt Division
HCD	Housing and Community Development Department	Port	Port of Oakland	PW-ZWP	PW - Zero Waste Program
HSD	Human Services Department	PW	Oakland Public Works		

LEGEND	
	Implementation in Progress
	Action Implementation Deadline

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THE 2030 EQUITABLE CLIMATE ACTION PLAN COMMUNITY ENGAGEMENT PROCESS

The City of Oakland conducted more than a year of extensive engagement to ensure that the 2030 ECAP reflects the needs and insights of Oaklanders. This work was conducted in partnership with the City’s two ECAP consultant teams: An Equity Facilitator (co-led by the Oakland Climate Action Coalition, Blue Star Integrative Studios, and Environmental / Justice Solutions) and a technical consultant, led by Oakland-based Integral Group. This process directly engaged more than 2,100 Oakland community members, as well as dozens of technical experts.

The City of Oakland pioneered the Equity Facilitator (EF) model to ensure process equity in the ECAP’s creation. The City sought a team with deep local knowledge, experience designing and assessing equity-based processes and plans, and awareness of climate equity issues. The Oakland Climate Action Coalition is

a cross-sector coalition with over three dozen member organizations, organizing and advocating for sustainable, equitable, and community-based economic development. Based in the East Bay, Environmental / Justice Solutions consults on climate and environmental justice law and policy, from community engagement to implementation. The EF led outreach for the workshops, online survey, and Town Hall meetings described below; worked with the City to design and facilitate the workshops and Town Hall meetings; spearheaded additional outreach strategies including social media, an online portal, and Climate Equity Work Days; and conducted a racial equity impact analysis of the ECAP, making recommendations to ensure equity in its implementation. The overall process was designed to particularly engage frontline community members and ensure that their voices are meaningfully incorporated in the ECAP by eliminating barriers to participation.



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The following is an overview of all community engagement conducted for the 2030 ECAP process, from January 2019 through June 2020:

- **Neighborhood Leadership Cohort:** In early 2019, the EF recruited a Neighborhood Leadership Cohort (NLC) of two residents from each City Council District. Neighborhood leaders received training on City government process, equity principles, basics of climate science, and the origins and goals of the ECAP, and an hourly stipend to co-lead outreach and co-facilitate their district workshop and Town Hall meetings.
- **ECAP ad hoc Community Advisory Committee:** Appointed by Mayor Libby Schaaf, the ECAP ad hoc Community Advisory Committee began meeting in April 2019. The Committee was formed by City Council Resolution to advise City staff in the development of the ECAP. It consisted of 13 members and two alternate members, reflecting the racial and geographic diversity of Oakland. The Committee met monthly until final adoption of the ECAP by City Council.
- **Community Workshops:** From May through July 2019, the EF and City staff delivered eight community workshops – one in each Council District, and an additional citywide workshop. Nearly 400 Oaklanders attended. Residents shared knowledge about their communities, and identified local values and priority community needs. EF and City staff provided education on the climate crisis and Oakland-based solutions that could reduce emissions while addressing community priorities. At the end of each workshop, attendees voted on the most critical equity-based climate solutions for their communities. All workshops were free and included a full meal. Childcare and simultaneous interpretation in Chinese and Spanish were available upon request.
- **Stakeholder Interviews:** Throughout the ECAP's development, the City and both consultant teams interviewed technical experts in transportation and mobility, material consumption and waste, building science, energy systems, racial and climate equity, carbon sequestration, resilience, and more. These informed analysis of what strategies will be technically feasible and most likely to produce intended outcomes. They also informed community discussion by enriching the baseline of data and potential solutions for Oaklanders to explore in imagining local solutions.
- **Online Survey:** Nearly 800 Oaklanders responded to an in-depth online survey that reflected many of the questions posed at the Community Workshops plus additional topics, providing detailed information on the types of climate actions that Oaklanders want and need. The survey identified priorities and helped the project team understand community concerns.
- **Online Draft:** The City published a draft 2030 ECAP in late October. The interactive online draft allowed Oaklanders to review and publicly comment on the draft, stimulating conversations about climate, equity, and civic topics. More than 400 public comments were recorded.
- **Town Halls:** In November 2019, the EF and City led two citywide Town Halls focused on the draft plan. The process was designed to engage all community members, particularly from frontline communities, in a deep exploration of the draft ECAP, to provide detailed feedback and recommendations for improving the plan and increasing its relevance in their communities. To increase access for harder-to-reach communities, the Town Halls were held at the Rainbow Recreation Center in East Oakland and the Lincoln Square Recreation Center in Chinatown. A full meal was included, and childcare and language interpretation services in Spanish and Chinese were free upon request. In total, more than 200 Oaklanders participated in the Town Halls.
- **Youth Engagement:** Youth voices have gained prominence in global discussions of the climate crisis. In Oakland, staff and partners worked in multiple ways to bring youth into the conversation, provide accessible education about the climate crisis and the City's response, and lay the foundation for ongoing engagement with our future leaders. Through the Youth-Plan Learn Act Now (Y-PLAN) program, run by UC Berkeley, the City worked with four Skyline High School sophomore classes to explore equity and engagement in the 2030 ECAP. More than 100 students learned about the City's climate efforts, and

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made recommendations for strategies to be included. The EF team worked with high school youth through the Rose Foundation's New Voices are Rising (NVR) program, where the ECAP became the focus of NVR's 2019 Summer Academy and students helped deliver the District 3 community workshop. The City also began working closely with the Oakland Unified School District's Environmental and Climate Change Literacy (ECCL) team in 2019 to support strengthened climate curricula including integration of the ECAP into OUSD's policies and teacher resources. Additional youth engagement was led by community members directly, such as the Mycelium Youth Network, which taught 7th graders about the City's ECAP and provided 13 letters from the youth urging strong climate action.

- **Additional Plans:** Several community planning processes that paralleled the ECAP took place in Oakland in 2018 and 2019. Most notably, the East Oakland Neighborhoods Initiative (EONI) and the West Oakland Community Action Plan (WOCAP) focused on building resilience and addressing environmental harms in Deep East Oakland and West Oakland: communities hard-hit by environmental pollution and a historic lack of investment, and deeply at risk from the impacts of climate change. Both plans included extensive community engagement. Findings and recommendations from both of these are incorporated in the ECAP.
- **Pop-Up Engagement and Climate Equity Work Days:** Led by the EF, this work involved meeting people where they are and through hands-on projects that make climate action tangible and relevant. These included presentations to neighborhood and church groups, and projects such as tree planting, building tiny homes for unsheltered Oaklanders, and coastal cleanup. These events helped spread the word about the ECAP, and encourage participants to join workshops or access other engagement.
- **Leadership Engagement:** The City of Oakland has many Boards and Commissions to increase community engagement on critical topics or from key populations. Other community groups bring together leaders who reach populations that would be harder for staff to engage directly. Staff worked with the City's Youth Commission, Mayor's Commission on Persons with

Disabilities (MCPD), the Oakland Parks and Recreation Foundation (OPRF), and the Alameda County Interfaith Council, among others, to get input into what topics were most important for key populations, and how to better protect sensitive populations from the impacts of climate change and from unintended consequences of climate action.

The feedback and compiled wisdom from these activities directly guided ECAP development, including which Actions were included, how they were structured, and how the overall ECAP was framed. Priorities from the workshops, online survey, and other initial outreach led to certain Actions being included that otherwise would not have been considered (such as CL-4, Explore Creation of a Public or Green Bank, arising from the top-voted priority at the community workshops), and gave other Actions greater depth (such as the emphasis on teaching repair in high schools and vocational schools in MCW-4, Support the Reuse, Repair, Recovery, and Refurbishment Economy – a key concern of the Youth Commission). Feedback received at the Town Halls, on the online draft, and from the ECAP ad hoc Community Advisory Committee led to the creation of the callouts in Leading with Equity on public health, housing security, and food security, as it became clear that Oaklanders wanted to see how the City was considering these crosscutting topics that spanned ECAP sections, and how the City was already addressing these pressing issues.

