DRAFT SUPPLEMENTAL REPORT

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EQUITY 2

Advancing Equitable Climate Solutions 2
Equity TAC Process 5
Equity Recommendations 5
Equity TAC Roster 8

COMMUNITY AND STAKEHOLDER ENGAGEMENT 9

Summary of Community Input Received 10
City Outreach 12
Business Roundtables 13

STATE LEGISLATION THAT SUPPORTS LOCAL CLIMATE ACTION 16

BUILT ENVIRONMENT 20

Strategy Recommendation #1: Sustainable Land Use 21
Strategy Recommendation #2: Electrification of New Construction 27
Strategy Recommendation #3: Electrification of Existing Buildings 34
Built Environment TAC Roster 43

MOBILITY 44

Strategy Recommendation #1: Active Transportation 45
Strategy Recommendation #2: Transit and Shared Mobility 56
Strategy Recommendation #3: Zero-Emission Vehicles 67
Mobility TAC Roster 75

COMMUNITY HEALTH AND RESILIENCY 77

Strategy Recommendation #1: Urban Greening and Forestry 79
Strategy Recommendation #2: Sustainable Food Systems 90
Strategy Recommendation #3: Community Climate Resilience 98
Community Health and Resiliency TAC Roster 109

FINANCE AND FUNDING 111

Summary of Identified Finance and Funding Options 111
Matrix of Options 112
Finance and Funding TAC Roster 117

CONCLUSION 118

REFERENCES 119

APPENDICES

EQUITY

Advancing Equitable Climate Solutions

Studies have shown that marginalized communities disproportionately suffer from both the causes and consequences of climate change as a result of living in areas exposed to higher levels of GHG emissions and other environmental hazards. The subsequent adverse health outcomes are undeniable – from chronic respiratory illnesses caused by air pollution to injuries and fatalities from climate-induced natural disasters.

Existing high rates of poverty, unemployment, housing and food insecurity, and other health burdens further exacerbate climate impacts: increasing exposure of climate impacts (e.g. floods or extreme heat sensitivity to climate risks (e.g. extreme heat and air pollution) and reduce adaptive capacity to respond to such threats. The cumulative impacts of climate change and socio-economic factors create a feedback loop, perpetually exacerbating existing inequities and widening the inequality gap.

For example, low-income communities of color, who have a higher likelihood of living in close proximity to freeways, experience higher rates of asthma. Without the economic means to relocate, long-term exposure can lead to respiratory infections. As climate change accelerates, more frequent and severe heat waves will worsen air quality and further reduce lung function.

These communities also have lower levels of tree canopy, unreliable transportation that can impact the ability to get to cooling centers, and higher energy bills as a percentage of income that can result in hesitancy to turn on air conditioners to avoid higher electricity bills. Without the ability to seek relief from extreme heat, vulnerable residents may face life-threatening conditions. If medical attention is sought, medical bills and lost wages can increase the risk of being evicted from their homes, demonstrating how the cycle of poverty and health inequities can be exacerbated by climate change and span generations.

The underlining conditions in the places where people live, work, learn and play already affect a wide range of health risks and outcomes (known as the social determinants of health) and will significantly influence the ability to adapt to increasing climate risk. Social determinants of health include:

> The feedback loop of socio-economic and environmental factors being exacerbated in crisis has become clear in the disproportionate impact of the COVID-19 virus on African Americans. The early data suggest that the covid-19 pandemic is hitting black communities particularly hard. As of Monday, African Americans made up 27 percent of the population in Milwaukee County, Wis., but 70 percent of its covid-19 deaths. In Chicago: 30 percent of the population but 69 percent of deaths. And in Louisiana, the disparity is 32 percent and 70 percent. A similar divide can be seen in Michigan, where African Americans make up 14 percent of the population and, as of last Friday, accounted for 40 percent of covid-19 deaths.
>
> The disproportionate impact appears to be attributable to preexisting conditions — high blood pressure, heart disease, diabetes and inadequate access to health care — that make African Americans more vulnerable to the disease.

- Core demographics such as ability, age, ethnicity, gender, immigration status, race and sexual orientation.
- Economic status such as class, debt, employment, expenses, job opportunities, financial literacy and income.
- Education such as early childhood education, higher education, language, literacy and vocational training.
- Health care such as access to health services, healthcare coverage, health literacy, pre-existing health conditions, provider linguistic and cultural competency, and quality of care.
- Physical environment such as exposure to toxins and hazards, food access, housing quality and security, park access, physical accessibility, safety, transportation options, working conditions and ZIP code/geographic locations.
- Social context and other resources such as access to mass media and technologies, cultural norms and attitudes, energy access and affordability, social integration and support systems.

According to the World Health Organization, social determinants of health are shaped by the distribution of power and resources. The California Department of Public Health further recognizes that climate change and health inequities share similar root causes: the inequitable distribution of social, political and economic power, which result in systems and conditions that drive health inequities, GHG emissions and the exacerbation of existing vulnerabilities due to climate-change impacts.

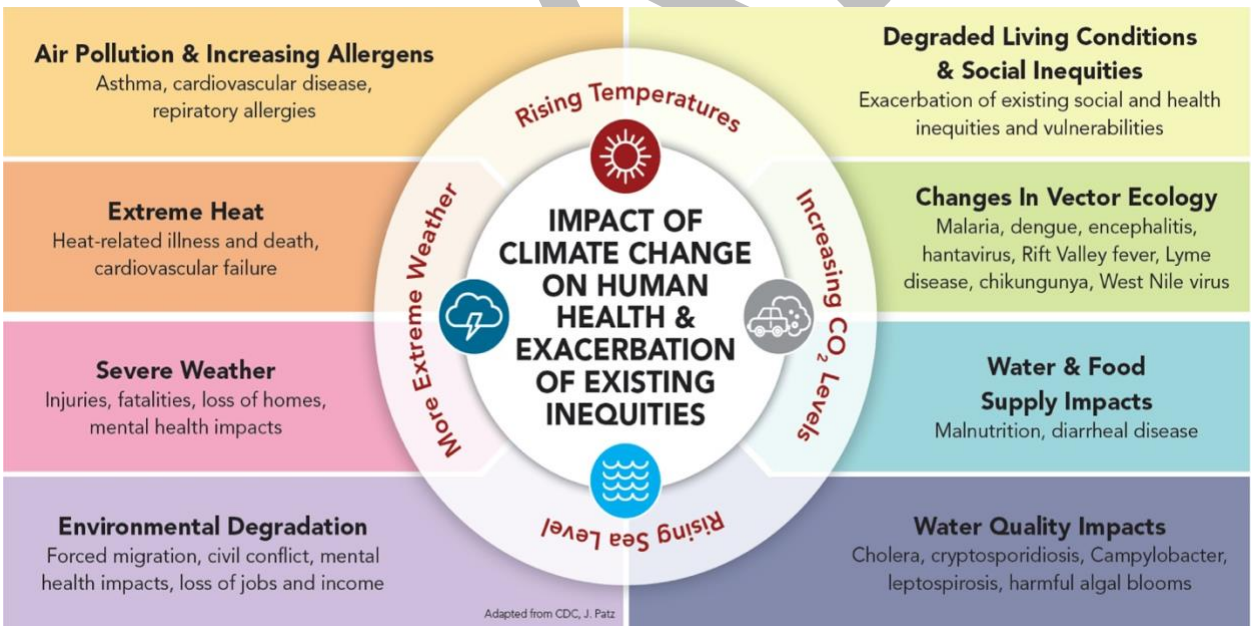


Figure X: Impact of Climate Change on Human Health and Exacerbation of Existing Inequities, CDPH

Given the intersectionality of social determinants of health, climate-change impacts will intensify existing disparities and disproportionately affect those who are most vulnerable and least equipped to adapt. This detrimental reality necessitates an unwavering commitment by policymakers and community stakeholders to advancing climate solutions in a way that addresses both existing disparities and future threats, responds to locally defined needs, and achieves equitable outcomes for all residents.

The inextricable links between climate change and equity can be harmful, but those connections can also provide opportunities for more equitable outcomes. Most climate-change solutions can, if designed and implemented appropriately, provide a wide range of benefits that support the achievement of social-equity objectives. Sacramento and West Sacramento have the opportunity to leverage climate change investments to directly benefit marginalized communities and set in motion a new cycle of community resilience, economic opportunity and prosperity.

For example, urban forestry is a common strategy for carbon sequestration and urban heat island mitigation. Strategic tree planting in low-income neighborhoods can improve air quality, promote physical activity and mental health, reduce energy demand and electricity bills, reduce crime and violence, and strengthen the local economy. This can, in turn, lead to more positive health outcomes, greater levels of social cohesion and cost savings for individual residents and the community as a whole. Layering on additional climate-action measures – such as improving sidewalks and transit connectivity – can further amplify benefits for residents.

Inclusive community engagement to collaboratively identify and implement strategies will be critical to achieving equitable outcomes and maximizing community benefits. First and foremost, the cities need to work with communities to identify and mitigate unintended consequences before they emerge.

Neighborhood improvements can lead to rapid gentrification, which heightens the risk of displacement for both low-income residents and small businesses. Appropriate and effective anti-displacement measures should be identified with the community and implemented in tandem with neighborhood improvements.

Obtaining buy-in and cultivating a sense of community ownership can also ensure municipal investments are welcomed and protected, and help to reverse the history of disinvestment in those neighborhoods.

The cities can leverage existing tools and resources to support their efforts, such as those developed by:

- Asian Pacific Environment Network
- California Department of Public Health
- California Environmental Justice Alliance
- ClimatePlan
- Government Alliance on Race and Equity
- Leadership Counsel for Justice and Accountability
- Movement Strategy Center
- PolicyLink
- Public Health Advocates
- Public Health Institute
- Resources for Independent Living
- The California Endowment
- The Greenlining Institute
- Urban Displacement Project
- United Way Capital Region

The UN Sustainable Development Goals can also serve as a guiding compass. The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future.

Equity TAC Process

Recognizing the disproportionate impacts of climate change on marginalized communities, an Equity Technical Advisory Committee (Equity TAC) was formed to ensure that equitable strategies were developed across all sectors. The Equity TAC brought together 20 community leaders, environmental justice experts and equity practitioners for seven meetings throughout the duration of the Commission's work. Equity TAC members developed a rigorous working definition of equity in the context of the Climate Commission's carbon-zero vision:

> **Equity** means making decisions and allocating resources in a manner that addresses historical and current disparities and holds the largest GHG emitters accountable. Equity also demands **inclusivity**, the practice of including relevant stakeholders and communities, particularly marginalized communities and groups that have been historically left out, in the policymaking and governance process, in order to ensure fair and equitable outcomes.

The Equity TAC reviewed each sector-based recommendation from the Built Environment, Mobility, and Community Health and Resiliency TACs to ensure all strategies and tactics addressed community needs, prioritized marginalized communities, and avoided unintended consequences.

The Equity TAC also developed a set of equity recommendations to guide the cities in putting in place principles and practices that incorporate equity in planning and decision-making processes, conducting inclusive community engagement, and building community capacity. These recommendations are intended to underpin and guide the implementation of all sector-based strategies.

Equity Recommendations

To guide climate action and resilience planning in Sacramento and West Sacramento, the Equity TAC and the Commission generally recommend (1) operationalizing equity throughout agency decision-making and investment processes, (2) authentically and inclusively involving marginalized communities, and (3) supporting cultural brokers and community-based organizations in building capacity.

These three core strategies are further supported by a set of concrete tactics:

Please note that the following strategies will be presented for discussion and action at the May 13th Commission Meeting. As such, the Equity Recommendations have not yet been adopted.

1. Operationalize equity by providing education, ensuring shared decision-making, and allocating resources that address historical and current disparities.
    a. **Define marginalized communities and populations** by the end of 2020 by using CalEnviroScreen, Healthy Places Index, CDPH's Climate Change and Health Vulnerability Indicators and SMUD's Sustainable Communities Risk Heat Map, as well as other data and tools available to establish a shared understanding of marginalized communities for all city departments. Engage with community leaders to ensure that these definitions are properly vetted prior to adoption.
    b. **Prioritize resource allocations** to the identified marginalized communities and populations through the city's annual budgeting process, starting in fall 2020 to begin identifying priority projects for FY 2021.
    c. **Invest in continuous equity education for city staff and elected officials** to increase their collective understanding of the root causes of systemic racial inequity and opportunities to address it, with an initial training taking place in 2020. Training should involve topics including internal processes such as hiring practices; the practical application and implementation of pro-equity tools and resources; model policies such as those developed in Seattle and the Government Alliance on Race and Equity; and ongoing tours to assess conditions in marginalized communities and populations.
    d. **Assess the racial and socioeconomic impact of climate action policies and investments** that may lead to unintended consequences by using tools such as Racial Impact Assessments. Based on assessment findings, update measures to create greater racial equity or minimize unintended consequences prior to implementation. Begin to pilot this assessment for at least one policy or measure by 2021. (Consider examples from City of Seattle, PolicyLink and Race Forward)
    e. **Establish a public dashboard** in 2021 to communicate current baseline disparity data, targets and benchmarks for racial and socio-economic equity, and metrics to track and report progress. Data should include the cities' Vulnerability Assessments as required by SB-379. The dashboard should be updated on a consistent basis.
2. Authentically and inclusively involve marginalized communities and populations that have been historically left out of the policymaking and governance process as co-creators in all phases of planning and implementation in order to ensure fair and equitable outcomes.

a. **Remove barriers that hinder residents from participating** in community engagement activities. Barriers include transportation, childcare, language access, adequate meeting notice, accessibility needs and other identified socio-economic challenges. Ensure community meetings and engagement activities are fully accessible by providing all necessary accommodations and assistive technologies to enable participation regardless of race, socio-economic status, age, size, ability or disability.

b. **Partner with and fund community-based organizations** to expand education for community members on city processes as well as opportunities to get involved in specific areas of interest. Build relationships to maintain an ongoing, informed population who can more consistently inform city processes.

c. **Coordinate across city departments and with regional partners**, including counties, air districts, the Sacramento Area Council of Governments and utilities to leverage resources and data for collaborative opportunities that fall into alignment and require community engagement activities that lead to concrete actions.

d. **Identify sustainable funding sources** to create and expand upon existing community-led engagement efforts, support ongoing community engagement, and build long-term capacity of residents to participate.

e. **Establish an Environmental Justice Collaborative Governance Committee** in partnership with the counties to support marginalized communities, particularly communities of color and youth, in owning and shaping environmental solutions. Community members with expertise in policy/program design would work with City/County staff to provide guidance to ensure that we create solutions with (not for) communities, such as on the development and implementation of climate action plans and SB-1000 goals.

3. **Build the capacities of cultural brokers and community-based organizations that have established relationships with marginalized communities, leveraging existing community engagement efforts when possible.**

a. **Identify existing cultural brokers** and community-based organizations that are already engaging with marginalized communities, such as neighborhood associations, schools, social service providers and nontraditional partners/community gathering places such as barber shops.

b. **Convene cultural brokers for a series of roundtables** to inform the Environmental Justice Collaborative Governance Committee by collaboratively developing long-term strategic plans and assessing resource needs to address the cumulative impacts of institutional and structural inequity. Incorporate strategies that increase institutional memory and coordination across city departments to address potential community-engagement fatigue.

c. **Cultivate advocates**, particularly youth advocates, and build their capacity to champion these systemic shifts in prioritizing equity. Partner with environmental-justice groups to provide advocates with the training, tools and funding required to organize the political and social will to support the required change, and track progress.

d. **Review existing models**, such as the Choice Neighborhoods Initiative, to provide residents with the necessary resources, templates, tools and support for creating and developing actionable plans for their own communities.