Many Oaklanders expressed concerns about Public Safety Power Shutoff (PSPS) events and how efforts to modernize buildings and promote decarbonization would promote equity and public health. Hearing these concerns, the City strengthened language in B-2, Plan for All Existing Buildings to be Efficient and All Electric by 2040, and added Action A-2, Enhance Community Energy Resilience; taken together, these actions will ensure an equitable, methodical transition to a fossil-fuel-free building stock that prioritizes public health, safety, and energy resilience, and ensures that the most vulnerable Oaklanders can survive and thrive during PSPS events.

The City and its partners began planning the robust community engagement described above in 2018, and the work continued into 2020. Building on past and concurrent cooperative efforts between the City and local grassroots

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organizations, this process created a powerful foundation for ongoing collaboration. ECAP Action CL-5, Establish the Oakland Climate Action Network, aims to build on that momentum. It is also responsive to repeated calls

for the City to help build capacity of Oakland's grassroots organizations to equitably engage with the City in policy and program development and implementation.

Top Priorities from ECAP Community Workshops	Placement in the ECAP
1. Support a public bank to divest public money from fossil fuels and enable local financing of local sustainable economic development projects promoting climate action and creating local benefits.	CL-4: Explore Creation of Public or Green Bank
2. Support community land trusts for permanently affordable housing, local businesses, growing food, and supporting biological and cultural diversity.	TLU-3: Take Action to Reduce and Prevent Displacement of Residents and Businesses
3. Municipal ban on single-use plastics such as packaging and flatware.	MCW-3: Eliminate Single-Use Plastics and Prioritize Reuse in Food Preparation, Distribution, and Sale
4. Low-cost or free bus fare. Transit passes or reduced fares for all.	TLU1: Align All Planning Policies & Regulations with ECAP Goals & Priorities TLU-4: Abundant, Affordable, and Accessible Public Transit
5. Climate justice education & curriculum. Teachers and students develop K-12 curriculum with service-learning opportunities and partnerships with the City and community-based organizations for Oakland Unified School District.	MCW-4: Support the Reuse, Repair, Recovery, and Refurbishment Economy See also "Community Engagement" in the Introduction, explaining the City's climate engagement with OUSD, as well as plans for ongoing coordination.
6. Improve public transit. More frequent, reliable bus service, public safety at bus stops, more destinations, more amenities.	TLU-4: Abundant, Affordable, and Accessible Public Transit
7. Community-owned solar that allows renters and neighbors to financially benefit from shared solar energy installations.	TLU-1: Align All Planning Policies & Regulations with ECAP Goals & Priorities A-2: Enhance Community Energy Resilience
8. Ensure complete neighborhoods so that needed daily services are accessible without a car, including green pathways and alleyways and safe streets and sidewalks for active mobility.	TLU-1: Align All Planning Policies & Regulations with ECAP Goals & Priorities
9. Make streets safer for pedestrians, bikes, wheelchairs, skateboards, and scooters.	TLU-7: Rethink Curb Space TLU-2: Align Permit and Project Approvals with ECAP Priorities TLU-6: Establish Temporary and Permanent Car-Free Areas

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<p>10. Divert quality unused food from restaurants and grocery stores in Oakland to food banks and pantries for people in need.</p>	<p>MCW-2: Strengthen Infrastructure and Partnerships for Edible Food Recovery</p>
<p>11. Urban farming & gardens. Grow local food production and food access by supporting more community-based farms and gardens on vacant lots.</p>	<p>CR-4: Explore Carbon Farming</p> <p>See also “Food Security” in the Introduction about ongoing City action to support organic urban agriculture and food security.</p>
<p>12. Support establishment of green, community- and worker-owned cooperative businesses to retain local wealth and build economic democracy.</p>	<p>TLU-3: Take Action to Reduce and Prevent Displacement of Residents and Businesses</p> <p>MCW-4: Support the Reuse, Repair, Recovery, and Refurbishment Economy</p> <p>CR-5: Assess Feasibility for Sequestration Incubator</p>
<p>13. Green Buffer Zones to prioritize tree planting and vegetation near schools and residential areas adjacent to freeways, truck routes and other pollution sources to protect community health.</p>	<p>A-6: Expand and Protect Green Infrastructure & Biodiversity</p>
<p>14. Green jobs training for development of local businesses that repair & upcycle goods.</p>	<p>MCW-4: Support the Reuse, Repair, Recovery, and Refurbishment Economy</p> <p>See also “Green Economy” in the Introduction.</p>
<p>15. Increase and ensure affordable housing near transit and in new transit-oriented development.</p>	<p>TLU-1: Align All Planning Policies & Regulations with ECAP Goals & Priorities</p>
<p>16. Grow and maintain urban forest, with a focus on reducing urban heat islands by increasing tree cover.</p>	<p>CR-2: Expand and Protect Tree Canopy Coverage</p>
<p>17. Restore creeks. Reduce flood risks from sea level rise and create walking / biking paths & habitat by surfacing and restoring neighborhood creeks.</p>	<p>CR-3: Rehabilitate Riparian Areas and Open Space</p>
<p>18. Permeable Concrete, Bioswales & Rain Gardens. Reduce toxic runoff to the Bay by switching out concrete for permeable materials and adding bioswales and rain gardens in parking lots & street medians.</p>	<p>A-6: Expand and Protect Green Infrastructure & Biodiversity</p>
<p>19. Neighborhood disaster preparedness. Support and expand City and community-led programs that train volunteers, identify vulnerable populations and develop emergency plans, in partnership with emergency response agencies.</p>	<p>A-1: Fund Creation and Operation of Resilience Hubs</p> <p>A-3: Fund and Implement Citywide Vulnerability Assessment and Comprehensive Adaptation Plan</p>
<p>20. Green jobs training & development in urban forestry, tree planting & maintenance, ecosystem restoration, installation of greywater systems and rainwater catchment.</p>	<p>CR-5: Assess Feasibility for Sequestration Incubator</p> <p>See also “Green Economy” in the Introduction.</p>

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Additional Priorities from Online ECAP Survey*	Placement in the ECAP
1. Switch to zero-emission buses.	TLU-5: Create a Zero Emission Vehicle (ZEV) Action Plan TLU-10: Expand Neighborhood Car Sharing
2. Encourage construction of accessory dwelling units to increase density, boost income for low-income homeowners, and increase available affordable rental units.	TLU-1: Align All Planning Policies & Regulations with ECAP Goals & Priorities See also "Housing and the Climate Crisis" in the Introduction.
3. Protect existing affordable housing stock and strengthen tenants' rights.	TLU-3: Take Action to Reduce and Prevent Displacement of Residents and Businesses
4. Build ecologically sustainable tiny house villages to support housing needs of houseless residents and curbside communities.	No specific mention. See "Housing Security" in the Introduction for a discussion of the climate risks posed to curbside and unsheltered communities as well as ongoing City action on homelessness and the housing affordability crisis.
5. Reduce air pollution from local industrial facilities adjacent to residential neighborhoods and schools.	A-6: Expand and Protect Green Infrastructure & Biodiversity

*Many survey priorities were reflected in the Workshop priorities.

APPENDIX B

GHG Modeling Methodology

INTRODUCTION

Greenhouse Gas modeling and analysis were critical elements of ECAP development, ensuring the ECAP actions would achieve Oakland's 2030 emissions reduction target. The City's GHG targets, Business as Usual (BAU) projections, and projected impacts of ECAP actions all pertain to local emissions, as lifecycle emissions are harder to measure and subject to many factors outside of the City's control. All GHG data used in the modeling are based on the City's most recent GHG Inventory, which was conducted in 2019 and analyzed 2017 emissions.

Local emissions modeling focuses on three major sectors: buildings and energy, transportation, and waste. Building energy use is sourced from utility data provided by PG&E, and converted into GHG emissions using location and fuel-specific GHG intensities. Transportation emissions are sourced from the California Air Resources Board. Waste emissions are calculated based on City waste management data. GHG modeling for the ECAP additionally builds on the analysis from the [Climate Action for Urban Sustainability \(CURB\)](#) tool, which the City performed in 2017 through support from Bloomberg Associates.

Overview of the Modeling Tool

The ECAP consultant team developed an Excel-based GHG emissions modeling tool to inform ECAP actions, accounting for all GHG emission sources in Oakland. The team used the tool to estimate future energy use and emissions under a business-as-usual (BAU) scenario, and to quantify the potential impact actions would have on different sectors. The model provides insight into how the City can achieve its 2030 and 2050 climate targets; it is not meant to quantify all actions or assign savings to specific actions. In some cases, the tool was used to quantify specific programs and policies where actions are more directly quantifiable, such as new building codes. Where actions have less direct impact on emissions, the team focused on determining the scale of action required to achieve the City's targets.

The GHG model is not intended to be a predictive tool and does not account for costs or externalities other than GHG emissions. The intent of the ECAP is to provide the City with a roadmap to achieving its GHG reduction targets and climate adaptation goals, and increasing climate equity. It provides this roadmap through a package of policy and program recommendations, with additional guidance regarding the design and implementation of such actions based on available research and experiences in other leading jurisdictions. The specific design and implementation of its Actions will take further analysis, including understanding the potential cost-effectiveness and relative feasibility of specific program and policy approaches and designs.

While the ECAP's GHG model mainly focuses on buildings and energy, transportation, and waste, one key source of GHGs that deserves mention are industrial and manufacturing facilities. The California Public Utility Commission follows a "15/15" rule where energy use data for a class of customers can only be shared with a third party (in this case, the City) when that class is bigger than 15 customers and no customer makes up more than 15% of the total. In Oakland, this threshold has never been met by the industrial sector. Therefore, industrial emissions remain outside the scope of both the City's GHG inventories and the ECAP modeling.

BASELINE ASSUMPTIONS AND BAU WITHOUT POLICIES

The first step of the BAU scenario is defining baseline assumptions and estimating what emissions will look like in the absence of new City policies, simply considering increases in floor area and mobile transport. The BAU factors in reasonably anticipated market trends (such as conservative estimates of increased electric vehicle sales) and state and federal policies (such as anticipated advancements in California's building code, Title 24. This BAU forms the top line of the chart on Page 24 in the ECAP introduction.

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GHG Modeling Methodology

Transportation:

Transportation emissions are forecast based on the Emissions Factor (EMFAC) model developed and used by the California Air Resources Board (CARB). EMFAC is used to assess emissions from on-road vehicles including cars, trucks, and buses in California, and to support CARB's regulatory and air quality planning efforts to meet the Federal Highway Administration's transportation planning requirements. The United States Environmental Protection Agency (USEPA) approves EMFAC for use in the State Implementation Plan and transportation conformity analyses. EMFAC 2014 was used to project BAU vehicle miles traveled (VMT) emissions. The following assumptions were made in the BAU scenario for VMT based on the EMFAC calculations:

- The first BAU scenario run through EMFAC assumes current vehicle stocks going forward, with limited uptake of electric vehicles. This is not likely given the rapid uptake of electric vehicles due to both policies and market conditions, but appropriately represents the worst-case BAU.
- Oakland's most recent local GHG inventory excludes airport transportation emissions for outbound and inbound transboundary flights, as these are considered Scope III (lifecycle) emissions. Therefore, the ECAP model also excludes these emissions. Airport stationary energy use and emissions are included; these are taken from the 2017 inventory and held constant in the BAU.
- Seaport emissions are sourced from the Port of Oakland's inventory, with the exception that no emissions from moving ships are included. These emissions are also held constant in the BAU.
- Amtrak, Union Pacific Rail, San Francisco Bay Ferry, and BART emissions are sourced from their respective agencies, and held constant.

Transportation VMT and GHG Model Inputs

Car Type	Fuel	VMT			GHGs (tCO ₂ e)		
		2017	2030	2050	2017	2030	2050
Passenger Cars	Gasoline	3,432,387,542	3,498,446,449	3,582,510,378	1,253,896	859,244	772,966
	Diesel	28,838,285	41,693,334	44,771,309	10,382	10,814	10,464
	Electricity	0	801,841	1,074,672	0	0	0
Buses	Gasoline	5,993,535	8,287,224	9,303,891	8,896	10,609	11,787
	Diesel	15,629,286	10,583,025	10,645,338	32,876	18,018	16,227
Light/Medium-Duty Trucks	Gasoline	59,276,183	35,513,894	31,328,295	54,974	32,966	28,704
	Diesel	118,120,386	152,379,956	177,988,993	116,658	146,695	174,086
Heavy Duty Trucks	Gasoline	919,833	1,090,404	1,140,328	1,681	1,784	1,829
	Diesel	150,567,732	216,310,937	275,789,999	250,227	318,232	406,921

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GHG Modeling Methodology

Buildings:

Buildings were split into four categories: single family residential, multifamily residential, commercial, and local government. While the commercial category encompasses many building types, varying commercial energy use profiles relate more to electricity consumption and less to thermal energy demand. Because Oakland's electricity will

be 100% carbon-free by 2030 through East Bay Community Energy, detailed modeling of various electricity use profiles was not necessary. Building Energy Use Intensity (EUI) assumptions were developed from Oakland's most recent GHG inventory.

Building GHG Emissions Model Inputs

	2017 Gross Floor Area (ft ²)	Baseline EUI (kBtu/ft ²)	Electricity EUI (kBtu/ft ²)	Natural Gas EUI (kBtu/ft ²)	Total Energy Use (kBtu)	Total Electricity Use (kBtu)	Total Natural Gas Use (kBtu)
Single Family Residential	234,854,312	20.3	5.9	14.4	4,774,800	1,381,440	3,393,360
Multifamily Residential	158,293,759	20.1	5.8	14.3	3,183,200	920,960	2,262,240
Commercial	167,819,507	46.8	26.1	20.7	7,851,500	4,374,600	3,476,900
Local Gov't Facilities	2,607,400	151.1	89.0	62.1	393,872	232,029	161,843
Total	563,574,978				16,203,372	6,909,029	9,294,343

The BAU scenario starts with population growth projections and building floor area growth projects that are consistent with the City's best estimates and prior modeling done for CURB. This plan does not aim to achieve any change in city population, but simply recognizes that ongoing population growth is forecast to occur and must be addressed in the City's plans to cut citywide GHG emissions. ECAP modeling assumes a 1.09% annual population growth rate per year, with total city population rising from 425,204 in 2017 to 608,090 in 2050. Assumptions of floor area are

consistent with the assumptions in CURB (see Table 2). Average Annual Growth Rate (AAGR) is the growth rate of total citywide floor area based on new buildings being built; assumptions for this differ by building type and time period. A 1% annual replacement rate is assumed, representing old buildings that are replaced by new buildings or subject to a gut-rehab; these new buildings still trigger code requirements even though they don't increase city floor area.