Equity TAC Roster

Equity TAC Co-leads: **Jackie Cole** | Veritable Good Consulting and **Russel Rawlings** | Resources for Independent Living

- **Chioko Grevious** | California Department of Public Health / Sacramento Black Women's Health and Wellness Conference
- **Moiz Mir** | City of Sacramento Mayor's Office / Sunrise Movement Sacramento
- **Nailah Pope-Harden** | ClimatePlan
- **Luis Sanchez** | Community Resource Project
- **Rubie Dianne Simonsen** | First Mother Farms
- **Rachel Rios** | La Familia Counseling Center, Inc.
- **Herman Barohona** | Latinos Unidos
- **Paris Dye** | Liberty Towers Church / Black Child Legacy Campaign
- **April Wick** | Resources for Independent Living
- **Dr. Olivia Kasirye** | Sacramento County Public Health / Black Child Legacy Campaign
- **Beth Smoker** | Sacramento Food Policy Council / California Food & Farming Network
- **Natalie McGee** | Sacramento Sister Circle
- **Chet Hewitt** | Sierra Health Foundation / Black Child Legacy Campaign
- **Kirin Kumar** | Strategic Growth Council
- **Christine Tien** | The California Endowment
- **Stephanie Bray** | United Way Capital Region
- **Elena Sanchez** | Western Services Workers Association
- **Nasama Wali-Ali** | *Youth Advocate*

COMMUNITY AND STAKEHOLDER ENGAGEMENT

Early and ongoing engagement to inform both climate action planning and implementation efforts will be critical for the cities to understand potential barriers, as well as to shape strategies in a way that responds to community needs and achieves multiple benefits. Throughout the duration of the Commission's efforts, input was gathered from public members and key stakeholders, work that will need to be continued by the cities.

With over 200 individual comments received at public meetings and through the Commission's online comment form, community members called for urgent action to address climate change, sharing their ideas for priority areas of action, such as:

- Increasing energy efficiency and solar power generation
- Providing diverse, affordable housing options near transit stations
- Prioritizing infill development to create compact, mixed-use communities
- Improving walkability and providing safe sidewalks in all neighborhoods
- Installing protected bike lanes
- Expanding public transit routes
- Installing electric vehicle charging stations
- Adopting pricing signals to motivate behavior change, such as gasoline taxes and additional parking fees
- Conserving green space and farmland
- Transforming vacant lots into mini-parks and community gardens
- Banning gas-powered leaf blowers
- Promoting plant-based diets
- Eliminating waste

Accessibility was a common theme for many of the comments received – both in terms of creating transportation systems and built environments that are accessible to people of all ages, size, and abilities, and to ensure marginalized communities can participate in and access the benefits of climate action strategies. For example, the importance of accessible and affordable options for affordable housing, clean mobility, healthy food, and parks and green space was called for by numerous community members. Equity specific strategies were developed by the Equity TAC and are outlined in the previous section of this report.

The importance of addressing climate change impacts that communities are already facing was another common thread. From extreme heat and wildfire smoke to flooding and the inland impacts of sea level rise – the public made it clear that climate action strategies need to mitigate *and* build resilience to climate change. Vulnerable populations, including people experiencing homelessness, low-income households, people with disabilities, and communities of color, were highlighted as frontline communities that need to be prioritized in the cities' adaptation efforts and need support in meeting their basic needs today.

Many public members also called for more urgent action to achieve carbon zero by 2030, asserting that 2045 would be too late. In response, the City of Sacramento adopted a Climate Emergency Declaration on December 10, 2019 to commit to taking significant action to sustain and accelerate municipal and community carbon elimination in the short term, with maximum feasible efforts to implement emergency-speed carbon reduction actions towards eliminating emissions by 2030 as much as possible.

The Commission also recognizes that youth have a particular stake in the climate crisis. As the defining issue of our time and for generations to come, young people will soon inherit this burden and will need to sustain, accelerate, and expand the cities' efforts while grappling with the worsening impacts of climate change. Youth Summits were organized at River City High School and Sacramento State to gather input from nearly 150 high school and college students who shared ideas ranging from promoting public transit and telecommuting to creative marketing strategies and incentives.

Summary of Community Input Received

Public Comments	Youth Input
Equity	
• Employ people experiencing homelessness to implement climate action strategies • Ensure equitable access for mobility options, healthy foods, civic engagement processes, and other key amenities and services • Increase transparency and opportunities for members of different backgrounds to inform decision-making • Review all strategies through the lens of low-income residents prior to implementation • Create a youth council to inform city plans, policies, decisions, and investments	• Prioritize affordability and accessibility • Hold companies accountable for their actions and avoid providing benefits to polluting companies • Provide communal housing and develop tiny houses for people experiencing homelessness • Involve people of color in decision-making • Provide discounts for farmer's markets to residents living in food deserts • Provide rebates and incentives for solar and EVs to low-income residents • Create renewable energy job opportunities for low-income communities
Built Environment	
• Encourage infill development to increase density, particularly near transit stops • Increase energy efficiency and expand rooftop solar on all buildings • Convert all City buildings to LEED Platinum status and require all new buildings to meet green building standards • Provide rebates for energy efficiency and to upgrade energy-intensive appliances • Adopt a reach code that makes gas use in buildings more stringent and to require all buildings to be all-electric ready • Address land use and zoning issues to encourage more walking, biking, and transit use • Support businesses in reducing emissions (e.g. electrification, cool/green roofs, tree planting, low-carbon procurement) • Implement urban growth boundaries to preserve green space and ag lands	• Standardize green practices in new developments • Promote rooftop solar • Pursue Living Building Challenge • Provide incentives for carbon sequestration on residential buildings (e.g. green roofs) • Repurpose old buildings • Convert empty lots and abandoned buildings to community centers • Make the cities the hub for advanced energy systems in California • Ensure all buildings are properly insulated • Incentivize eco-friendly architecture • Require green infrastructure in all new construction • Increase electricity capacity to make clean energy more abundant and lower cost • Work with students to get their families to reduce building emissions • Design buildings to use natural light

Public Comments	Youth Input
Mobility	
• Target investments in areas that lack access to sidewalks and public transportation • Increase price of gasoline to $15/gallon to account for externalized costs to health and environment • Fully fund Regional Transit to provide more frequent routes and increase safety/accessibility • Provide EV procurement incentives • Install free EV charging stations in all parking areas • Convert all City fleets to EVs • Add shelters to every bus stop • Expand microtransit programs to serve areas that are not within a half-mile of a transit stop • Enact a city-wide congestion charge • Prioritize destination-oriented protected bike lanes • Offer preferential parking for clean vehicles • Establish car-free districts • Establish dedicated bus lanes • Extend light rail to the airport • Pass a moratorium on new parking garages	• Invest in public transit and bikeshare programs • Provide amenities within walking distance • Create jobs closer to where people live • Provide Cal Fresh recipients with access to discounts for shared mobility programs • Provide incentives to transit users based on ridership (i.e. ride more, save more) • Incentivize rideshare companies to hire drivers with electric or fuel-efficient cars or pay EV drivers a higher rate • Implement smart controls for traffic lights to reduce idling emissions • Expand biking infrastructure • Tax commuters and encourage telecommuting • Destigmatize public transportation to attract new riders, particularly youth • Replace parking meters with EV chargers • Increase carpooling • Add bike stations at all transit stops
Community Health and Resiliency	
• Dedicate staff to engage with community groups that are already working to build resilience • Preserve existing green space and acquire land to create community parks • Implement citywide residential organic waste composting programs • Work with farmers and owners of vacant land to develop urban agriculture • Ban gas-powered leaf blowers • Partner with Sacramento Tree Foundation to ensure adequate shade trees for every home and expand tree canopy citywide • Transform empty lots and stranded assets into pocket parks and urban agricultural plots • Enact residential stormwater fees based on average surface area of impervious cover to fund green infrastructure projects • Promote plant-based diets • Convert all pavements to permeable pavements or green infrastructure	• Encourage home gardens in local communities • Address existing disparities to ensure all community members, regardless of income, can prepare for and adapt to climate change • Require cool pavements • Translate all climate change materials into languages spoken by residents to provide education on climate risks and adaptation • Promote plant-based diets • Host community health events • Provide grants to low-income community members to build resilience • Implement water recycling programs • Promote drought-tolerant plants • Provide cost post bins in all school cafeterias • Create reservoirs for floods • Adopt zero waste goal • Provide resources to low-income residents to update buildings (e.g. air conditioning) to adapt to climate change impacts

Public Comments	Youth Input
Other	
• Achieve carbon zero by 2030 • Align all strategies and recommendations to be consistent with IPCC reports that demand urgent action to reduce emissions and adapt • Look to other leading cities (in the U.S. and around the world) to continue taking bold action • Reduce permitting cost to increase compliance	• Implement carbon tax to fund climate action • Require all events held within city limits to be carbon neutral and zero waste • Require all students to take environmental units • Reduce single-use plastics • Organize competitions and challenges to promote eco-friendly lifestyles

City Outreach

As part of the City of Sacramento's General Plan Update and Climate Action Plan Update, a series of community engagement activities were conducted to help city staff understand existing conditions, issues, and opportunities throughout the city and to inform the plans' vision and guiding principles. The City launched the planning process by hosting three citywide workshops from April through May of 2019 where over 340 community members participated.

Across all workshops, major themes emerged from workshop participants' responses. Residents wanted to protect and enhance the things they love about Sacramento: the trees, the rivers, the diversity and friendliness, the fresh food, the arts and culture. Residents expressed concerns about climate change and disaster risk, about racial and geographic equity, about housing affordability and homelessness, about safety, and about shortcomings in transit, biking and walking systems.

The City also convened an Environmental Justice Working Group to better understand and address historic practices that have placed a disproportionate environmental burden on low-income and minority communities. The Environmental Justice Working Group and the Equity TAC facilitated by the Climate Commission both highlighted the need for the Cities to maintain and increase meaningful community engagement as an integral part of ongoing community initiatives and decision-making processes. Equity specific strategies were developed by the Equity TAC and are outlined in the previous section of this report.

As part of its Phase I community engagement efforts, a youth engagement program was launched and 10 Community Plan Area meetings were conducted from June through August of 2019. The City plans to continue engaging communities in Phase II to gather input on draft policies.

Community members discussing neighborhood assets with City of Staff at the North Sacramento Community Plan Area Meeting.

The City published a Summary of Phase 1 Outreach, which includes meeting presentations and summaries of input gathered at each citywide workshop and Community Plan Area meeting.

The City of West Sacramento will be conducting a series of community engagement activities as part of their Climate Action Plan update starting in the spring of 2020.

Business Roundtables

The City of Sacramento's Mayor's Office collaborated with Metro Chamber to host a series of roundtables and conversations with businesses in Sacramento and West Sacramento, including both small and large businesses, individuals, large employers, supply chains, and over 100 stakeholders tied to business. Priority industries and stakeholder groups included real estate and development, multifamily property owners and managers, building contractors, restaurants, manufacturing, major employers, green businesses, shared-mobility service providers, labor unions and workforce development organizations.

Industry-specific roundtables were convened to enable focused discussions on the specific challenges and opportunities facing each industry, as well as to share targeted resources for incentives, cost-effectiveness, and model projects and programs. Business representatives shared feedback on the Commission's recommendations for the Built Environment, Mobility, and Community Health and Resiliency sectors, which has been summarized below.

- Incentives are important to drive innovation and implementation. Most businesses engaged have expressed support for the intent of the Commission and many of its goals to create healthier and more vibrant communities. However, all industries expressed concern that mandates and policies, which may be well-intended, would be either cost prohibitive to implement and/or restrict their ability to conduct business.

- A strong business case is needed to convert equipment, infrastructure, and fleets. Many businesses in the region have been leading efforts to reduce their carbon footprint. However, in order to enable businesses to transition technology, infrastructure, and equipment, a clear business case must be created that includes cost savings, sustainable financing, and/or long-term incentives in order to ensure businesses remain viable and productive. Examples include the re-use or repurpose of food waste into clean energy, which not only reduces emissions but also the cost of food disposal at restaurants and farms.
- The cities need to lead by example. The cities should serve as testing grounds to demonstrate how they can lower their own carbon footprint, which is possible without ordinances and mandates. Following city leadership, businesses will be more motivated and encouraged to adopt similar strategies that have demonstrated success. An example includes the ability for city staff to work remotely to reduce the use of vehicles and commute times, as well as prioritizing city lots to expand green space and for infill development.
- Take a data-driven approach to identifying and implementing strategies. Tactics should be identified and prioritized based on emission reduction potential, greatest impact for community health, and lowest cost impact on business. Prior to creating any mandates, the cities should, at minimum, identify the ROI and inclusive economic impacts to neighborhoods.
- Technological advancements are needed to enable deep GHG emissions reductions. The cities should assess availability and cost of current technology and prioritize strategies and tactics that wouldn't negatively impact jobs and local businesses especially in light of the devastating economic impacts of COVID-19.
- The cities should consider energy diversification and reliability. Roundtable participants expressed concern about the potential risk of requiring buildings, transportation and infrastructure to be 100% electric. Specifically highlighting the utility power safety shut offs of electricity and concern of evacuating in electric vehicles if charging is unavailable.

Areas of opportunities highlighted by the business community include the following:

- Embrace Our Place as a City of Trees: Invest and increase the ratio of trees in lower-income neighborhoods. Conduct a review of barriers in city ordinances and assess how to elevate green spaces to drive economic development.
- Smart Design: Identify design best practices to reduce carbon emissions and work with architects and developers to incorporate design elements to maximize resource efficiency and green space, such as urban gardens and green rooftops.
- Food Waste: With nearly a third of our food going to waste and 11% of emissions from food waste, the cities can lead in the "Farm-to-Fork Capital" by aligning policy with industry and technology to drive efficiency and productivity, but also address future concerns for food shortages and scarcity.
- Phasing and Coordination: Taking a strategic approach, the cities can coordinate efforts when upgrading, repairing or building infrastructure to reduce the impact on businesses as well as the emissions of construction vehicles. For example— fast tracking transportation projects with the

reduction in traffic due to stay-at-home orders or following "dig-once" policies to ensure that when we are digging up our roads to install or repair infrastructure, that we also fix our sewers, broadband or similar at the same time.

- Invest in Innovation: Many of the Commission's goals are reliant on technology advancements. The cities should invest in local innovation including the Clean Mobility Center and new forms of renewable energy while focusing workforce education, entrepreneurship, and training opportunities in marginalized neighborhoods.
- Regional Approach: The cities should embrace pilot programs, support innovation, and develop case studies that can serve as a model for regional municipalities to follow to ensure that the policies adopted and strategies implemented become part of a larger regional effort.

Additional feedback from business representatives will be included as an Appendix in the final report.

Business engagement and feedback will continue to be critical to successful implementation of the recommended strategies to ensure an appropriate balance of environmental leadership, social equity and economic prosperity. With the many pressing challenges facing businesses— particularly now with the health, social and economic crises resulting from the COVID-19 outbreak – it was difficult to get broad and meaningful engagement. The cities are encouraged to identify creative ways and a variety of formats (such as through interviews at business locations and online surveys) to engage additional businesses as part of their CAP update processes.