Building Growth Projection Model Inputs

	2020-2030		2031-2050		2017	2050
	AAGR of building stock	Replacement Rate of building stock	AAGR of building stock	Replacement Rate of building stock	Baseline Floor Area	2050 Floor Area
Single Family	0.4%	1.0%	1.4%	1.0%	234,854,312	315,782,345
Multifamily	0.4%	1.0%	1.4%	1.0%	158,293,759	212,839,926
Commercial	0.6%	1.0%	2.0%	1.0%	167,819,507	247,780,566
Local Gov't	0.6%	1.0%	2.0%	1.0%	2,607,400	3,849,750
Total					563,574,978	780,252,587

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GHG Modeling Methodology

Material Consumption + Waste:

Overall waste output of Oakland residents is assumed to increase in proportion to population. The current waste split is 73% landfill (including Alternative Daily Cover [ADC]), 13% recycling, and 14% compost. As the City's GHG inventory only includes landfilled waste, those percentages were used to estimate the total waste tonnage inclusive of recycling and composting.

Per State rules, ADC—the waste cover that is laid atop a landfill each day—is not counted in the formula for waste diversion, though starting in 2020 organic ADC waste will need to be included as landfilled (non-diverted) waste. As no numbers existed for the percentage of ADC that was organic, 0% was assumed, to keep future projections consistent with historical data. ADC tonnage was kept proportional to all other landfilled waste based on the 2017 ratio of 81%. Given these facts, the official current diversion rate for waste diverted from landfills is 39.6%.

Waste emissions include emissions from collection trucks, and trucks taking waste to the landfill; these are also increased proportional to population. They don't change with waste diversion because the waste must be transported from collection points to transfer, disposal, or processing points, regardless of whether the waste is headed to a landfill, a recycling plant, or a composting site.

CURRENT POLICIES FOR THE BAU SCENARIO

To get an accurate picture of where emissions will be in 2030 and 2050 without additional City action, we then factor in a series of policies currently in effect and anticipated at the local, state, and federal level. This forms the true BAU scenario against which all savings from the ECAP are measured.

Carbon-Free Electricity:

In 2018, Oakland joined East Bay Community Energy (EBCE), which supplies electricity by default to all Oakland customers, unless they opt out, with a higher percentage of clean and renewable electricity than PG&E's default mix. It is assumed that by 2030, 98% of all Oakland customer load that was historically supplied by PG&E will use EBCE. EBCE is currently at least 82% renewable; by 2030 100%

of EBCE supply will come from renewable sources of electricity. The model linearly increases uptake in EBCE to 98% by 2030, and linearly decreases the GHG intensity of this portion of supplied electricity to zero by 2030.

Fifteen percent of commercial customers, however, do not use either PG&E or EBCE, and instead have direct access contracts with third parties for electricity. The City has little visibility at present into these contracts of the GHG emissions resulting from this electricity use. Historically, the City has simply assumed those customers had the same electric GHG intensity as the PG&E mix. However, with EBCE going to 100% carbon-free power within a decade, the GHG intensity of direct access customers will differ dramatically. In the longer term, those third-party suppliers will still need to provide carbon-free energy by 2045 under state legislation. The model applies current and projected PG&E emissions intensity to 15% of the electricity; this decreases to zero by 2045.

By 2030, carbon-free electricity will reduce annual CO₂e emissions by 176,858 tons of CO₂e per year, and by 2050, it will have reduced annual emissions from Oakland by 250,799 tons of CO₂e per year, relative to current grid intensity.

This leaves natural gas use in buildings, and gasoline and diesel transportation, as the main sources of local emissions in Oakland that this plan must address. The model holds natural gas emissions intensity constant due to both a shortage of cost-effective biogas (sometimes called "renewable natural gas") options, and the absence of programs to infuse biogas, if it were available, into the gas distribution network.

Transportation:

Several policies will reduce transportation emissions in the BAU scenario. Oakland requires all new development projects under the Small Area Plans to reduce the VMT that would be generated by their construction by 15%. As shown in Table 5, by 2030 this will have reduced citywide VMT by 3% relative to what would happen otherwise, and by 2050 it will have reduced VMT by 8%.

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Oakland Land Use Policy VMT Reduction Assumptions

Year	Total New Building Area	Total Building Area	% of Total Area	VMT Reduction by 15% equals an overall reduction by..
2025	66,796,891	585,285,871	11%	2%
2030	108,544,949	598,855,179	18%	3%
2040	255,601,150	689,553,883	37%	6%
2050	402,657,351	780,252,587	52%	8%

The second factor altering VMT projections and the resulting GHG emissions is the rapid uptake of electric vehicles (EVs). California has a target of 1.5 million EVs by 2025, and 5 million EVs by 2030 (Executive Order B-48-18). This equates to 3.85% of all passenger cars being electric by 2025, and 12.16% of all passenger cars by 2030. This will require rapid uptake of EVs by new customers. Already, Oakland outpaces the nation in EV adoption, with EVs making up 10% of all new car sales in 2017. As the state has not set EV adoption targets past 2030, we assume that the rate of EV sales continues at the same pace after 2030, which is projected to result in 34% of all VMT being by EVs by 2050. This is a conservative assumption, because the adoption curves of new technologies are not linear.

New Construction:

California’s Title 24 has long set the gold standard as the most efficient energy code in the nation, and, along with appliance standards and other efficiency programs, has helped keep California’s building energy use flat for decades despite massive growth in economic activity, building stock, and population.

By 2020, under Title 24, all new single-family construction will need to be Zero Net Energy (ZNE). Title 24 for commercial and multifamily buildings will continue to get more stringent at a rate of 5% per 3-year cycle; the 2030 Title 24 will also require new commercial and multifamily buildings to be ZNE. The model assumes that implementation of a new code lags by 2 years for single-family homes and 3 years for all other buildings, as codes take time to be effective and buildings already permitted remain subject to the old code.

Market forecasts call for many more new cars to be electric by 2040. Nonetheless, this conservative assumption is appropriate for the BAU, and EV adoption is thus a key focus of plan actions.

Overall, these changes in VMT and EV adoption will reduce passenger car GHG emissions by 44% and reduce overall on-road emissions by 29% in the BAU scenario.

In addition, CARB has mandated that all buses in the state become zero-emission by 2040. Oakland area buses are assumed to transition to run on either battery power or with fuel cells that use hydrogen, in both cases using carbon-free electricity. The transition period is 2023 to 2040, with a 5.88% turnover per year.

By 2030, these combined transportation policies will reduce annual CO2e emissions by 152,223 tons of CO2e per year, and by 2050, they will have reduced annual emissions from Oakland by 391,037 tons of CO2e per year. Transitioning buses to fuel cells avoids an additional 11,467 tons of CO2e per year by 2030, and 25,845 tons of CO2e per year by 2050.

ZNE typically means a building that is so efficient that it can and does generate all the energy it needs onsite from renewable sources, over the course of a year. As most tall buildings in urban contexts like Oakland cannot achieve ZNE with just onsite renewables, going offsite is allowed in order to meet the remainder of the demand, so long as all onsite efficiency and renewable opportunities have been maximized. Critically, ZNE standards from entities like the International Living Future Institute (ILFI) do not allow on-site combustion of natural gas. While the full Title 24 definition of ZNE is not set, at present the CEC does not actually prohibit the use of gas in ZNE buildings—the building owner simply must offset all the energy consumed onsite, on a source energy-basis, with offsite renewable energy. Furthermore, community choice aggregation (CCA) programs like EBCE that achieve 100% carbon-free energy can also be used to meet the renewable electricity needs of ZNE buildings served by that CCA. Because this plan is focused on GHG reductions, and the BAU includes

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100% clean electricity by 2030, there is no net difference to modeling the renewable electricity as coming from EBCE or generated on the building; nor is there any true difference from an emissions standpoint from assuming ZNE buildings to be all-electric or assuming that they use gas but over-procure renewable electricity to compensate. For these reasons, the model does treat ZNE buildings as all-electric buildings.

To calculate what EUI should be assumed for each building type in each year, we referenced a recent study from the New Buildings Institute that estimated model ZNE EUIs by climate zone for various building types. For climate zone 3C, which includes all of Oakland, this study pegs a ZNE

multifamily residential building at an EUI of 16 kBtu/ft², and a ZNE office at 20 kBtu/ft², with most other commercial building types having similar EUIs.

The model reduces existing EUIs by building type by a percentage representing estimated code savings for each code cycle, applied to both fuels (electricity and gas). For the ZNE code, however, gas use is reduced by 100% and electric use is increased to make up the difference, up to the reference ZNE EUIs. Because of the very high baseline EUIs for local government buildings, the model assumes much greater energy savings from those buildings, to bring them down to appropriate ZNE efficiency levels by 2030.

Building Energy Code Model Input Assumptions

Building Type	Code Model	Effective Year	EUI Reduction	Electricity Change	Gas Change	ZNE EUI Target
Single Family Residential	Title 24-2016-Res	2018	20%	20%	20%	N/A
Single Family Residential	Title 24-ZNE-Res	2022	60%	-38%	100%	9
Multifamily Residential, Local Government, & Commercial	Title 24-2016-Com	2019	20%	20%	20%	N/A
Multifamily Residential, Local Government, & Commercial	Title 24-2019-Com	2022	30%	30%	30%	N/A
Multifamily Residential, Local Government, & Commercial	Title 24-2022-Com	2025	35%	35%	35%	N/A
Multifamily Residential, Local Government, & Commercial	Title 2025-Com	2028	40%	40%	40%	N/A
Multifamily Residential	Title 24-ZNE-Com	2033	30%	-142%	100%	17
Local Government Facilities	Title 24-ZNE-Com	2033	85%	74.5%	100%	22
Commercial	Title 24-ZNE-Com	2033	60%	28%	100%	20

By 2030, these codes will reduce annual CO₂e emissions by 52,033 tons of CO₂e per year, and by 2050, they will have reduced annual emissions from Oakland by 308,705 tons of CO₂e per year.

Existing Buildings:

California AB 802 mandates benchmarking and disclosure of energy use of all buildings over 50,000 gross square feet. While the act of benchmarking does not itself save energy, buildings that benchmark their energy usage tend to notice opportunities to reduce energy use. On average, buildings that consistently benchmark their energy use see reductions of 10% over a period of 3 to 6 years. While some of these buildings may already have been benchmarking,

and thus already achieved some savings, most have not. Only 31 buildings over 50,000 ft² have achieved ENERGY STAR certification in Oakland in the last decade with scores of 85 or higher and thus are likely to have addressed many of the low-hanging fruit of energy savings opportunities. The floor area of these buildings totals 11 million ft², which is less than 10% of the total 115 million ft² of buildings covered by the legislation in Oakland. The model assumes that over the next decade, 85% of covered buildings will

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comply, and these buildings will see energy savings of 2% per year for five years. By 2026, this measure is projected to avoid 8,367 tons of CO₂e per year.

The California PUC Zero Net Energy Strategic Plan calls for 50% of commercial buildings to be retrofit to ZNE by 2030. In order to achieve this, 6% of commercial buildings in Oakland would need to be retrofitted annually for a 60% energy use reduction between 2020 and 2030. This is well in excess of current best-in-class retrofit rates, and current incentives and regulations in place in California and Oakland are unlikely to achieve this goal. Therefore, for the BAU scenario, only 1.67% of the commercial floor area is assumed to be retrofitted each year from 2020 to 2030, achieving a 60% energy use reduction. No multifamily or single-family buildings are assumed to be retrofit in the BAU scenario. By 2030 and thereafter, this measure will avoid 52,250 tons of CO₂e per year.

Material Consumption + Waste:

Oakland is not currently on track to meet its 2020 or 2025 waste diversion goals, nor are policies in place to achieve this. Therefore, no GHG emission reductions for solid waste were included in the BAU.

ECAP ACTIONS SCENARIO

The ECAP has aggressive actions that will achieve major savings in GHGs, reducing GHGs by over 60% by 2030 and over 84% by 2050. Not every action in the plan could be modeled. Rather, the modeling assumptions discussed below capture the expected effect of the combined plan actions per sector.

Port of Oakland

No GHG emissions reductions were modeled for the two Actions related to the Port of Oakland.

Transportation - Vehicle Electrification:

Based on national data, we assume that 6.67% of vehicles turn over each year.

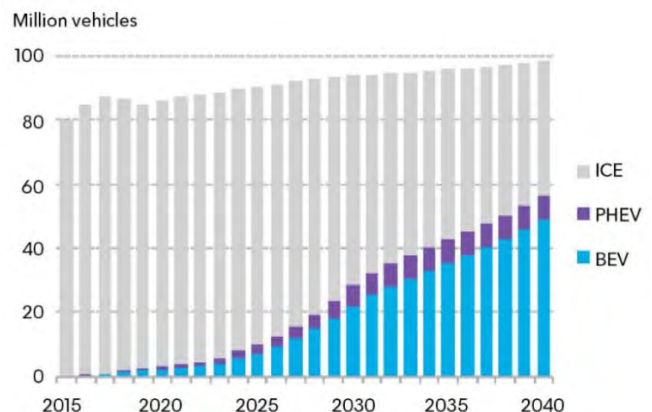
In Oakland, 10% of new passenger cars were EVs in 2017. This is substantially ahead of the national average, and ahead of global projections for EV adoption. However, technology innovation and adoption curves have standard

shapes, as shown below. Therefore, we can reason that the entire EV adoption curve is shifted ahead in time for Oakland by 10 years, and market forces, technological innovation, and state incentives will continue to accelerate EV adoption well beyond the BAU projections.

To forecast EV adoption, we used projections from Bloomberg New Energy Finance for global vehicle adoption. We then shifted the adoption curve forward by 10 years, and extended it forward in time by 20 years, to create new estimates for passenger car EV uptake in Oakland out to 2050.

Using a vehicle stock turnover model, we then calculated how the total VMT would be divided between EVs and conventional fuel vehicles over time.

Global Long-Term Passenger Vehicle Sales by Drivetrain



Source: BloombergNEF

EVs are now spreading into the SUV market as well. As EMFAC does not separate out SUVs and pickup trucks from other light/medium duty vehicles, we assumed that all gasoline-fueled, light-duty vehicles in the EMFAC projections were subject to the same electrification trend as passenger cars. Light/medium-duty trucks running on diesel, and heavy-duty trucks, continue to use the VMT and emission projections from EMFAC 2014, with no shift towards electric or other carbon-free fuel source.

EV Adoption Rate Assumptions

EV%	2020	2025	2030	2040	2050
Percent of new sales	10%	20%	40%	75%	95%
Percent of total VMT of passenger vehicle stock	2%	7%	18%	51%	85%

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These increased percentage of total VMT were then applied to the EMFAC 2014 projections in the model, to shift the distribution of passenger car and light-duty truck VMT between gasoline-powered vehicles and electric vehicles, with intermediate years interpolated on a linear basis. The new total GHGs for on-road transportation are subtracted from the BAU GHGs to calculate the savings from vehicle electrification.

In the ECAP model, increased vehicle electrification avoids 44,019 tons CO₂e by 2030, & 350,812 tons CO₂e by 2050.

Transportation - Mode Shift Assumptions:

Mode shift refers to actions that shift people from using cars to other transit modes for commuting to work and traveling around the city. To align with past analysis, the model uses the CURB “deep decarbonization” targets for mode shift.