In the aftermath of the COVID-19, emergency strategies that can support economic recovery, cost savings and climate resilience will be particularly important. Resources such as the region's Comprehensive Economic Development Strategy and the recommendations above can inform green economic development priorities.

STATE LEGISLATION THAT SUPPORTS LOCAL CLIMATE ACTION

Subnational leadership has always been critical to driving innovation. More than 50% of the world's population lives in cities today, and it is projected that two-thirds of the global population will live in urban areas by 2050. As such, local leaders are closest to the problems and potential solutions— they can move more quickly to develop pilot programs, implement innovative approaches, and make targeted use of technological advances that can provide proof of concept for initiatives that can be expanded with state (and eventually federal) programs and regulations.

That said the ability to act at the pace and scale needed to make a significant impact on climate change will require significant leadership from the state and federal government as well.

Fortunately, in California, our communities have a wide spectrum of state climate-related legislation that helps guide and encourage local efforts.

Envisioning a carbon-zero future

Governor Brown's 2018 Executive Order (EO B-55-18) established a statewide goal of achieving carbon neutrality as soon as possible, and no later than 2045. Governor Brown further directed state agencies to identify measures and support communities in achieving this goal.

The passage of SB-100, which mandates 100% zero-carbon electricity statewide by 2045, makes building electrification a viable long-term strategy for California communities to achieve carbon zero.

Promoting clean-energy buildings

SB-1477 allocates $50 million each year for four years (until 2023) to create two new programs to support market growth and drive down costs for clean heating technologies:

- BUILD (Build Initiative for Low-Emissions Development) provides incentives for developers to find low-cost, innovative "build clean from the start" ways to make the deployment of near-zero-emission building technologies a common practice in new construction.
- TECH (Technology and Equipment for Clean Heating) focuses on promoting purchases of low-emission space- and water-heating technologies by incentivizing retailers to make such equipment available and by providing customer education and contractor training. The program aims to spur market development of low-emissions space and water-heating technologies.

AB-3232 also calls for the California Energy Commission to assess the potential to achieve at least a 40% reduction in GHG emissions by 2030 from the state's residential and commercial building stock. Working to achieve this goal while remaining on the path to carbon neutrality by 2045 will require a major transformation of the cities' existing buildings.

Updating energy-efficiency policies

In 2019, the CPUC unanimously voted in favor of updating its energy-efficiency policy to allow access to funding if an appliance saves energy and reduces air pollution, regardless of technology. This decision essentially opens up the approximately $1 billion spent annually on energy efficiency to support customers in switching from natural gas to electricity, in such uses as space heating and water heating. The tides are clearly turning in favor of electrification and the cities should leverage this and similar opportunities to support homes for low-income residents in particular.

Reducing transportation-related emissions

The largest source of GHG emissions is the transportation sector. The state of California has passed groundbreaking legislation requiring a comprehensive combination of transportation measures and better land-use and housing planning that fosters smart-growth and compact transit-oriented development.

Linking housing needs and regional transportation. Vehicle miles traveled (VMT) have increased despite California's landmark legislation like SB-375, which requires "Sustainable Communities Strategies" in regional transportation plans that demonstrate how the area will meet emission targets through their regional allocation of housing needs and regional transportation planning.

Multimodal transportation. With the passage of SB-375, metropolitan planning organizations (MPOs) like SACOG are responsible for aligning land-use and transportation planning in a way that reduces emissions. The California Air Resources Board has also established regional targets for reducing emissions that MPOs must create plans to achieve through their Metropolitan Transportation Plan/Sustainable Communities Strategies (MTP/SCS). SACOG's 2020 MTP/SCS highlights a multimodal transportation plan to achieve our region's target of a 19% reduction of GHG emissions per capita.

Transit and active transportation focus. SB-743 also creates a process to change the way that CEQA analyzes transportation impacts, particularly within areas served by transit, to focus on reducing vehicle miles traveled (VMT). It also provides streamlined review of land-use and transportation projects that will help to reduce future VMT growth. To reduce VMTs emissions from passenger vehicles, cities will need to facilitate drastic mode shifts to increase travel by active transportation, transit and clean shared-mobility services, and accelerate the adoption of zero-emission vehicles (ZEVs).

Shared mobility and electrified fleets. Recognizing this issue, SB-1014 (signed into law in 2018) requires transportation network companies (TNCs), like Uber and Lyft, to measure their GHG emissions on a per-passenger-mile basis. The cities should engage TNCs to capitalize on this momentum to maximize the number of pooled and shared rides, and encourage fleet electrification to make on-demand rides a tool for achieving carbon neutrality.

Parking for electric vehicles. The cities should adopt CALGreen Tier 2 standards that establish minimum requirements for EV capable parking spaces:

- Residential: 20% of the total number of parking spaces on a building site, provided for all types of parking facilities, but in no case less than one, shall be electric-vehicle charging spaces (EV spaces) capable of supporting future electric-vehicle supply equipment (EVSE).

- Non-residential: 10% of new parking spaces must be EV-capable.
- New multifamily dwellings (sites with 17 or more multifamily dwelling units constructed on-site): 5% of the total number of parking spaces provided for all types of parking facilities, but in no case less than one, shall be electric-vehicle charging spaces (EV spaces) capable of supporting future EVSE.

Executive Order B-16-12 also directs state agencies to offer ZEV charging stations and infrastructure at employee parking facilities. The Department of General Services offers transportation-demand management (TDM) incentives for their employees, such as reduced monthly parking rates for ZEV at its facilities and priority access to its parking.[1]

Resiliency capacity and planning

The State of California has sent clear signals to local jurisdictions and communities on the urgent need to adapt and build resilience to climate-change impacts. With the passage of SB-379, local jurisdictions are required to identify climate-change risks and adaptation strategies as part of their local hazard mitigation plans and/or in the safety element of their General Plans.

In subsequent years, additional state laws have expanded this mandate:

- SB-1035 requires cities and counties to review and revise their general plan safety elements to address climate-adaptation strategies, no less than every eight years.
- AB-747 requires safety elements to be reviewed and updated to identify evacuation routes and their capacity, safety and viability under a range of emergency scenarios. SB-99 further requires the identification of residential developments in hazard areas that do not have at least two emergency evacuation routes.
- SB-1000 also creates a newly required environmental-justice element and requires cities and counties to identify objectives and policies to reduce the unique or compounded health risks of disadvantaged communities, identify objectives and policies to promote civic engagement in the decision-making process, and identify objectives and policies that prioritize improvements and programs that address the needs of disadvantaged communities.

SB-379 (passed in 2015) requires cities and counties to integrate climate adaptation and resilience strategies into the safety elements of General Plans before or beginning in January 2022. Considering the far-reaching impacts of climate change across all sectors and facets of society, the cities are encouraged to integrate climate risks, vulnerabilities and adaptation strategies into all relevant plans.

While SB-1035 requires climate adaptation and resiliency strategies to be assessed at least every eight years, the Community Health and Resiliency TAC recommends strategies to be updated every three years so that the cities use best-available science, models, projections and practices in the rapidly evolving field of adaptation. Committing to regular updates will enable the cities themselves to adapt and pursue the most appropriate and effective adaptation measures.

AB-617 CARB established the Community Air Protection Program at the California Air Resource Board to reduce exposure in communities most impacted by air pollution. AB 617 includes community air monitoring and funding for community emissions reduction programs. AB 617 also includes new requirements for accelerated retrofit of pollution controls on industrial sources, increased penalty fees, and greater transparency and availability of air quality and emissions data, which will help advance air pollution control efforts throughout the State.

SB-1072 established the Regional Climate Collaborative Program (RCC) to help under-resourced communities across California build regional capacity and collaboration to develop and implement climate change mitigation and adaptation projects.

To mitigate the risk of wildfires triggered by transmission lines (as occurred in the devastating Camp Fire), the CPUC adopted Resolution ESRB-8 to enable Investor-Owned Utilities to shut off electric power, referred to as "de-energization" or Public Safety Power Shutoffs (PSPS), to reduce the risk of utility infrastructure starting wildfires.

Reducing food waste. In California, food waste is the single-most prevalent item in landfills.[2] To combat this reality, several State laws seek to reduce food waste:

- AB-1826 mandates commercial organics recycling.
- AB-341 establishes a statewide 75% recycling goal by 2020.
- SB-1383 seeks to reduce organic-waste methane emissions and establishes targets of 50% reduction in statewide organic-waste disposal from the 2014 level by 2020, and a 75% reduction by 2025.

There are many community and citywide organics recycling efforts in the Sacramento region, and this tactic calls for creation of local requirements that align with state regulations. AB 1826, signed by Governor Brown in 2014, required businesses to recycle their organic waste starting in 2016.

BUILT ENVIRONMENT

The Built Environment encompasses the human-made places in which people live, work and recreate on a day-to-day basis. This set of recommendations focus on land use and buildings, in terms of both construction and building energy use.

Following the passage of SB-100, which mandates 100% zero-carbon electricity statewide by 2045, California cities can now turn their attention to building electrification as a viable long-term strategy to achieve carbon zero. A combination of strategies must be pursued to increase all-electric new construction and retrofit existing buildings to eliminate use of natural gas and its related negative health effects and GHG emissions. Appliances using natural gas – furnaces, stoves, water heaters and clothes dryers – will be replaced with all-electric products that are already available through various retailers and contractors. Through partnerships and targeted investments, cities can raise awareness, educate property owners, and provide incentives to retrofit existing residential and commercial buildings in a cost-effective and equitable manner.

Calculating the exact emissions from land use can be more challenging, but generally they encompass the cities' natural and working lands (parks, farms, trees and other green spaces) that serve as carbon sinks for removing and storing carbon from the atmosphere. We also have to consider how converting these lands to other uses can lead to additional emissions – during construction and the subsequent use of new buildings and roads. Infill growth and compact, mixed-use communities with lower transportation and building emission footprints can help preserve and expand green space, while also fostering economic activity that addresses the need for affordable housing and good jobs.

Transportation is the largest contributor to GHG emissions and thus is the most difficult sector to address. Land use choices are one of the largest levers that local governments have in addressing transportation sector emissions. Vehicle miles traveled (VMT) have increased despite California's landmark legislation such as SB-375, which requires "Sustainable Communities Strategies" in regional transportation plans that demonstrates how the area will meet emission targets through their regional allocation of housing needs and regional transportation planning.

Compact, mixed-use communities across the country have shown that automotive travel can be reduced by shortening the distance between necessary trips and offering additional transportation modes besides personal vehicles. Studies have also shown fiscal benefits for these communities, along with reduced infrastructure costs and reduced costs for public safety and services.[3] The National Association of Realtors has also found a lack of supply of these types of communities and that people in walkable, bikeable communities are generally more satisfied with their quality of life.

TAC Vision & Recommendations

In a carbon-zero future, communities will be fossil-free and fully electrified with an abundance of green space and affordable housing, designed to prioritize vibrant public spaces, multimodal and active transportation, resource conservation, and quality of life for all. This future envisions compact, walkable communities that integrate efficient design, localized renewable energy systems, and nature-based solutions, leveraging carbon neutrality to achieve public health, equity, economic development and

resiliency. To achieve this vision, public investments will need to match these priorities, and strategies must be pursued cost-effectively to avoid unintended harm to marginalized communities including effective anti-displacement measures. At the same time, thoughtful investments should be targeted to create opportunities for marginalized communities to benefit first and most from the cities' carbon-zero transition.

The TAC identified a prioritized set of recommendations focused on sustainable land use and the electrification of new construction and existing buildings.

1. Sustainable Land Use
   Support infill growth in a manner consistent with the regional Sustainable Communities Strategy to ensure that:
   - 90% of the cities' growth is in the established and center/corridor communities and 90% small-lot and attached homes by 2040.
   - Project level VMT is 15% below (or 85% of) the regional average.

1. Electrification: New Construction
   Mandate all-electric construction in new buildings by 2023.

2. Electrification: Existing Buildings
   Transition 25% of existing residential buildings and small commercial buildings to all electric by 2030.

This section explores each of these strategies in detail, including potential implementation tactics, possible hurdles and opportunities.

Strategy Recommendation #1: Sustainable Land Use

Support infill growth in a manner consistent with the regional Sustainable Communities Strategy to ensure that:

- **90% of the cities' growth is in the established and center/corridor communities and 90% small-lot and attached homes by 2040.**
- **Project level VMT is 15% below (or 85% of) the regional average.**

Prioritizing infill development will enable the cities to reinvest in established communities and create more compact, mixed-use neighborhoods, which can enhance existing public services, bolster economic activity, and generate many social benefits.[4] By efficiently using already-developed land, the cities and private sector partners can avoid costs for new infrastructure and preserve working lands and open spaces that serve as critical carbon sinks. By bringing homes and destinations closer together, they can also create the environment needed to make active transportation and transit more viable, convenient mobility options – also drastically reducing the largest sources of emissions.

This strategy was developed in accordance with SACOG's Blueprint Principles, which call for the implementation of smart-growth principles to integrate land-use and transportation planning to curb sprawl, congestion and GHG emissions including: transportation choices, compact development and mixed-use development, housing choice and diversity, use of existing assets, natural resource conservation, and quality design.

The Carbon Zero Opportunity

Land-use decisions play a critical role in shaping the built environment and transportation patterns, the two largest sources of emissions in the cities. These decisions, which essentially determine where and how to develop, set in motion long-term trends in GHG emissions. Developing in existing urban areas that are already largely developed can curtail emissions by preserving carbon sinks and creating compact, mixed-use communities that make active transportation and public transit more accessible and affordable for residents.[5]

With space at a premium in dense areas, disincentives for driving, such as limited paid parking, often further reinforce motivations for choosing low- or zero-carbon transportation modes. Compact, mixed-use development also promotes diverse, vibrant communities by providing a mix of different building and housing types, contributing to a sense of community where residents have more opportunities to interact and let residents meet their daily needs without a car.

This strategy addresses historical sprawl patterns, which have contributed to significant GHG emissions through increases in energy consumption, traffic congestion and VMT, as well as rising infrastructure costs including operations and maintenance.

A study by the National Research Council's Transportation Research Board on the costs of sprawl concluded that planned, spatially compact growth consumes not only 45% less land area but also costs 25% less for roads, 20% less for utilities, and 5% less for schools.[6] Other studies have shown that compact development can significantly reduce GHG emissions through efficiencies in district heating of residential and service buildings and reduced passenger travel.

A direct relationship between the number of dwellings per acre and GHG emissions has also been found. A common suburban density of 4 homes per acre generates an estimated 25% more emissions per household compared to an urban neighborhood with 20 homes per acre.[7]

Rather than contributing to additional urban sprawl, the cities can achieve significant reductions in GHG emissions while providing additional benefits to communities by pursuing compact infill development.

Overcoming Potential Hurdles

The cities can create appropriate incentives and policies to make infill development more feasible and attractive through greater engagement with developers and financial institutions. Regional alignment on sustainable land-use decisions can help the cities achieve carbon zero by providing more options for residents throughout the region to live closer to their jobs.