ECAP Mode Shift Targets from CURB Analysis

Travel Modes	On Road	Today	2030 Deep Decarbonization	2050 Deep Decarbonization
Private Autos & Trucks	Yes	69.1%	40.0%	20.0%
Motor Cycle	Yes	1.6%	1.6%	1.6%
Taxi/TNC 1 or 2 pass.	Yes	1.6%	3.0%	3.0%
TNC Pooled Ride	Yes	Not avail.	5.0%	5.0%
Shared Minibus	Yes	Not avail.	9.0%	10.0%
Standard Bus/BRT	Yes	11.9%	15.0%	19.9%
BART	No	6.5%	8.0%	14.0%
Amtrak	No	1%	3.0%	3.0%
Ferryboat	No	0.1%	0.4%	1.0%
Biking	No	3.3%	7.5%	10.0%
Walking	No	4.9%	7.5%	12.5%

Since the categories in CURB are slightly different than EMFAC, “private autos and truck” mode share is divided between passenger, light/medium duty, and heavy duty based on the relative VMT for 2017 in EMFAC. Mode share

percentages are calculated for the on-road portion only, and intermediate years are interpolated on a linear basis.

Since EMFAC only contains on-road mode share, it is assumed that EMFAC VMT mode share in 2017 matches the on-road mode-share in 2017 from CURB and the American Community Survey for Alameda County. Further, it is assumed that changes in mode share apply equally to all fuel types for a given vehicle class in a given year.

GHGs emissions for each on-road vehicle and fuel type are multiplied by the ratio between the CURB target and the CURB baseline for that year, divided by the ratio between the EMFAC VMT mode share percentage for that year and the EMFAC 2017. This adjusts VMT by vehicle type to match the CURB projections, adjusting for the increases projected in EMFAC. Since this adjustment is applied to the road transportation GHG projections after the vehicle electrification actions, there is no double counting; the mode share savings are less than they otherwise would be because a decrease in EV VMT has no GHG impact in Oakland.

To fairly capture the impact of this shift, GHGs from buses, BART, and Amtrak are also increased based on the ratio between the CURB target mode share and 2017 baseline mode share. This ensures that GHG savings from mode share account for the projected increase in mass transit modes. The effect is marginal, since BART is zero carbon by 2030 and buses are zero-carbon by 2040.

While the ECAP also has actions related to ride-sharing and carpooling, it is not known if the mode share targets from the CURB analysis already assumed an increase in carpooling. To be conservative and avoid double-counting, no additional VMT reductions from carpooling are modeled, on top of the already aggressive mode shift goals. The mode shift is modeled at avoiding 272,482 tons CO₂e by 2030 353,756 tons CO₂e by 2050.

Transportation - City Fleet Electrification:

The model assumes that by 2030, 80% of the City of Oakland vehicle fleet is electrified. In lieu of detailed VMT by vehicle class for City fleet, GHGs from City fleet vehicles are simply decreased by 80% by 2030, avoiding 6,302 tons CO₂e.

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Buildings - New Construction:

The ECAP calls for a requirement that all new buildings and major renovations avoid connection to natural gas infrastructure by 2023. The BAU already assumes that single-family new construction is all-electric beginning in 2022 because of Title 24 ZNE requirements. As discussed above, Title 24 does not require ZNE to be all-electric, but rather requires that ZNE offset any gas use with additional renewable energy on a source energy basis; from a carbon perspective this is equivalent to assuming all-electric buildings with a 100% carbon-free grid. The additional savings come from all new multifamily, commercial, and local government buildings being all-electric beginning in 2023. This is modeled as an adjusted Title 24 to these sectors for Title 24-2019, 2022, and 2025, where the overall EUI savings are the same as modeled in the BAU, but the building is all-electric, so the actual electric EUI increases to replace the gas use. The BAU assumes the ZNE code for multifamily, commercial, and local government buildings will be effectively all-electric beginning in 2033. Thus, the total savings from this action come from the avoided natural gas use in any non-single-family buildings built between 2022 and 2033. This action avoids 14,306 tons of CO₂e by 2032.

Buildings - Existing Buildings:

The plan calls for development of a plan by 2022, to achieve decarbonization of the whole existing building stock by 2040. Since the plan would not be ready until 2022, and it will likely take more than a year to implement, we assume that decarbonization retrofits will begin in 2024 (though local government buildings could begin in 2022). It is assumed that 100% of local government buildings will in fact be retrofitted by 2040, but only 90% of all private buildings will be, to account for exemptions and non-compliance.

Further, the 15% of commercial buildings that were assumed to be retrofitted in the BAU are assumed to not be retrofitted a second time. During the period prior to 2030 when the BAU retrofits are occurring, the rate of decarbonization retrofits is slower, recognizing that both retrofit actions will draw from the same pool of workers and capacity.

- From 2024 to 2040, 90% of single-family homes and multifamily properties are retrofitted to eliminate all use of natural gas (6% annual uptake rate)

- From 2022 to 2040, 100% of all local government buildings are retrofitted to eliminate all use of natural gas (5.9% annual uptake rate)
- From 2020 to 2030, 15% of commercial buildings are retrofitted to ZNE levels (already in the BAU – 1.67% annual uptake rate)
- From 2024 to 2040, 75% of commercial buildings are retrofitted to eliminate all use of natural gas (4% annual uptake rate 2024-2030, 6.9% annual uptake rate 2031-2040)

The following assumptions inform the fuel switching:

- All buildings that are undergoing a fuel switching retrofit and are not already subject to state benchmarking requirements see a 10% energy savings due to realization of no-cost/low-cost energy efficiency opportunities (these savings are captured in BAU for buildings subject to benchmarking).
- Space Heating: 85% efficient gas-fired boiler is replaced with 200% efficient Air Source Heat Pump (ASHP)
- Domestic Hot Water (DHW): 63% efficient gas-fired boilers are replaced with mix of electric resistance boilers and heat pumps, averaging 94% efficiency
- Cooking & other equipment: 65% efficient gas equipment replaced by 75% efficient electric/induction equipment
- Based on these efficiencies, electricity use in retrofitted buildings increases by an amount equal to ~50% of the eliminated natural gas use (50% increase for single-family, 49% increase for multifamily, and 54% increase for commercial and government buildings). This increase is an average and will vary greatly on a building-by-building basis.

These annual retrofit rates of 6% are well in excess of best-in-class, community-wide retrofit programs anywhere in North America, and this action deserves notice as being particularly challenging to achieve.

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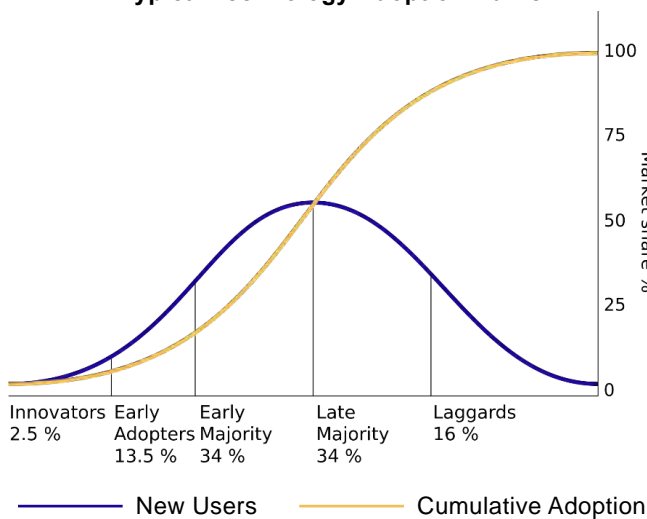
GHG Modeling Methodology

Energy Supply:

As in the BAU, EBCE is modeled as 82% renewable in 2019 and 100% renewable in 2030. Because decarbonization retrofits citywide can increase electricity use, only part of their savings is captured in the existing building wedge. However, since that electricity is renewable by 2030, there are additional savings in energy supply, which reflect this increased electricity use being carbon-free.

The combination of the decarbonization retrofits and the renewable electricity supply avoids 180,436 tons of CO₂e by 2030, and 326,580 tons of CO₂e by 2050, compared to the BAU scenario.