Through infill development, the cities can rehabilitate old or abandoned buildings, making neighborhoods more aesthetically pleasing and increasing the value of existing properties. However, it is critical that the cities pursue this strategy with sufficient anti-displacement measures and formal and transparent processes to foster and enforce these policies. Pursuing re-investment without these protections can result in negative outcomes for existing communities if residents can no longer afford to live in the neighborhoods they grew up in.

Broad public outreach can also help to build political support and community buy-in for infill and other sustainable land-use practices.

Implementation Tactics

The following set of potential implementation tactics are designed to help the cities implement the Sustainable Land Use strategy and achieve its ambitious targets.

1.1. Introduce and advocate for state, regional and local regulations that clearly limit new development to existing developed areas in the region, while promoting accessibility and adopting anti-displacement policies for residents and small businesses. Work with private sector partners to facilitate and expand infill development.

By advocating for regulations that clearly limit new development to existing developed areas, the cities can create a policy environment that supports infill growth locally and in neighboring jurisdictions. This can help to preserve greenfields and agricultural land throughout the region that serve as important carbon sinks and provide a multitude of benefits, including jobs, food, flood protection, clean air, recreational opportunities and more. Greater prioritization of infill development across the region will magnify these benefits and drive deeper reductions in transportation sector emissions by creating compact communities that bring residences and destinations closer together.

The cities can pursue a range of zoning and market-responsive strategies to promote infill development in an equitable manner:[8]

- Mature development zones that ensure new development or rehabilitation areas would not displace households and keep rents and prices the same.
- Conditional development zones that designate areas that only allow development projects that maintain the balance of the existing community and do not lead to any displacement.
- Limited development zones, which establish a cap on permitted development projects and automatically convert the zone to a conditional development zone once the cap is reached.
- Expansion zones, which designate areas where infrastructure investments and improvement by the city would be concentrated and development would be encouraged by subsidies, tax abatements and other incentives.
- Inclusionary construction zones that encourage development on vacant land where there is no threat of displacement.

The cities should also promote accessibility and universal design principles in design of communities and buildings that are available to all people, regardless of age, ability or other factors. Additionally, particular attention needs to be given to housing affordability as infill development may lead to increases in property values, which could displace low-income residents and small business owners if implemented without effective anti-displacement policies in place. Anti-displacement policies, particularly in marginalized communities and neighborhoods historically lacking investment, must also take priority. By prioritizing both accessibility and affordability, the cities can create inclusive communities that work for all residents.

Private sector partners must be engaged to facilitate and expand infill development, such as through public-private partnerships to redevelop priority districts or aligning public and private investments to enable infill projects that present greater financial risks. Early and ongoing engagement with developers and other private sector stakeholders can expose projects of mutual interest and opportunities for collaboration. Through land-use regulations and outreach to demonstrate the cost-effectiveness of infill development, the cities can instill a level of certainty that dispel long-held concerns of developers.

Infill is a cost-effective strategy in the long run. Infill development avoids costs related to the construction and maintenance of new infrastructure, such as water and sewer lines, roads and schools. The cities can leverage infill development to achieve multiple benefits for existing communities, including providing access to a wider range of jobs, rehabilitating abandoned buildings that pose public health hazards, and raising the value of nearby properties.

Opportunities for Neighborhoods and Businesses

Some low-income households and small businesses may be reluctant to welcome improvements in their neighborhoods because of the potential for gentrification and displacement. Like most communities in California, the Sacramento region is experiencing a severe shortage of affordable housing, which is further exacerbated by displaced Bay Area residents moving here and developers flipping properties in lower-income neighborhoods.

The City of Sacramento's Anti-Displacement / Gentrification Study found that the average apartment rental rate for the Central City Specific Plan area increased by 32% since 2008 to an average of $1,737 per month. During the same period, vacancy rates dropped to 3.2%. The study also found that lower-income households represent nearly 53% of all households in the Central City area. Amidst these findings, the study calls for anti-displacement policies and programs to preserve the current affordable-housing stock, create more subsidized affordable housing, and help existing lower-income residents stay in the area.

Infill development of mixed-use buildings with commercial spaces where there is a market can attract new businesses, more foot traffic and new job opportunities for residents. Infill development with a mix of housing types can also foster a more balanced range of income levels that can increase and stabilize the local tax base.

Implementation Tips

More than 20 states have adopted policies or passed legislation to limit new development to existing developed areas by establishing urban growth boundaries or priority funding areas. In Oregon, urban growth boundaries have been established in every city and metropolitan area to restrict residential development to sites within designated urban growth areas.[9] Instead of setting restrictions, Maryland established priority funding areas to direct development toward more urbanized areas through economic incentives and subsidies.[10]

Many funding resources are available for infill development from federal and state agencies, as well as numerous academic institutions and nonprofit organizations that provide decision-making support tools, best practices and technical assistance. The cities are encouraged to regularly seek best practices and technical assistance to update housing policies, plans and programs towards creating communities that are racially and socioeconomically inclusive and diverse.

1.2. Accommodate and facilitate construction of 30% of the region's new living wage[11] jobs and 35% of the region's new housing units by 2040, prioritizing the construction of affordable housing, through strategic infrastructure investments, expansion of by-right zoning, TOD ordinances, financial incentives and modification of single-family dwelling designations, all coupled with accessibility, universal design and anti-displacement policies with a commitment to affordable workforce housing.

As stated in SACOG's 2020 MTP/SCS, the Sacramento region needs to be bold and intentional in its planning to ensure success in a rapidly arriving future. By 2040, SACOG estimates the region will have over 620,000 more people who will need to be supported by jobs and housing.

Sacramento and West Sacramento are well-positioned to absorb much of this growth as the region's largest existing hub of residents and employment centers. Through strategic infrastructure investments and infill development, the cities can prepare to accommodate the growing population in a manner that supports the achievement of carbon zero.

To create a livable future that supports all segments of society, accessible housing must be a priority. Housing accessibility also demands equal attention, which can be best addressed by promoting or requiring universal design. The principles of universal design include equitable use, flexibility in use, simple and intuitive use, perceptive information, tolerance of error, and appropriate size and space for use.

Local jurisdictions are uniquely positioned to encourage development that helps to achieve carbon zero and equitable outcomes. The cities are encouraged to explore the following levers as part of this tactic:

- Modification of single-family residential zoning: Single-family zoning allows detached single-family homes and accessory dwelling units to be built in an area. By modifying this designation to allow for a mix of housing types (such as townhouse, duplexes and apartment buildings), the cities can enable developers to construct affordable housing in many areas that have been traditionally off-limits to new housing. Measure such as design standards or form-based codes (that foster predictable built results and a high-quality public realm) can help preserve the community's existing character.
- By-right zoning: This type of zoning code streamlines the approval process by approving projects that comply with established zoning standards without discretionary review. Developers and housing advocates alike have pointed to discretionary review processes as a significant driver of the affordable housing crisis because it increases costs and prolongs timelines. Specific standards must be set before expanding by-right zoning, which should promote infill development and diverse housing types, at minimum.
- TOD ordinances: TOD ordinances require and/or incentivize quality development near transit hubs to increase transit use. They typically apply to areas that are within a quarter-mile or half-mile radius of transit stops. Different requirements or incentives can be included to encourage compact, mixed-use developments that promote affordability, business opportunities, active transportation and transit use:
    - Decreasing or removing minimum parking requirements.
    - Increasing floor area ratio.
    - Reducing minimum lot area per unit.
    - Increasing maximum building height.
- Financial incentives: The cities can provide a range of incentives to encourage the right type of development, including density bonuses, subsidies, fast track processing, tax abatements, and fee waivers, reductions and deferrals.

With the right types of policies and incentives in place, private sector investments can be leveraged to create compact communities that drastically reduce transportation-related emissions. New housing and jobs (particularly living-wage jobs) will also contribute to the cities' tax base, providing a sustainable source of revenue to fund infrastructure improvements and future climate-action programs.

Opportunities for Neighborhoods and Businesses

As the cities work to grow their affordable housing stock, new investments can substantially change the character of existing neighborhoods. The degree of change typically depends on the amount and pace of investments and how the existing community is engaged and involved in the decision-making process. In addition to enacting strong anti-displacement policies, the cities should consult with community members to identify opportunities to leverage investments that address their concerns and improve their standards of living. This combined approach can help to alleviate gentrification pressures so existing residents and business can stay and community character is preserved.

SACOG estimates the addition of 270,000 new jobs in the region by 2040. By making public commitments, accompanied by supporting policies and incentives, to accommodate at least 30% of these jobs, the cities can attract businesses and encourage new entrepreneurial ventures.

Reduced utility bills for tenants can also boost the local neighborhood economy – less money spent on utility bills means more to spend at local businesses.

Implementation Tips

To ensure affordability of new homes with advanced amenities, the cities can:

- Review existing inclusionary-housing policies and programs to identify opportunities to achieve more equitable results and create racially and economically integrated, inclusive and diverse communities.
- Target incentives and low-cost financing to landlords and low-income consumers to overcome capital cost barriers and ensure that all communities receive clean-energy benefits.
- Focus Measure U resources in the City of Sacramento to leverage federal and state affordable-housing dollars.
- Develop a comprehensive anti-displacement strategy.

1.3. Prioritize public investment in low emission development areas using a locational efficiency metric such as a city average Vehicle Miles Traveled (VMT) limit, additional building siting and efficiency requirements, and/or others. The public investment will promote accessibility, universal design and anti-displacement.

The largest source of emissions is transportation, which will be the most challenging to mitigate as VMT. By using a locational efficiency metric, the cities can identify low-emission development areas to prioritize for public investment and further development.

Location-efficient areas are dense and vibrant, with walkable streets, access to transit, proximity to jobs, mixed land uses and concentrations of retail and services. These attributes work together to require less time, money and GHG emissions for residents to meet every day travel needs. Prioritizing these areas for

growth can bring new residents into communities that are already well-designed to encourage trips by active transportation and transit, leading to far less VMT and associated GHG emissions.

Different metrics can be used to measure locational efficiency, including average VMT and additional building siting and efficiency requirements, which are supported by principles of transit-oriented development, compact building design, mixed land uses, diverse housing options and pedestrian-friendly infrastructure.

The California Air Resource Board recommends: Certain land-use development projects located in areas that would produce rates of total VMT per capita that are approximately 14.3% lower than existing conditions, or rates of light-duty VMT per capita approximately 16.8% lower than existing conditions (either lower than the regional average or other appropriate planning context) could be, by virtue of their location and land-use context, interpreted to be consistent with the transportation assumptions embedded in the 2017 Scoping Plan and 2050 State climate goals.

The cities can encourage and incentivize beneficial development types and approaches through subsidies, streamlined permitting and fee reductions. Public investment in catalyzing infrastructure can also indirectly facilitate infill. Beneficial development that maintains or increases the area's locational efficiency can include development that follows smart-growth principles, as well as that which allows new businesses to support residents in meeting additional daily needs.

By reducing household reliance on carbon-intensive automobile travel, this tactic can drive significant reductions in GHG emissions and support the achievement of regional VMT reduction targets. Studies also show that households in location-efficient areas benefit from reduced transportation costs as cleaner, more affordable options are readily accessible, which can amount to savings of up to 18% of household income.[12]

Opportunities for Neighborhoods and Businesses

Investments, bolstered by anti-displacement measures, should promote accessibility and universal design to ensure people of all abilities and ages can reside and thrive in these improved neighborhoods.

By working with transit agencies and private sector partners (Jump, Via, etc.) to provide adequate routes and services into location-efficient areas, the cities can attract neighboring residents and visitors, which can spur local economic activity and raise awareness around the value of compact, mixed-use communities. The cities should also seek to ensure a seamless network of safe active-transportation paths and trails from surrounding areas into these vibrant spaces.

Implementation Tips

The cities should leverage existing research, best practices and tools to inform the development of a locational efficiency metric, such as those available through the Center for Neighborhood Technology's Location Efficiency Hub.

Strategy Recommendation #2: Electrification of New Construction

Mandate all-electric construction to eliminate fossil fuel use in new buildings by 2023.

When California's power grid electrifies to meet SB-100, which mandates 100% carbon-free electricity by 2045, the remaining emissions to address in the buildings sector largely stem from natural gas. Electrification is a core pathway to decarbonization that must be pursued to achieve the cities' vision of a carbon-zero future.

Electrifying existing buildings will be a challenge that requires a significant level of effort and by mandating all-electric new construction. The cities can prevent this challenge from growing even larger. Construction-related emissions will also need to be addressed.

The Carbon Zero Opportunity

California is working to decarbonize its energy portfolio and has passed legislation that will require increased adoption of renewable resources. PG&E and SMUD will need to eliminate carbon emissions from electricity generation by 2045. Policymakers have also sent clear signals that point to electrification. In addition to landmark bills that establish GHG emissions reduction targets, other notable policies include:

- EO B-55-18 establishes a statewide goal of achieving carbon neutrality as soon as possible, and no later than 2045. Governor Brown further directed state agencies to identify measures and support communities in achieving this goal.
- SB-1477 allocates $50 million each year for four years (until 2023) to create two new programs to support market growth and drive down costs for clean heating technologies:
    - BUILD (Build Initiative for Low-Emissions Development), which provides incentives for builders to find low-cost, innovative ways to "build clean from the start" to make the deployment of near-zero-emission building technologies a common practice in new construction.
    - TECH (Technology and Equipment for Clean Heating) is focused on promoting purchases of low-emission space and water heating technologies by incentivizing retailers to make such equipment available and by providing customer education and contractor training. The program aims to spur market development of low-emissions space and water-heating technologies.
- Utilities like SMUD have established significant electrification incentive programs. SMUD's 2019 IRP commits $1.7 Billion over the next 20 years to incentivize the transition to clean efficient electric appliances and vehicles in place of current natural and gasoline powered end-uses. In addition, in 2019, the CPUC opened up the Investor Owned Utility efficiency programs to allow investment in electrification to be part of their $1B per year efficiency portfolios.

Mandating new buildings to be fully electrified will future-proof these buildings (i.e. prepare for climate impacts such as extreme heat and avoid retrofit costs) while helping the market mature. A 2019 study by E3 estimated an all-electric new construction home to have a capital cost advantage ranging from $3,000 to over $10,000 compared to their mixed-fuel counterparts.[13] A 2018 study by LBNL found electrification of some end uses to already demonstrate cost-effectiveness in certain instances, such as electric heat pumps in new residential buildings.[14] As the market matures, electric appliances will become more and more cost-effective. There is also mounting evidence of the benefits of electrification, including improved indoor and outdoor air quality, which will be critically important for improving health outcomes in underserved communities.

The cities should work with state regulatory agencies to get electrification embedded into state regulations such as the CALGreen mandatory green building standards code working with the Building Standards Commission, State Fire Marshal, the Energy Commission, the Division of the State Architect and California Building Officials.

Overcoming Potential Hurdles

The cities should continue engaging with developers and builders to demonstrate cost-effective approaches to electrification. Incentives for high-efficiency heat pump HVAC systems, particularly in areas with higher air-conditioning loads can also help to address cost concerns. With numerous groups mobilizing to support their efforts to electrify buildings, such as the Building Decarbonization Coalition, the cities can leverage existing studies and forge partnerships to promote electrification and workforce development, as well as broader outreach and demonstration projects to build public buy-in.

With nearly 30 California cities and counties adopting ordinances and reach codes that mandate or encourage all-electric new construction, the cities can look to these jurisdictions to learn from emerging best practices and use model strategies.