Typical Technology Adoption Curve



Material Consumption + Waste:

The City of Oakland is not on track to hit the 2020 state waste diversion target. However, with the actions in ECAP, the City could hit the 2025 state target. This increases overall waste diversion to 70% by 2025, with per capita waste dropping to 2.6 lbs./person/day (not including ADC, per state guidelines).

Total waste is reduced by an amount equal to 1% of plastic weight, to reflect the single-use plastics ban (these plastics tend to be very light).

Hard numbers on the exact percentage of citywide waste that is Construction & Demolition (C&D) waste were not available; as an approximation, we assume that the category known as “Other (includes C&D)” is all C&D, and that half of that is recovered (reused/recycled) by 2030. Since “other” is 28% of the waste stream, this reduces total waste sent to landfills by an additional 14%.

By 2035, to reflect a zero waste goal, diversion rate (not including ADC) is increased from 75% (where it is due to the above changes) to 80%.

The ratio of ADC cover to the tonnage of waste from franchise haulers and self-haul remains constant at 2017 levels, so ADC waste declines in proportion to all other landfilled waste.

Waste actions avoid 71,830 tons of CO₂e by 2030 and 108,127 tons CO₂e by 2050.

APPENDIX C

Equitable Implementation

The 2030 ECAP directs City staff to develop and implement specific policies, plans, programs, and projects over the next 10 years to achieve the City’s climate goals. Achieving climate equity will require careful design and execution to improve outcomes for frontline communities. This approach is not a mere declaration of values; it is grounded in science and data.

To ensure equity in outcomes, the City must:

- Gauge to whom and where the benefits of each Action are intended to happen, and whether those benefits are small or large, short-term or lasting.
- Ensure the ECAP is structured such that its overall benefits will be equitably distributed, responsive to the unique needs of each community.
- Structure implementation of each Action such that the benefits (direct or indirect) are targeted to increase frontline communities’ access to key determinants of physical, social, and economic well-being, thereby reducing disparities and increasing opportunity.

Each ECAP Action targets different aspects of the economy, the community, and the climate crisis. Design and implementation will vary widely, so a number of tools have been marshaled to help guide staff in maximizing equity. This Appendix provides a brief overview of four key tools:

1. CalEnviroScreen 3.0
2. Oakland Equity Indicators Report
3. Racial Equity Impact Assessment and Implementation Guide
4. Racial Equity Implementation Guide

Identifying Frontline Communities

Frontline communities experience high climate impacts and high social vulnerability – the cumulative impact of environmental harms and socio-economic disadvantages. This includes multiple threats that compound vulnerabilities to different climate impacts. Who the City defines as “frontline” will vary from one ECAP Action item to the next, depending on the threats associated with each item. Two important tools exist to help staff identify who and where

frontline communities are: **CalEnviroScreen 3.0 (CES)**, developed by the California Environmental Protection Administration (CalEPA); and the [Oakland Equity Indicators](#) report from the City’s Department of Race and Equity.

CES assesses and ranks cumulative impacts by combining 20 indicators of environmental, socioeconomic, and health vulnerabilities. Higher scores indicate more disadvantage and risk. In ranking all of California’s 8,000 census tracts, it [“provides a scientific assessment that corroborates the lived experience of many Californians,” and a clear map of the communities that have historically been “exposed to more environmental problems and are more vulnerable to the effects of pollution than others” – burdens that have generally been “unfairly distributed along race and class lines.”](#)

As a policy tool, CES can help identify where residents face disproportionate risks and which census tracts need additional resources. CES also illuminates areas of greatest geographic disparity among census tracts.

Instead of geographic regions, the 2018 Oakland Equity Indicators report assessed measures of wellbeing among Oakland’s various racial groups, finding that “almost every indicator of wellbeing showed troubling disparities by race.” The report demonstrated that racial equity could be measured rigorously, providing a baseline against which progress in reducing disparities can be tracked.

As ECAP Actions are implemented, staff will use CES and the Oakland Equity Indicators report – as well as other pertinent data sources describing geologic, climatic, & other risks – to identify specific frontline communities & outline where and among whom actions should be targeted to maximize benefits, reduce harms, and eliminate disparities.



Photo: Alonzo Young

APPENDIX C

Equitable Implementation

Designing Implementation

While numerous resources will be used to ensure equity in the design and execution of specific Actions, two deserve specific mention. The first is the **Racial Equity Impact Assessment and Implementation Guide** (REIA), developed by the City's ECAP Equity Facilitator specifically for this process. It builds from existing resources such as the California Office of Planning and Research's [Resiliency Guidebook Equity Checklist](#); the NAACP's [Our Communities, Our Power](#); the Movement Strategy Center's [Spectrum of Community Engagement to Ownership](#); and material from the City's own Department of Race and Equity. The REIA offers three important principles for Action implementation:

- 1. Equitable Governance (procedural and structural equity).** Wherever feasible and appropriate, frontline communities should directly shape the design and implementation of strategies through democratic and participatory processes. Deep engagement builds the civic capacity of community members and organizations, increases mutual accountability, and is expressly designed to reach traditionally marginalized groups. Several ECAP Actions exemplify this principle for specific topics, such as MCW-4 (Support the Reuse, Recovery, Repair, & Refurbishment Economy) and CR-2 (Expand and Protect Tree Canopy Coverage). Action CL-5 (Establish the Oakland Climate Action Network to Support Inclusive Community Engagement on ECAP Implementation) is intended to incorporate the principle of equitable governance throughout the City's climate and resilience policy and program development and implementation.
- 2. Equitable Investments (substantive and distributional equity).** A majority of the local benefits generated by the 2030 ECAP should be focused in frontline communities by meeting priority community needs, improving public health, building on community assets and values, and increasing community resilience, thereby improving outcomes for existing residents. Actions throughout this ECAP demonstrate this principle explicitly, from ensuring that public transit improvements benefit frontline communities first and foremost (TLU-4: Abundant, Affordable, and Accessible Public Transportation), to actively preventing displacement (TLU-3: Take Action

to Reduce and Prevent Displacement of Residents and Businesses), to redistributing edible food to those who need it the most (MCW-2: Strengthen Infrastructure and Partnerships for Edible Food Recovery). For all Actions, staff will need to assess where and to whom benefits can occur. Programs should be designed such that, wherever possible, frontline communities will experience benefits first, and multiple community needs will be addressed. For example, youth leadership and local design competitions could be paired with riparian rehabilitation projects (CR-3); or job training and local hiring could be integrated into a pilot carbon sequestration incubator (CR-5).

- 3. Community Resilience.** Wherever feasible, ECAP implementation should foster collaboration within and across Oakland's communities, neighborhoods, and sectors, to decrease community isolation or neglect and increase access to public and shared resources. Actions such as MCW-5 (Expand Community Repair Resources), A-1 (Fund Creation and Operation of Resilience Hubs), and A-2 (Enhance Community Energy Resilience) specifically target resilience building in frontline communities and among Oakland's most sensitive populations. There are opportunities to build community resilience in many ECAP Actions; staff and partners must identify and leverage these opportunities in collaboration with impacted communities to ensure that all climate action activities – even those not specifically addressing resilience – build the capacity of frontline communities to withstand adversity, recover from disasters, and thrive in everyday conditions.

The second tool is the **Racial Equity Implementation Guide** (Guide), created by the City's Department of Race and Equity in 2018. The Guide assists City staff and Departments in ensuring that the policies and programs they develop and implement will lead to more equitable outcomes, by centering the needs of historically underserved or disproportionately burdened communities. In following this guide, it is up to each Department or work group to identify the relevant indicators that should be tracked and measured. Departments are particularly encouraged to use data from the Oakland Equity Indicators report to inform this work. As applicable, projects may also refer to CES, the Metropolitan Transit Commission's Communities of Concern guidelines, or other pertinent datasets and sources. This Guide, along with the REIA, will be employed

APPENDIX C

Equitable Implementation

early in the development of any policy or program resulting from this ECAP, and consulted throughout implementation – from design to evaluation – to ensure that approaches not only achieve the desired climate impact, but also reduce disparities.

In addition to benefits, possible negative impacts must be considered. In an era of acute housing affordability concerns, with a major homelessness crisis plaguing the region and a global health pandemic, there is more need than ever to assess potential impacts on housing and business affordability and public health. This need is emphasized throughout the ECAP, and must be a specific point of analysis when assessing proposed approaches. For example, ECAP Action B-2 (Plan for All Existing Buildings to be Efficient and All-Electric by 2040) specifies

a long-term, methodical approach, leveraging available energy efficiency resources, to ensure that renters and other vulnerable populations can enjoy improved indoor environmental health and safety while being protected from housing dislocations that might otherwise arise from the transition.

In Action planning and design, staff must consult available data sources to minimize the risk that implementation would negatively impact communities. The data sources and guides described herein will be helpful in this process. Building on the success of the community engagement process used for this ECAP, as well as other community engagement efforts mentioned in Appendix A, staff will need to consult affected communities wherever possible to ensure that potential impacts are identified.

RACIAL EQUITY IMPLEMENTATION GUIDE

City of Oakland Municipal code 2.29.170.1 specifies that “the City of Oakland will intentionally integrate, on a Citywide basis, the principle of “fair and just” in all the City does in order to achieve equitable opportunities for all people and communities.



CITY OF OAKLAND
Department of Race and Equity

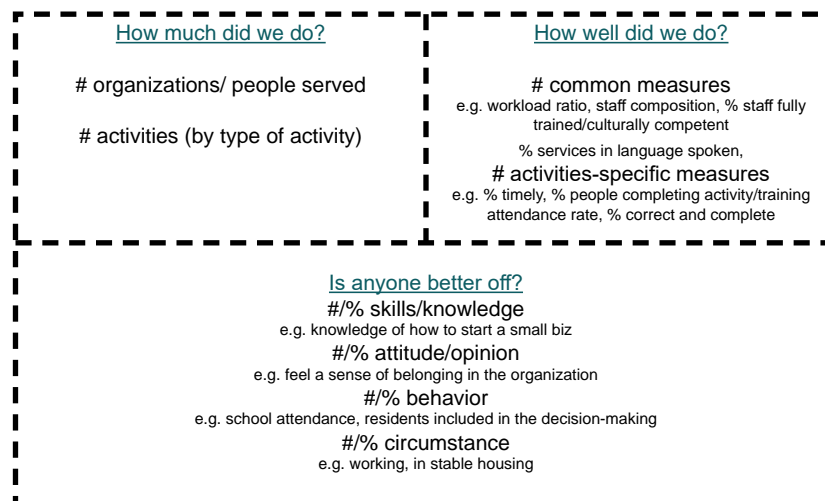
Equity practice focuses on developing systemic approaches to addressing racial disparities in life outcomes for residents of Oakland. The 2018 Oakland Equity Indicators Report showed Black residents to be the most extremely impacted by racial disparities in most indicators of well-being, with significant degrees of impact for other communities of color as well. To implement change that will improve these outcomes in our communities of color, your department will need to analyze policies, procedures, and practices to identify elements that have, or could contribute to, or improve these conditions. This worksheet will help guide your project or program planning and implementation process by explicitly naming equity outcomes, identifying and engaging those most impacted by disparities and taking a structured, analytical approach to designing and implementing community informed equity solutions.

1. Racial Equity Outcome(s)- What is the racial equity outcome for this effort? Your stated goal, or description of improved future conditions for residents should include addressing the needs of those most impacted by racial disparities. Use relevant disparity data to start to define specific focus for outcomes. (Example of data to guide equitable housing policy development – housing cost burden, average median income, eviction rates, and homelessness data, disaggregated by race.)
2. Identify and plan to engage stake holders - What is the best way to inform, outreach and engage community members most impacted by racial disparities? Strategize to remove barriers to community engagement in your equity process. (Use Inclusive Outreach and Engagement Guide for planning outreach that will engage those most impacted by disparities as well as other key stakeholders needed for development and implementation of policy and program recommendations.)

APPENDIX C

Equitable Implementation

3. Gather supplemental information/qualitative data – What are the systemic issues driving disparities? Identify root causes that drive related disparities and possible solutions, centering the observations of communities most impacted by racial disparities, to deepen City awareness and understanding of current conditions and needed action.
4. Identify Equity Gaps (burdens and barriers)- Using data and information gathered from community, identify any current or anticipated barriers and burdens impacting access for those most impacted by racial inequity. (Housing barrier example – affordable housing serving those with income above 30% of AMI excludes most Black residents from accessing that housing based on low median household income data for that group.)
5. Address Equity Gaps- Based on information gathered, what action could be taken to advance equity? Design strategies that will address root causes of disparities, remove system barriers to equity, and/or create new equity approaches. Connect back to specific disparity indicators used to set equity outcome, root causes of disparities, and ground truth proposed strategies with community.
6. Implementation – What steps are needed to implement action(s) identified? Based on the findings of the analysis, identify implementation steps to write or rewrite policy/program documents, address budget needs, create necessary partnerships, get approvals needed to implement equity strategies. As needed, propose plans to address gaps in resources or other barriers to implementation.
7. Evaluation and accountability- How will success/equity be measured? Who will be better off and how will we know? Establish meaningful performance measures as guided by Result Based Accountability (RBA) model, see below; plan to track outcomes and make course correction as needed. Plan for collecting data disaggregated by race and feedback from communities most impacted by disparities for each performance measure. Design reporting mechanism that will keep internal and external stakeholders informed of progress, lessons learned, and emerging best practices.



APPENDIX D

Related City Plans

As described in the ECAP's Introduction (History of Climate Leadership, page 3), the 2030 Equitable Climate Action Plan builds on nearly three decades of progressive, science-based policies and programs that the City of Oakland has pursued to reduce climate impacts and reverse environmental harms. The ECAP also references and incorporates a number of current plans, including the recently-adopted plans and studies linked below, as well as the forthcoming Zero Emission Vehicle Action Plan (specified in TLU-5) and the 50-year Urban Forest Master Plan (specified in CR-2).

The 2020 Energy and Climate Action Plan, adopted by Oakland City Council in 2012, set forth 175 Actions that were advanced by City staff, community groups, and others as important to climate action. In the eight years since that Plan was adopted, 57 of those Actions were fully implemented, and another 95 have been initiated.

A total of 107 Actions from the 2020 Energy and Climate Action Plan are reflected in the 2030 ECAP. Of the 68 Actions from the 2020 Energy and Climate Action Plan that are not reflected in the 2030 ECAP, 30 have been fully implemented as of early 2020. Some Actions that are not incorporated in the 2030 ECAP – such as BE-16 (Adopt an ordinance requiring cost-effective commercial energy-related improvements at lease or sale) and TLU-42 (Study options to implement truck re-routing away from residential neighborhoods; increase enforcement of anti-idling restrictions) – were deemed to have low GHG reduction potential, low-to-medium equity benefits, and extremely low feasibility due to their cost and complexity, and the fact that the availability of new technologies and policy mechanisms (such as building and truck electrification) reduce their relevance. The City Council may choose to explore these and other items from the 2020 Plan in the future as beneficial actions if desired.

[2019 Downtown Oakland Specific Plan](#)



[2016 Local Hazards Mitigation Plan](#)



[2019 Let's Bike Oakland Oakland Bike Plan](#)



[2016 Resilient Oakland Playbook](#)



[2017 Oakland Walks! Pedestrian Plan Update](#)



[2017 Preliminary Sea Level Rise Road Map](#)