Implementation Tactics

2.1. Adopt and implement an ordinance that would result in 100% electrification of all new construction by 2023.

This tactic calls for the development, adoption and implementation of an ordinance that would effectively ban natural-gas infrastructure in new buildings. The ordinance would apply to all building types – from single-family homes and multifamily apartment complexes to commercial buildings – and disable the use of all natural-gas appliances, including space heaters, water heaters, stoves and dryers.

By adopting an electrification ordinance, Sacramento and West Sacramento can join nearly 30 California cities with similar ordinances or reach codes:[15]

- Carlsbad adopted an electrification reach code that requires heat-pump water heaters or solar thermal water heating in new low-rise (below four stories) residential construction.
- Berkeley adopted an ordinance that prohibits natural-gas infrastructure in new residential and nonresidential buildings. It allows for specific exceptions when it is not feasible to construct a new building completely without natural gas. A complementary reach code includes pathways for either all-electric construction or mixed-fuel construction that exceeds the efficiency requirements of the Energy Code. It also extends solar photovoltaic-system requirements to nonresidential buildings, high-rise residential and hotels/motels, and requires electric readiness of systems that use natural gas.
- Menlo Park adopted a reach code that requires all-electric new construction for all residential buildings (single-family, multifamily, high-rise) as well as new commercial buildings. For low-rise residential (under four stories) developments, the city will allow gas for cooking.
- San Jose adopted an ordinance prohibiting natural-gas infrastructure in new detached accessory dwelling units, single-family homes and low-rise multi-family buildings. A supplementary ordinance encourages building electrification and energy efficiency, requires solar-readiness on

nonresidential buildings, and requires electric vehicle (EV)-readiness and EV equipment installation.

- Davis adopted a reach code that requires higher energy-efficiency standards and electrification readiness in mixed-fuel buildings.

Studies have shown that building electrification can reduce the cost of constructing new homes, lower energy bills, create local jobs, improve air quality, and put downward pressure on electricity rates. The electricity rate is important for determining the cost-effectiveness of electrification for customers. SMUD's lower rates allow for higher cost savings, while PG&E's tiered rate plans point to smaller cost savings or no net changes.[16]

Overall, all-electric new construction homes have the potential to save residents $400-$600 per year in energy costs. Delaying a residential all-electric code will cost builders $15.4 million in building costs and residents $1.7 million in higher operating costs per year, according to SMUD.[17] For housing units like an 8-plex, developers can save over $20,000 by reducing gas distribution, laterals, interior piping, appliances, and venting.[18]

As the market matures, all-electric appliances will become more cost-effective than gas-fueled appliances. However, the bulk of savings for all-electric new construction stems from avoided gas infrastructure. Funding available through various mechanisms, such as utility rebates and BUILD and TECH program incentives created by SB-1477, should be leveraged to support this transition. SMUD's All-Electric Smart Home Program provides financial incentives for all-electric builds with up to $7,000 for single-family homes and $1,250 per unit for multifamily homes.

Opportunities for Neighborhoods and Businesses

All-electric buildings will undoubtedly improve overall indoor air quality and health related issues by eliminating natural gas combustion inside homes. Household appliances that produce gas combustion are harmful to indoor air quality, emitting a range of pollutants such as nitrogen dioxide, carbon monoxide, nitric oxide, formaldehyde, acetaldehyde and ultrafine particles.

Carbon monoxide poisoning results in nearly 15,000 emergency room visits and 500 deaths every year, according to the U.S. EPA. The California Air Resources Board warned that cooking emissions, especially from gas stoves, have been associated with increased respiratory disease. Gas stoves also double the chances of a home chef experiencing lung and heart disease symptoms and triples the chances of a home chef needing to take asthma medication.[19]

Homes with more efficient equipment are more comfortable to live in and more affordable to operate. Low-income households will benefit the most from all-electric appliances, because this will reduce utility costs for low-income households, and allow more money to pay for food, medicine and healthcare.

All-electric new construction already demonstrates capital cost advantages, particularly for low-rise residential homes. By targeting incentives, providing contractor training, and engaging with developers and builders, the cities can leverage their carbon-zero vision to support local economic growth. Including incentives or phased requirements for electric-ready retrofits in existing buildings, the cities can also help to create more jobs.

Implementation Tips

To take this ordinance a step further, we recommend that the cities pursue the following actions if they have not already:

- Adopt an EV-charging reach code that requires all new commercial and multifamily buildings to exceed minimum state standards for "EV Ready" charging spaces and infrastructure in commercial and multi-family buildings. Require all new single-unit and multi-unit dwelling garages, and 30% of parking spaces for all new multi-family complexes and non-residential buildings, to be equipped with EV chargers by 2030.
- Work with developers to adopt data standards and metrics for all data reporting and developing a pathway for voluntary to mandated reporting. Require all new buildings to have benchmarking capability and report energy, water use, air quality and GHG emissions on an annual basis by 2030.
- Fast track alignment with CEC-approved certifications (LEED Platinum and Living Building Challenge certifications) that are modeled after leading building-industry certifications.
- Develop legal pathways to impose a GHG mitigation fee for emissions associated with natural gas, and prohibit gas infrastructure or appliances in development projects subject to CEQA review.
- Identify ways to reduce the cost of land, labor, and materials to expand TOD affordable housing.
- Adopt a local ordinance to maximize energy efficiency with options for PV and storage.
- Adopt a rate-based infrastructure charge to better incentivize low-energy users and property owners with on-site solar and ensure SMUD continues to have resources to pay for infrastructure.
- Establish an outreach and education campaign to assist with implementation about next-generation building techniques and technologies.

Lastly, to bring all strategies within this sector together, we recommend the cities establish zero-carbon innovation zones to attract research and development, venture capital, and targeted investments to create Eco-Villages that embody the Living Community Challenge framework. These Eco-Villages can demonstrate a regenerative approach to development (energy, water, waste, food systems and more) while leveraging local talent to create a beautiful space that can educate and inspire communities. By experimenting with tiny houses, relocatable micro-dwelling clusters, deep retrofits of existing buildings and mixed-use infill development, Sacramento and West Sacramento can rise to the forefront of innovation in sustainable architecture and serve as a model for the state.

2.2. Adopt a measure to reduce the embodied carbon emissions from building materials and construction of new buildings by 40% by 2030 (compared to 2018).

UNEP's 2017 Global Status Report found buildings construction to represent 11% of global energy-sector emissions in 2015, and recommended actions to reduce embodied emissions by taking a life-cycle approach. Embodied carbon primarily includes emissions from manufacturing building materials (such as cement, steel and glass), transportation of materials, and construction (such as emissions from equipment used).

The World Green Building Council recommends, by 2030, all new buildings, infrastructure and renovations to have at least 40% less embodied carbon with significant upfront carbon reduction, and all new buildings are net-zero operational carbon.

The cities can engage developers and highlight guidance from the American Institute of Architects to reduce embodied carbon:

1. Reuse buildings instead of constructing new ones as renovation and reuse projects, typically saving between 50-75% of embodied carbon compared to new construction.
2. Specify low-carbon concrete mixes by using fly ash, slag, calcined clay or even lower-strength concrete where feasible.
3. Limit carbon-intensive materials, such as aluminum, plastics and foam insulation.
4. Create lower carbon alternatives, such as using wood structures or sidings.
5. Choose carbon sequestering materials, such as wood and straw or hemp insulation.
6. Reuse materials whenever possible, including salvageable bricks, metal, broken concrete and wood.
7. Use high-recycled content materials.
8. Maximize structural efficiency by using optimum value-engineering wood-framing methods, efficient structural sections and slabs to minimize material use.
9. Use fewer finish materials by promoting polished concrete slabs or unfinished ceilings.
10. Minimize waste, particularly in wood-framed residential projects by designing in modules.

Another key first step will be to use whole-building life-cycle assessments to understand the multiple impacts of building materials – from extraction and manufacturing to its end life in landfills or recycling plants. The Carbon Leadership Forum (CLF)'s Life Cycle Assessment Guidance aimed at building professionals can serve as a valuable resource. However, not all project budgets may be able to accommodate a full assessment.

An important takeaway from CLF is that structural systems almost always comprise the largest source of a building's embodied carbon – up to 80%. The cities should therefore focus their efforts on reducing emissions related to the manufacture and transport of concrete, steel and wood.

Addressing embodied carbon will require rethinking the way buildings are designed and constructed to use low-carbon materials and meet the standards of CEC-approved certification programs. By adopting a life-cycle approach, the cities can encourage developers to repurpose materials from old buildings, support research to develop next-generation, low-emission technologies, and cultivate the emergence of new industries in the region.

The policy landscape is also evolving to address embodied carbon emissions. The Buy Clean California Act requires the Department of General Services to establish and publish the maximum acceptable Global Warming Potential, targeting embedded carbon emissions of structural steel, concrete reinforcing steel, flat glass, and mineral wool board insulation. Several cities, including Berkeley, Cupertino, and Richmond, adopted resolutions to support the implementation of the Buy Clean California Act. The City of Vancouver also set a target of reducing embodied emissions by 40% by 2030 as part of its climate emergency declaration.

It will be important for the cities to balance this strategy with other carbon-reduction strategies that will need to be pursued, such as avoiding overly burdensome standards or regulations that may hinder infill development.

Opportunities for Neighborhoods and Businesses

The cities may consider exemptions for affordable infill housing developments to reduce development costs as the market matures. Given the potential of job creation by pursuing this tactic, the cities can target workforce development programs and support small business development in the cities' most under-resourced communities.

Embodied carbon is often overlooked as a source of GHG emissions, and having educated contractors will help spread the information to the public. Educating and training trade professionals will be critical to ensure low-emission materials are adopted and that all parties involved in building design and construction are in alignment and coordinating effectively.

Implementation Tips

As cities and industries look to reduce embodied carbon emissions, there are a growing number of initiatives and resources that the cities can leverage, such as the Construction Climate Challenge, an initiative hosted by Volvo Construction Equipment to promote sustainability throughout the entire construction-industry value chain.

Challenges to reducing embodied carbon can be overcome by:

- Collaborating across the whole value chain, including both public and private sectors, to create a common vision.
- Raising awareness about the importance of reducing embodied carbon, demonstrating leadership, and sharing best practice strategies.
- Addressing foundational gaps in skills, data and benchmarks through knowledge sharing, training and transparency for both prescriptive and performance-based pathways.
- Creating space for innovation, new business models, new technologies and circular patterns to evolve and thrive in response to financial and policy incentives.
- Fostering and leveraging proven industry-wide demand drivers and market forces including voluntary, financial and policy measures.[20]

2.3. Identify large-scale development projects in progress to encourage electrification.

Reviewing existing plans for large-scale development projects and engaging with developers to encourage electrification can jumpstart the cities' efforts to electrify new construction. Mounting evidence of capital cost advantages and best practices emerging throughout the state can motivate developers to pursue all-electric builds.

A range of financial incentives from subsidies to fee waivers, as well as coordinated marketing campaigns to recognize leadership, can further encourage developers. Ideally, a mix of different building types, including residential homes, multifamily homes and commercial buildings, would be included in the suite of in-progress projects to electrify.

The progress of local projects should be closely monitored and tracked to better understand costs and barriers to inform contractor training, next-generation incentives and priorities for research and development. These projects can also serve as demonstration sites to address consumer concerns about electrification. The benefits of all-electric buildings and electric appliances can be highlighted, from improved air quality to new and improved technology. All-electric commercial kitchen demos would also be important to dispel concerns among restaurants to display the viability and benefits of electric cooking equipment.

Projects within SMUD's All-Electric Smart Home program can serve as models for other developers:

- D.R. Horton – Independence
- Next Generation Capital – Icon at 14 & C
- Sacramento Urban Works – Castro Zero Energy
- Riverland Homes – Rio Villages
- Indie Capital – Broadway Redux and Mansion Flats
- K. Hovanion – Murieta Gardens

While the construction of all-electric residential homes have proven to be cost-effective, the financial feasibility and cost-effectiveness of constructing all-electric multifamily homes and commercial buildings will need to be further demonstrated. The cities are encouraged to prioritize engagement with developers pursuing these types of development.

Opportunities for Neighborhoods and Businesses

Identifying multifamily development projects, in particular, to encourage developers to pursue electrification can enable future tenants to benefit from improved indoor air quality and new technology. To ensure affordability, the cities should target incentives to developers leading these types of projects.

Developers can be matched with available incentive programs, such as Savings by Design, in which SMUD and PG&E are participants. The program provides up to $150,000 in incentives and assistance to encourage the design and construction of high-performance, energy-efficient non-residential buildings. The program also maintains a catalogue of case studies that can be shared with local developers to motivate participation:

- Bacon Street Offices in San Diego
- David Brower Center in Berkeley
- University of California, Santa Barbara Student Resource Building

Implementation Tips

The cities can work with developers who agree to pursue electrification to explore opportunities to drive down costs, such as through joint procurement initiatives. Bringing developers together, particularly those committed to social equity objectives such as affordable housing developers, can lead to long-term partnerships and coalitions that support their bottom lines while mobilizing stakeholders to support climate-change goals. Such partnerships can also foster knowledge exchange and best practice sharing in the dynamic, rapidly evolving world of electrification.

Strategy Recommendation #3: Electrification of Existing Buildings

Transition 25% of existing residential buildings and small commercial buildings to all-electric by 2030.

Electrification of existing buildings is a necessary, yet admittedly challenging, strategy to reach carbon zero. Existing buildings will need to be retrofitted with new electric equipment and appliances, and older

buildings will need upgraded electrical panels to support the increased load. A key opportunity with these retrofits will be engaging in additional deep energy-efficiency retrofits through partnerships with utilities, nonprofits and the private sector. These retrofits will create space on the grid to electrify other sectors such as transportation.

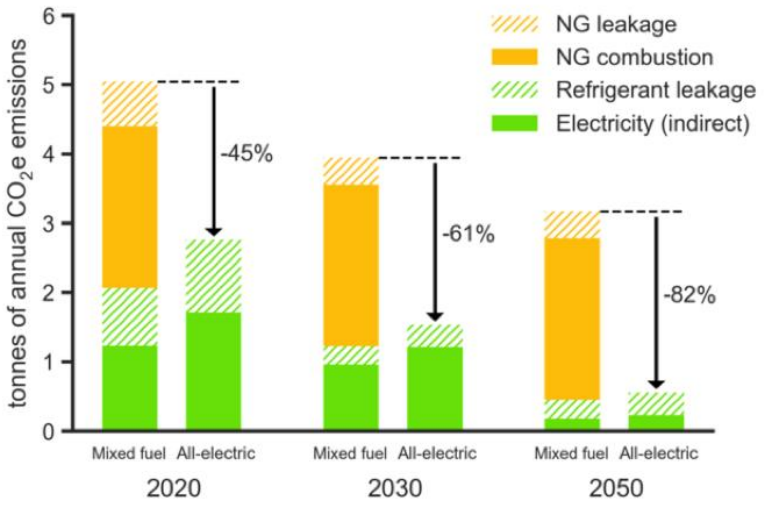
Creative mechanisms can be developed to fund incentives for electrification. For example, fees for buildings in the highest tier of emissions can be returned to building owners to finance energy-efficiency and electrification retrofits. The cities can also engage with philanthropy to pursue replicable pilot projects.

Arch|Nexus Sacramento, the first Living Building certified in California, can serve as a model for commercial-building retrofits. In its first full year of operations, its performance has exceeded expectations with both lower energy use and higher energy production.

The Carbon Zero Opportunity

As the grid becomes cleaner, the electrification of buildings – switching from fossil fuels to electricity use for space heating, water heating, cooking, and clothes drying – represents an important strategy to achieve carbon zero. AB-3232 also calls for the California Energy Commission to assess the potential to achieve at least a 40% reduction in GHG emissions by 2030 from the state's residential and commercial building stock. Working to achieve this goal while remaining on the path to carbon neutrality by 2045 will require a major transformation of the cities' existing buildings.

The figure below illustrates the expected GHG emissions savings from an all-electric single-family home in Sacramento in 2020, 2030 and 2050, compared to a mixed-fuel home, assuming no change in the efficiency of today's commonly available electric and natural gas end uses.



The largest savings result from eliminating on-site combustion of natural gas. Emissions from electricity decrease over time due to the state's zero-carbon generation goals. The increase in GHG emissions from refrigerant leakage associated with heat pumps in all-electric homes is relatively small since mixed-fuel homes use conventional air conditioning, which also results in GHG emissions from leaked refrigerant

gases. Multiple state agencies are working on approaches to reduce the impact of refrigerants by requiring lower GWP refrigerants or requiring better refrigerant lifecycle management approaches. Natural-gas leakage is also assumed to decrease over time.

Undoubtedly, electrifying the cities' existing building stock to all-electric will generate deep reductions in GHG emissions while modernizing older buildings and delivering a range of community benefits. Reducing fossil-fuel use in buildings can significantly improve public safety and indoor air quality while generating cost savings over time for residents and building occupants. The cities can also support economic development by creating jobs to perform retrofits and attracting new businesses and investments from philanthropic institutions, public agencies and businesses committed to a low- or zero-carbon future.

Overcoming Potential Hurdles

Costs related to electrifying existing buildings remains the largest hurdle. For example, high capital costs of electric heat-pump retrofits in existing homes are often perceived as a barrier to electrification, but this perception does not hold true for homes that are otherwise already upgrading the air conditioning system. Leveraging time of replacement will be critical to pursuing retrofits in a cost-effective manner.

Consumer-facing incentives, education and outreach campaigns, and low-cost financing options can alleviate cost concerns. Increasing awareness of the health risks of indoor combustion and demonstrating the benefits of new and improved technology can also build public demand for electric homes. SMUD is currently providing up to $10,000 per home for electrification retrofits, including up to $2,500 for electric panel replacement.

For low-income residents and tenants, the cities may consider a phased approach if a capital cost advantage or bills savings cannot be achieved to allow the industry to mature and the market to become more cost-competitive.

In order to reach the adoption levels needed to get to carbon zero by 2045, the region will need nearly 100% of replacements of gas equipment to be replaced by electric equipment by 2030. Education and incentives are the preferred approach, but if in the event they are not adequate to fully convert the market in the next 10 years, some kind of regulatory requirement may be needed. The specific regulatory and compliance measures that the cities should pursue remains uncertain. The Built Environment TAC initially proposed a point-of-sale compliance measure, checking to make sure appliances in a home were all-electric or were installed prior to an all-electric code requirement, prior to sale. This recommendation was met with opposition from the realtor community due to concerns related to delaying or increasing the costs of the home purchasing process. However, this is a mechanism that has been demonstrated to work for code compliance in other jurisdictions, including the City of Davis.

The cities are encouraged to assess a range of enforcement mechanisms based on cost and effectiveness; continue engaging with the realtor community; and pursue a phased approach that encourages voluntary action through education and incentives prior to establishing and enforcing a mandate.

Actions that the cities can take to overcome barriers and successfully rise to the challenge of retrofitting existing buildings include:

- Workforce Development: Engage, train and certify contractors to perform necessary retrofits, offering adaptable curricula to meet current demands and prepare for jobs of the future. Connect contractors to utility direct install programs, contractor-facing incentives, and other trainings and resources. Explore opportunities to connect youth development programs with job-development programs.
- Customers: Develop strategies to reach customers before their appliance fails, pre-selling the advantages of electric appliances and encouraging early retirement through incentives, such as by following the Cash for Clunkers model. Leverage and coordinate ongoing energy-efficiency programs to maximize benefits and cost reductions. Provide incentives for fuel-switching and efficiency that are simplified and aligned with GHG-reduction goals, and rate designs should avoid penalizing electrification or collecting fixed costs via volumetric rates. It is important to avoid unduly burdening low-income households when changing rates to make them more efficient and supportive of climate goals.
- Market: Increase the quantity, quality and performance of available technologies through proactive engagement with the manufacturing community, including engagement at a national scale. Invest in distribution channels by stocking warehouses with a local stock of efficient devices to draw from while increasing retail availability.

The cities are also advised to anticipate and mitigate potential stranded costs to legacy systems which must continue to provide safe, reliable service during a period of transition.

Implementation Tactics

3.1. Incentivize property owners to install electric appliances when replacing natural gas appliances, prioritizing education and voluntary action prior to establishing a mandate.

Buildings – and the space heating and water heating equipment used in them – are long-lived and slow to change, which is why any effort to electrify buildings would need to begin immediately to assure a reasonable pace of transitioning the cities' existing building stock without causing disruption in people's homes.

Rocky Mountain Institute analyzed case studies for four national locations and highlighted three situations when building electrification is generally expected to be cost-effective when replacing oil or propane, in new construction, and when replacing both an air conditioner and a furnace.[21] It will be important to start promoting available incentives for electric appliances as soon as possible – appliances have long lifetimes and the opportunity to upgrade may be delayed by 8-10 years if a resident invests in a gas-powered appliance today.

By providing incentives to property owners and working with industry leaders and nonprofit partners to address the split incentive challenge, the cities can leverage time of replacement to prepare properties for full electrification.

An E3 study exploring residential building electrification in California found some evidence of cost-effectiveness for select electric appliances compared to their gas-fueled counterparts. However, further market transformation is required to make retrofits more cost-effective.

- Electrifying both HVAC and water heating systems generates bill savings for the retrofit homes studied. The bill savings can be up to $750 per year in single-family homes and up to $300 annually in low-rise multifamily homes.
- HVAC heat pumps show a capital cost advantage of up to $3,000 in retrofits for most homes (additional electrical panel upgrade costs for older homes diminish the cost advantage) and deliver bill savings of up to $400 per year.
- Heat pump water heaters typically cost $1,000-$2,000 more per household than gas storage water heaters, but have a lower capital cost than gas tankless water heaters and deliver bill savings of up to $200 per year.
- Not surprisingly, the electricity rate is of critical importance for determining the cost-effectiveness of electrification for consumers. SMUD, for example, enjoys some of the lowest electricity rates in the state, and, as a result, nearly always showed significant bill savings from electrification – reaching more than $600 per year in some cases.

Since the time the E3 study was conducted, some electric appliances may have become more cost-competitive, such as heat pump water heaters that can be several hundreds of dollars cheaper than comparable gas heaters.

The cities should leverage existing incentives, financing mechanisms and programs while cultivating new partnerships to provide a comprehensive package to property owners and managers. Equipment and delivery cost reductions may also be achieved through targeted interventions in the supply-chain.

Opportunities for Neighborhoods and Businesses

Two core stakeholder groups must be engaged to ensure an equitable approach and avoid unintended consequences. Ultimately, all communities should be able to participate in this transition, but a thoughtful approach needs to be taken to avoid burdening already resource-constrained households and individuals.

Low-income homeowners should be connected to available incentives and programs. The cities should assess the range of state grant programs, utility rebates and nonprofit programs to provide a streamlined package of resources to property owners. Given the large number of renters, the cities will also need to address the split incentive by engaging with property owners and building managers.

The cities can encourage business models that actively promote electrification by working with chambers of commerce to create a brand around West Sacramento and Sacramento's high-tech buildings. The cities can also support workforce development by working with IBEW, community colleges and workforce development boards.

Implementation Tips

To further support this tactic, the cities can advocate for CalGreen to require electric space and water heating in equipment replacements and promote natural refrigerants in commercial refrigeration systems by forming a diverse coalition to lead advocacy efforts.

To achieve retrofit targets, the cities will need to develop an inspection program to improve permit compliance and identify unpermitted improvements. A point-of-sale program, for example, would support reach codes by ensuring that all homes sold have pulled permits and complied with codes and standards for HVACs, water heaters and other specified improvements.

The cities could explore opportunities to track and fine HVAC contractors who fail to pull permits or by creating a fund to provide incentives. A phased approach will be needed to combine consumer education, marketing campaigns, and incentives in the early years, followed by a mandate at a future date.

3.2. Establish a comprehensive electrification and energy-efficiency program to reduce the energy burden of low-income residences while expediting the decommissioning of aging natural gas infrastructure in frontline communities.

Energy efficiency is central to many electrification strategies. By pursuing a combined approach, the cities can cost-effectively maximize GHG emissions reductions and community benefits. Ultimately, energy efficiency provides a strong foundation for electrification by ensuring that increases in electric load do not increase electric supply costs or electric system emissions. Comprehensive community and stakeholder engagement will serve as fundamental pillars to successful implementation.[22]

As part of this tactic, the cities are also encouraged to expedite the decommissioning of aging natural-gas infrastructure, particularly in frontline communities that are burdened by higher levels of air pollution. The cities can work with SMUD and PG&E to incentivize early retirement of gas appliances and to electrify accounts instead of upgrading deficient fossil fuel gas infrastructure. This can help to avoid costly upgrades to gas infrastructure that will become stranded assets as the cities progress along their paths to carbon zero.

In 2019, the CPUC unanimously voted in favor of updating its energy-efficiency policy to allow access to funding if an appliance saves energy and reduces air pollution, regardless of technology. This decision essentially opens up the billion dollars spent annually on energy efficiency to support customers in switching from gas to electricity, such as for space heating and water heating. The tides are clearly turning in favor of electrification and the cities should leverage this and similar opportunities to support low-income residences in particular.

Energy efficiency is a well-known strategy to reduce GHG emissions, often regarded as one of the most constructive, cost-effective ways to combat high energy prices, energy security and independence, air pollution, and climate change. Although the benefits of energy efficiency are clear, programs and incentives that support energy efficiency are often underutilized.[23] As the cities look to electrify their existing building stocks, pursuing energy efficiency is critical, now more than ever before.

In addition to ensuring grid stability, notable opportunities to leverage energy efficiency for beneficial electrification include heating and transportation. Heating systems that use oil or propane in particular, which are more common among low-income households, are ideal candidates for electrification as these systems have higher costs and carbon emissions compared to natural gas systems.

Improvements in electric heat-pump technology also have made these appliances up to 300% more efficient, compared with 67% for a typical Energy Star gas water heater. Newer systems have also demonstrated greater effectiveness at lower temperatures compared to older natural gas heat pumps, particularly below 40° F. For transportation, energy efficiency will be an important strategy to effectively manage grid loads as more electric vehicles hit the streets.[24]

Opportunities for Neighborhoods and Businesses

As with their housing and transportation costs, low-income households spend a greater proportion of their income on energy than other households. In Sacramento, low-income households experience an energy burden of 5.3%, compared to 2.9% for all households in the area. Sacramento's low-income households were estimated to have a higher energy burden compared to residents in San Diego, San Jose and San Francisco.[25]

Due to lack of savings, disposable income and access to credit, low-income households have fewer viable housing options and often live in older, less-efficient homes that require more energy for heating and cooling. Many low-income households are also renters and may not be able to leverage existing energy efficiency incentives. Furthermore, this challenge presents a risk to public health and safety, especially due to rising temperatures and more severe and prolonged heat waves, as households with access to air conditioning may choose to limit air-conditioning use as a cost-saving measure.

By coordinating with utilities, public agencies and nonprofits to establish a comprehensive package of energy-efficiency incentives and direct install programs, the cities can enable all communities, particularly low-income households, to experience the benefits of energy efficiency – from lower energy bills to improved health and safety to reduced risks of utility shutoffs. The cities should work with partners to identify barriers to participation and evaluate and update programs to increase accessibility.

Property owners must be engaged to address the split incentive. The cities can seek to address this challenge by establishing clear energy-efficiency standards and upgrading rental-housing inspections. For example, the cities can set the attic-insulation standard for residential rental units to R-38 and provide landlords one year to comply after inspection, connecting landlords to weatherization programs and financing programs.

Coordinated action should also include steps to prepare low-income households for electrification by expediting the decommissioning of natural-gas infrastructure, the costs of which should not be borne by households.

A range of financing options can be leveraged to support both customers and contractors:

- Pay As You Save (PAYS)
- Property Assessed Clean Energy (PACE)
- Metered Energy Efficiency Transaction Structure
- Energy Savings Performance Contracting
- Incentives available through IBank's Statewide Energy Efficiency Program.

Increasing participation in energy efficiency programs can deliver a range of economic benefits, including reduced risk of utility rate increases, investment in the local economy, and local job creation, among others.[26] By closing the gap between available electrification and energy efficiency programs and participation rates, new jobs may be created to meet rising demand for retrofit services. The cities can engage with contractors to identify opportunities to improve and expand the types of incentives available to right-size incentives to foster implementation.

Implementation Tips

To further bridge energy-efficiency and electrification goals, the cities may consider adopting a local ordinance to maximize energy efficiency with options for PV and storage. Passive energy-efficiency strategies, such as increasing the use of daylighting, can reduce the size of required solar PV arrays to meet building energy needs. For commercial buildings, requiring conveniently located, appealing and safe stairs to reduce use of elevators can also decrease energy use, while encouraging physical activity.

The cities may also consider working with utilities to adopt a rate-based fixed infrastructure charge to better incentivize low-energy use and solar installations. That revenue can help to fund necessary infrastructure improvements to support full-scale electrification. Additional opportunities for utility partnerships include working with SMUD and PG&E to develop distribution-level solar PV on the customer-side of the meter including community solar projects, prioritizing locations for west-facing arrays or possible tracking systems for better generation at summer afternoon peak demand.

Furthermore, the cities could work with utilities to explore a future regional ban on natural gas to send clear signals that would aid SMUD and PG&E to incentivize early retirement of individual gas appliances.

Finally, the City of Sacramento is encouraged to help expand the Home Energy Conservation Program, an existing partnership of SMAQMD, SMUD, Rebuilding Together Sacramento and the Sacramento Association of Realtors that provides Tier 1 upgrades to owner-occupied homes.

3.3. Establish building performance standards and GHG emission limits by 2021 with 2026 as the first year of compliance supported by a benchmarking and audit ordinance.

By establishing building performance standards and GHG emission limits, property owners can be incentivized to play their part in achieving the cities' ambitious climate change goals. A building performance audit program will need to be supported by local ordinances that require building managers to track and disclose energy use and GHG emissions using standardized carbon-based metrics.

The proposed program would also include an energy audit to identify buildings that do not meet energy-efficiency standards to require upgrades and/or pay fees that can then fund other energy-efficiency and electrification incentive programs. The cities may consider new staff positions, or connect existing nonprofits to grant programs to expand their capacity, to walk building managers and property owners through their building audit results and connect them with existing incentives, technologies and contractors.

The cities may consider a point-of-sale program to enforce compliance at point-of-sale. Point-of-sale programs are highly controversial and present concerns about the potential to delay or complicate home

sales. Therefore, prior to considering mandating compliance, the cities should look to encourage voluntary action, such as by creating a financing incentive through energy savings for the buyer like an Energy Efficiency Mortgage.

Buildings of all types and sizes will need to become carbon neutral for the cities to achieve their carbon-zero vision, and the cities should explore all tools available to them to drive deep reductions in GHG emissions. While the growing suite of incentives and supportive programs can encourage voluntary action, there will likely come a time when the cities need to develop mandates. A phased approach will be critical to ease this transition with robust outreach and education to build public support and stakeholder buy-in.

The cities should demonstrate leadership by ensuring municipal buildings meet performance standards and the established GHG emission limits. Tracking and publicly reporting progress as the cities retrofit public buildings can help to alleviate concerns related to feasibility, economic viability and cost.

As 2045 gets closer, remaining emissions may be more challenging and costly to mitigate. Developing a program that includes effective enforcement measures and penalties can provide a new source of revenue to fund more costly climate-action strategies.

Opportunities for Neighborhoods and Businesses

To avoid unintended harm to marginalized communities and hold the largest polluters accountable, the cities should target high-emitting buildings. Targeted incentives for multifamily buildings can also ensure that lower-income residents benefit from energy-efficiency and electrification measures.

For larger commercial buildings that face additional barriers to reduce their emissions, the cities can look to a tiered approach. For example, the cities could establish a maximum carbon ratings matrix that is 33% below today's level by 2030 with interim milestones to provide a longer pathway for compliance. Providing a list of eligible measures – ranging from efficiency and electrification to reducing high-GWP refrigerants – can support implementation efforts.

Implementation Tips

Fast-tracking alignment with CEC-approved certifications that are modeled after leading building-industry certifications can provide clear pathways to help building owners meet performance standards. The cities can start by identifying packages and certifications appropriate for single family, multifamily and commercial buildings, including Passive House, Living Building, LEED and WELL Building certifications, and determining the building types and/or scales where certain certifications can be mandatory. To support the implementation of these actions, the cities should partner with the International Living-Future Institute, the U.S. Green Building Council, the Passive House Institute and the International Well-being Institute.

Exploring opportunities to reduce the cost of building retrofits can support implementation. For example, the cities could:

- Work with building owners to review energy audit results to determine upgrades that can yield the fastest or highest return on investment.
- Partner with manufacturers and developers to identify ways to reduce the cost of materials, such as through joint procurement efforts.
- Engage labor unions and organizations to identify opportunities to increase efficiencies, such as through advanced contractor training.

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MOBILITY

The mobility sector encompasses all aspects of the transportation system – including its infrastructure and travel modes– that enable efficient movement of people and goods. As the largest emitting sector in both cities, a comprehensive approach must be undertaken to enable clean transportation solutions by improving accessibility, connectivity and safety. A significant shift away from single-occupancy vehicles will be needed, a challenge that communities throughout California continue to face as they work to reduce emissions.

California has adopted state policies to support the necessary transition away from passenger vehicles. With the passage of SB-375, metropolitan planning organizations (MPOs) like SACOG are responsible for aligning land-use and transportation planning in a way that reduces emissions. The Air Resources Board has also established regional targets for reducing emissions that MPOs must create plans to achieve through their Metropolitan Transportation Plan/Sustainable Communities Strategies (MTP/SCS). SACOG's 2020 MTP/SCS highlights a multimodal transportation plan to achieve our region's target of a 19% reduction of GHG emissions per capita.

SB-743 also creates a process to change the way that CEQA analyzes transportation impacts, particularly within areas served by transit, to focus on reducing vehicle miles traveled (VMT). It also provides streamlined review of land-use and transportation projects that will help to reduce future VMT growth. To reduce VMTs emissions from passenger vehicles, cities will need to facilitate drastic mode shifts to increase travel by active transportation, transit and clean shared-mobility services, and accelerate the adoption of zero-emission vehicles (ZEVs).

Social equity must be prioritized to ensure that all communities can access clean mobility options, and outreach, education, incentives and engagement is needed to help shift behavior and cultural norms.

Private-vehicle ownership is the second largest expenditure for Americans on an annual basis.[27] When considering costs related to vehicle purchases, registration, insurance, fuel and maintenance, owning a car can be a significant financial burden, particularly for low-income individuals who lack access to other mobility options. To achieve the identified mode-share targets, the cities will need to partner with agencies and organizations throughout the region to create a strategic mix of incentives for clean mobility options and disincentives for internal-combustion engine vehicles.

TAC Vision

In a carbon-zero future, the Mobility TAC envisions all community members, particularly from marginalized communities, will have access to sustainable and affordable mobility options that facilitate public health and safety, livability, and economy vitality. Sacramento and West Sacramento will be a hub for leadership, innovation and advanced clean-mobility solutions. Our transportation systems will be fully electrified, innovative and seamless, offering a wide range of accessible, affordable and efficient mobility choices coupled with supportive land uses. Transit, shared mobility and active transportation infrastructure will be prioritized and vastly improved and expanded to reduce VMT and minimize single-occupancy vehicle trips.

Based on this vision, the Mobility TAC identified a prioritized set of recommendations with active transportation at the top of the modal hierarchy, followed by transit and shared mobility, then zero-emission vehicles.

The Commission has adopted the following strategies, which are each supported by a set of potential implementation tactics and financing options identified by the Finance TAC. The mode-share targets reflected in the strategies apply to trips within city limits.

1. Active Transportation
   Expand and enhance accessibility to low-stress connected infrastructure for walking and rolling, prioritizing improvements that address specific community and neighborhood needs so that:
   - 30% of all trips are by active transportation by 2030, and
   - 40% of all trips are by active transportation by 2045.
2. Transit & Shared Mobility
   Expand and improve transit and shared mobility services to be more accessible, affordable, timely, and attractive than single occupancy vehicle use so that:
   - 30% of all trips are by transit and pooled shared mobility by 2030, and
   - 50% of all trips are by transit and pooled shared mobility by 2045.
3. Zero-Emission Vehicles
   Develop a comprehensive package of incentives, disincentives, and policies to encourage the adoption of zero-emission vehicles (ZEVs) so that:
   - 70% of new vehicle registrations will be for ZEVs by 2030, and
   - 100% of all public, private, and shared fleets will be electrified by 2045.

These strategies essentially entail reducing single-occupancy vehicle trips by promoting active transportation for shorter trips and shared mobility and transit for longer trips, and expanding electric electric-vehicle adoption and charging infrastructure for trips that require vehicles. By making clean-mobility options more accessible, affordable, convenient and safe, the cities can create the environment needed to discourage single-occupancy vehicle trips and the need for owning personal vehicles.

Strategy Recommendation #1: Active Transportation

Expand and enhance accessibility to low-stress connected infrastructure for walking and rolling, prioritizing improvements that address specific community and neighborhood needs so that:

- **30% of all trips are by active transportation by 2030, and**
- **40% of all trips are by active transportation by 2045.**

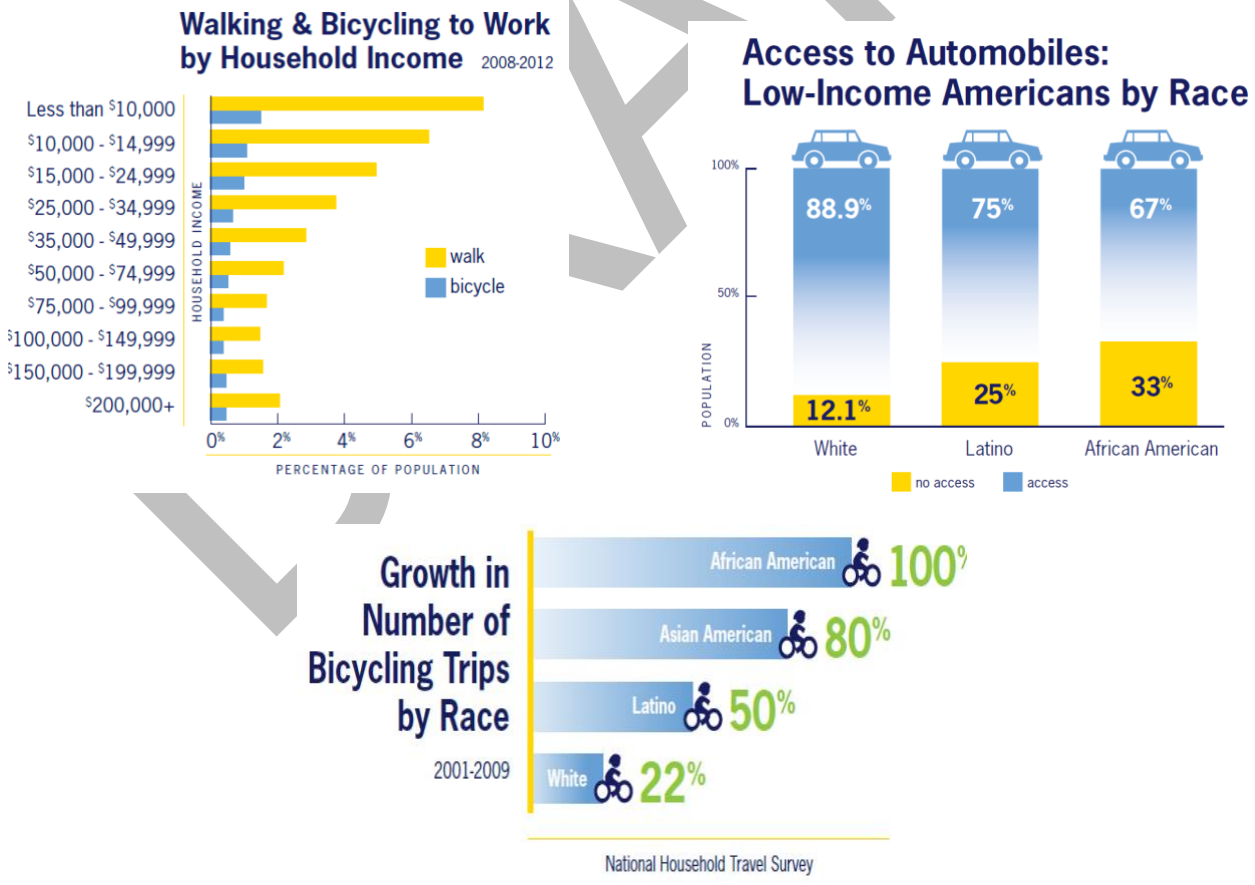
To achieve a significant shift away from vehicle use, the cities will need to create an environment that enables greater use of active transportation modes by making travel by walking and rolling more accessible, safe and convenient. This strategy is focused on making active transportation a viable and

attractive option by increasing the connectivity of active transportation corridors to create a seamless network, as well as by providing basic amenities at the neighborhood level so that shorter trips can be taken by walking or rolling to meet daily needs.

The Carbon Zero Opportunity

With a significant amount of emissions resulting from passenger vehicles, increasing travel by active transportation is a necessary and cost-effective strategy that the cities must pursue. Active transportation is prioritized at the top of the modal hierarchy, which aligns with the Commission's recommendations to promote infill development and urban density. Through pedestrian-centric design and improvements to walking and biking infrastructure, the cities can create a safe, attractive environment that promotes active transportation and reduces vehicle use, traffic congestion and air pollution. Active transportation can also provide important benefits from improved health as a result of regular physical activity and cost-savings for residents.

Providing adequate active transportation infrastructure directly benefits marginalized communities, particularly lower-income communities that rely on walking and biking to meet their basic needs. Studies have shown that families with annual incomes between $10,000-25,000 have higher rates of using active transportation methods. However, lower-income residents are twice as likely to be killed while walking to their destinations compared to higher-income residents.[28]



Overcoming Potential Hurdles

The cost of upgrading or creating active transportation infrastructure is likely the most significant barrier to implementation. By developing and implementing a staged plan based on comprehensive neighborhood-level audits, the cities can spread costs while prioritizing projects that address community-defined needs. The cities can also layer funds from multiple grants – such as active transportation and urban forestry grants – to implement more comprehensive projects.

Given the considerable economic benefits of greater foot traffic and use of public spaces, the cities can engage with businesses and developers to install active transportation infrastructure in new developments and improve existing commercial corridors.

Implementation Tactics

1.1. Adopt a policy to prioritize pedestrian travel at the top of the modal hierarchy. Funding should be proportionally allocated to make possible the mode shift targets.

The history of designing communities in a way that prioritizes the rapid movement of cars has created barriers for safe and convenient pedestrian travel. To reduce transportation-related emissions, policies and investments must reverse this trend by prioritizing pedestrians over cars to make active transportation a viable, attractive option. The cities should approach transportation projects from the perspective of pedestrians by informing and prioritizing projects based on an integrated set of safety, accessibility, connectivity and walkability criteria.

- **Safety:** Walkway and crosswalk improvements along high-speed, high-traffic volume streets and projects that improve safe travel to schools and other public facilities.
- **Accessibility:** Establishing fully accessible, ADA-compliant pedestrian routes and prioritizing locations that currently lack pedestrian infrastructure.
- **Connectivity:** Creating a seamless network of pedestrian routes by closing gaps and prioritizing connections to public facilities and commercial hubs.
- **Walkability:** Improving overall site amenities, protection from environmental conditions and traffic, and overall comfort and convenience of walking.

The potential of reducing emissions by increasing active transportation is undeniable. The 2017 National Household Transportation Survey found that 21.4% of all vehicle trips were one mile or less. With VMT on the rise throughout California, pedestrian-first policies and investments can significantly reduce VMT, particularly for shorter trips that can be easily completed through active transportation modes.

Investing in pedestrian infrastructure can also generate multiple benefits for communities and local economies. For example, a study in Vermont found that bicycling and walking created at least 1,400 jobs, $41 million in wages and $83 million in revenue from active transportation-related businesses and events.[29] Another study examining the benefits of Safe Routes to School projects in New York City found that the cost savings associated with the reduction of child pedestrian injuries would result in an overall net societal benefit of $230 million over a projected 50-year period.[30]

Opportunities for Neighborhoods and Businesses

Greater use of pedestrian facilities has compounding benefits for social cohesion, neighborhood safety and good health by making physical activity an integral part of daily routines. Prioritizing pedestrian travel at the top of the modal hierarchy can provide immediate benefits to communities, providing a safer environment for all transportation users – particularly children, seniors and people with disabilities – to travel to their destinations. Low-income households who do not own vehicles or face financial burdens associated with driving will also be able to use improved pedestrian infrastructure to meet their daily needs.

By making active transportation safe and convenient, the cities can create dynamic, connected communities that support local businesses and foster economic health. Enhanced connectivity between neighborhoods and commercial hubs can increase foot traffic and enable businesses to engage new customers, which is particularly important for smaller businesses that may not have a robust online presence. Improved pedestrian infrastructure can also make transit more accessible and allow customers from across the region to discover neighborhood businesses.

Implementation Tips

Other jurisdictions around the country have adopted similar policies:[31]

- Los Angeles County's Healthy Design Ordinance
- City of Boulder's Downtown Urban Design Guidelines
- City of Chicago's Complete Streets Design Guidelines
- Pennsylvania's Bicycle and Pedestrian Checklist
- City of Boise's Downtown Design Standards and Guidelines

1.2. Conduct a comprehensive neighborhood-level audit to identify deficient active transportation infrastructure and develop and implement a staged plan that prioritizes high-injury portions of the network by 2027. Pursue Vision Zero measures that make it safer (and more attractive) for residents to walk and roll.

By conducting a comprehensive neighborhood audit, the cities can engage residents and businesses to identify deficient active-transportation infrastructure and develop and implement a staged plan for network improvements. Safety should serve as a key filter, and cities should prioritize high-injury portions of the network by building upon the studies conducted and measures identified through Sacramento's Vision Zero campaign.

Active-transportation measures may include added or improved sidewalks, pedestrian/bike crossings, protected bikeways, bike storage facilities, efficient street lighting, covered rest areas, drinking fountains and wayfinding signs. The cities should prioritize marginalized communities and key travel corridors and consider optimizing traffic-signal timing for bicyclists to travel safely through busy streets and intersections to make it safer for bicyclists in high-injury portions of the network.

These measures can be layered to create an environment that makes walking and rolling more attractive, convenient, and safe for active transportation users. Marginalized communities and key travel corridors should be prioritized to target investments to address the greatest needs first and benefit as many users as possible.

With transportation accounting for the majority of each city's emissions, adding and improving active transportation infrastructure to create a seamless network can play a significant role in encouraging residents to walk and roll to their destinations. A study in Montreal looked at the effect of new cycling infrastructure on transport-related GHG emissions, and found that a 10% increase in the accessibility index of bicycle infrastructure resulted in a 3.7% increase in ridership. Based on this analysis, the model predicts that a 7% increase in bicycle network length reduces commute GHG emissions by nearly 2%.[32]

Although infrastructure improvements may be expensive, a staged plan can guide the cities in targeting investments in a cost-effective manner, which is very important in the current resource-constrained environment. The cities should leverage all available state and federal grant programs, particularly Caltrans' Active Transportation Program. This program will make $400 million available in the 2020 grant cycle to encourage increased use of active transportation.

Opportunities for Neighborhoods and Businesses

Grounding the cities' plans in neighborhood audits can help to ensure equitable prioritizations of projects and distributions of funding. Through inclusive, authentic community engagement, the cities can work with residents to identify key deficiencies and priority projects that can significantly increase walking and rolling trips. The cities can also leverage engagement activities to raise awareness about the health and environmental benefits of active transportation.

Studies have shown that walkable and rollable neighborhoods are more economically prosperous, as greater levels of foot traffic can increase local economic activity, increase property values, and spur business growth and job creation. For example, the redevelopment of a commercial district in Dublin, Ireland, to implement active-transportation measures led to a 300% increase in employment.[33] Considering the potential benefits to local businesses, the cities could work with business owners to coordinate active-transportation improvements.

Implementation Tips

The cities are encouraged to leverage best practices in community engagement and active-transportation infrastructure improvements to guide their efforts.

- Active Transportation Alliance: Complete Streets, Complete Networks Guide
- Cities Safer by Design: Guidance and Examples to Promote Traffic Safety through Urban and Street Design

1.3. Adopt a policy to accept traffic congestion for passenger vehicles to prioritize other modes and develop a transportation demand management (TDM) policy/program with incentives to help drivers to shift to walking and rolling for short-distance trips. The TDM program should be informed by proven strategies and developed, implemented, and completed by 2027.

The growth in the number of vehicles, sprawl development patterns, and rising costs of living in urban centers serve as primary drivers of traffic congestion. Historically, many transportation improvement projects focused on reducing congestion in response to public demand for roadway expansion. Rather than focusing on reducing congestion, this tactic calls for the acceptance of congestion levels for passenger vehicles and pursuing Transportation Demand Management (TDM) policies, programs and incentives to shift trips out of vehicles and into cleaner modes.

Successful TDM strategies targeting non-motorized transportation can lead to long-term changes in travel habits. One analysis indicates that an integrated program of improved cycling conditions, financial incentives, and improved trip end facilities could increase British cycling rates from about 6% to more than 20% for commute trips under 7.5 miles, about half of which displace automobile trips.[34]

Another study found the potential to achieve sizeable GHG emissions reductions by shifting short car trips to active modes as half of all car trips are less than 3 miles long. Taking into account individual travel patterns and constraints, walking or bicycling could realistically substitute for 41% of short car trips, reducing 5% of emissions.[35]

Opportunities for Neighborhoods and Businesses

The cities can target TDM strategies to benefit low-income households by improving transportation options, increasing affordability, or providing financial incentives. These strategies may include carsharing programs, commuter incentives, guaranteed rides home, pedestrian improvements, ridesharing, school trip management and alternative work schedules. Targeting work commutes to encourage clean mobility options can yield significant reductions in GHG emissions and as such, the cities should seek to partner with employers and businesses to pilot and implement innovative TDM strategies.

Implementation Tips

The cities should review TDM programs that have proven success in other cities. In Virginia, for example, Arlington County developed TDM strategies to create walkable, mixed-use urban villages, concentrating commercial, retail and multifamily development in high-density clusters around underground Metrorail stations or bus nodes connected by highly walkable pedestrian open spaces. The County created a balanced array of transportation resources, serving not only by a network of expressways and urban arterials, but a full complement of mode options including HOV lanes, subway and commuter rail, buses, bike trails and routes, and walking infrastructure.

The Arlington County Commuter Services program was created to raise awareness of available transportation options while providing various services for employers, residential complexes, and developers to provide education on business-friendly programs available to their employees and building occupants. As a result of these programs, Arlington residents driving alone to work decreased by 8-10%.[36]

1.4. Update design guidelines and street design standards for new development and prepare plans for commercial corridors to prioritize pedestrian-centric design and infrastructure improvements that enable all residents to easily and safely walk or roll to meet their daily needs. Identify at least one area in each city to pilot roadway conversions to support placemaking efforts. Create and promote a standard process to convert on-street parking spaces for other public uses.

By requiring new developments to prioritize pedestrian-centric design and infrastructure, the cities can work with developers to create attractive and safe spaces for active transportation users. The cities can leverage the wealth of studies conducted that demonstrate how pedestrian-friendly design attracts customers and increases local economic activity to obtain buy-in from the developer community and partner with existing businesses and property owners to prepare plans for key commercial districts.

With key amenities in close proximity to neighborhoods, residents will be encouraged to walk or roll to meet their daily needs. These amenities may include grocery stores, schools and healthcare facilities, but the cities should seek to obtain input from community members to identify local needs and priorities.

Travel by walking and rolling can be further encouraged by supporting placemaking efforts and creating spaces for public use, such as parklets and plazas and implementing other innovative streetscape enhancements – prioritizing areas with high volumes of pedestrians and bicyclists. By piloting roadway conversions and alley activations, the cities can create accessible public spaces in dense, urban environments.

Ultimately, creating more space for pedestrians can help to shift the pervasive car-centric culture to promote active-transportation lifestyles.

Opportunities for Neighborhoods and Businesses

With fewer cars on the road, communities will benefit from cleaner air and a range of health benefits associated with active transportation. This tactic calls for infrastructure improvements that enable residents to meet their daily needs by walking and rolling. By making active transportation not only feasible but more attractive, residents can benefit from making regular physical activity a greater part of their daily routines.

Through active community engagement and by involving residents in investment decisions, particularly in marginalized communities, the cities can support placemaking initiatives in a way that meets local needs and goals to avoid unintended consequences. As with any neighborhood improvement, the risk of gentrification and displacement must be countered by having strong anti-displacement measures in place.

As opportunities to provide daily amenities within walking and rolling distances of neighborhoods are identified, new business opportunities emerge. The cities can support inclusive economic development by providing business development assistance to new entrepreneurs – particularly low-income residents. The cities can also promote new businesses that support pedestrians and bicyclists to further encourage active transportation, such as bike-repair shops.

Implementation Tips

As communities throughout the country work to encourage active transportation through urban design and streetscape enhancements, the cities can leverage existing models and practices for inspiration and guidance. Key resources include:

- Tactical Public Realm Guidelines

- Reclaiming the Right of Way: A Toolkit for Creating and Implementing Parklets
- NACTO Urban Street Design Guide

1.5. In coordination with community leaders and residents, identify gaps in neighborhood needs that would encourage active transportation. Develop resources to support community-led initiatives to address identified gaps.

Similar to the previous tactic, this strategy calls for identifying gaps in neighborhood needs to encourage active transportation while addressing unmet needs such as community gardens or produce shops, specifically by coordinating with community leaders and residents and developing resources to support community-led initiatives. With daily amenities in closer proximity to residences, it will become more viable and attractive to complete these shorter trips through active transportation.

The cities can achieve additional benefits by supporting community-led initiatives to address the identified gaps. With many active nonprofits in the region, the cities can pursue partnerships to connect residents with existing training opportunities, grant programs and financing options, and technical assistance to build community capacity and resources to implement initiatives. Enabling communities to lead their own initiatives can build a sense of ownership and increase long-term viability and sustainability of new ventures.

Opportunities for Neighborhoods and Businesses

By supporting communities in leading initiatives to address gaps in neighborhood needs, the cities can help to improve community connectivity, social cohesion, and health outcomes while supporting job creation. Local business and community spaces, such as community gardens, can bring residents out of their homes and provide opportunities for neighbors to connect with one another. Community connectedness is particularly important as climate-change impact worsen. Neighbors who know one another will be more readily willing to support one another during times of emergencies and disasters.

Local businesses are more likely to hire local workers – from store employees to local architects, contractors, accountants, insurance brokers and more. The American Independent Business Alliance also found that local businesses are more likely than chain stores to carry locally produced goods. All of these factors converge to create a "multiplier effect," meaning that each dollar spent in a local store brings as much as $3.50 into the local economy. By contrast, large chain stores tend to displace as many local jobs as they create, because they often drive local retailers out of business.

A 2011 study published in the Cambridge Journal of Regions, Economy and Society found that U.S. counties with thriving local businesses also have lower mortality rates, a slimmer population and a lower incidence of diabetes. The study concluded that the population's health is better in communities with greater concentrations of small businesses. Many other studies like this one demonstrate the importance of encouraging small-business development, particularly in marginalized communities that have higher rates of unemployment and poor health conditions.

Implementation Tips

Partnering with nonprofits and community-based organizations to create incubators to support community initiatives, local entrepreneurship and small-business development can serve as a streamlined vehicle to connect residents with resources and assistance.

1.6. Develop and implement a green connections strategy to create a seamless network of low-stress, multi-use paths and trails and increase access to parks and open spaces. Implement pilots that promote greater use of active transportation modes and incentivize behavior change.

The ability to travel safely to school, work, restaurants, retailers, parks and other daily amenities is extremely important to encourage active transportation. Low-stress paths and trails can be expanded to create a seamless network to establish undisrupted, guaranteed routes for non-vehicular travel. For these trails to be usable, they must lead to purposeful destinations and have seamless connections that ideally avoid putting users in harm's way, such as busy road crossings.

Studies have shown that when active-transportation systems are put into place, the average protected bike lane sees bike counts increase by 75% in its first year alone.[37] There are also significantly higher bike commuting rates in cities with more bike paths and lanes.[38] Commuting trails in some urban areas are known to carry more than 1,000 commuter trips each day.[39]

Incentive programs, such as by paying residents to reduce vehicle miles traveled or launching communitywide competitions with prizes, can also be used to increase awareness and use of improved active-transportation routes. When implemented successfully, incentive programs can have long-lasting effects, such as Seattle's "Way to Go," which paid participants to participate in a mode-shift study that lasted 6-9 weeks. At the end of the study, participants reduced their drive-alone VMTs by 27%, bicycle mileage increased by 38%, transit use by 25%, carpooling by 23% and walking by 30%. Six months after the study, 80% of participants reported reduced rates of driving, and 26% of participants sold their extra household car.[40]

If cities around the world made a strong, sustained commitment to promoting bicycle travel and it resulted in a scenario where 14% of travel in the world's cities was by bike or e-bike in 2050, carbon emissions from urban transportation would be 11% lower than if efforts to promote sustainable transportation did not include bicycling.[41]

Opportunities for Neighborhoods and Businesses

Cities around the country have found that protected bike lanes increase bicycle ridership, reduce motor vehicle speeding, reduce crashes, and improve people's feelings of safety on those streets.[42] Multi-use trails have also been shown to be particularly beneficial in promoting physical activity among women and people in lower-income areas.[43] Separated bike paths can provide additional benefits, particularly through improved air quality compared to traditional bike lanes on roadways that are shared by vehicles.[44]

Retail shops, restaurants, accommodations and other industries in local and regional economies can experience notable economic benefits when in proximity to shared-use paths. They may make a commercial corridor more accessible to foot traffic, increasing browsing opportunities and encouraging

access to local goods and services, as well as enable residents to reduce transportation expenses, which can free up funds to be spent at local businesses.

Studies conducted in specific shared use paths found that businesses in the proximity of the trail attributed one-quarter of gross revenue to trail users. Properties in close proximity to shared-use paths can also experience both higher real-estate values and higher rates of property value increases, with one study finding that property values within a one-half mile of the trail are valued conservatively at 5% higher than other properties and that properties close to trails are considerably easier to sell.[45] The cities should therefore pursue anti-displacement measures in conjunction with their green-connections strategy.

Implementation Tips

The cities can look to other communities with higher active-transportation rates as models, such as Davis, a longtime model community for planning and implementation of non-motorized transportation facilities. Much of its success can be attributed to the city's Comprehensive Bicycle Plan, which put bicycle transportation on par with all other transportation modes. With these policies, its 64,000 residents benefit from 50 miles of dedicated bike lanes and 51 miles of bike paths and maintains a thriving bike-friendly community.[46]

The cities can also explore existing incentive programs that can be leveraged, such as services by Agile Mile, which provides rewards for commuters who take "greener trips." State and local governments can highlight this program and encourage employer sponsorship in order to provide clean mobility incentives at no cost to the agency.[47]

1.7. Establish car-free districts on weekend nights in areas that offer local commerce, recreation, and arts and culture.

Car-free districts can be limited to a few hours to a full day or more as a recurring temporary feature or as a permanent installation. There is a long history around the world of various movements to limit car movement in certain districts ranging from CicLAvia in Los Angeles and Sunday Cilovias in Bogota to world car-free days in which many cities across the globe participate. These events primarily aim to encourage people to use different forms of low- or zero-emission transportation and change their views on how to move. Car-free districts and events can serve as useful awakenings to residents on the possibilities of a different urban environment and catalyze a "pattern break" that promotes awareness of transportation alternatives.[48]

Demonstrating the feasibility and benefits of active transportation by establishing car-free districts, the cities can shift the pervasive car-centric culture and mindset of needing vehicles. Residents can experience first-hand the possibilities of car-free travel and if this attitude influences their daily routines, the cumulative effect on reducing emissions can be profound. Car-free events can also achieve short-term measurable reductions in pollution levels. For example, during World Car-free Day in 2019, estimates indicated that nitrogen dioxide levels were reduced by 7% compared to an average Sunday in London. On the same day, a temporary air-quality monitoring site measured a 60% decrease in nitrogen dioxide compared to the day prior.[49]

Opportunities for Neighborhoods and Businesses

People in cities are regularly exposed to noise levels above 85 decibels from traffic, subways, industrial activity and airports, which can cause significant hearing loss over time and is a common concern among community members.[50] Car-free days or events can effectively reduce noise in city centers. For example, Brussels Environment found a reduction in noise levels of over 10 dB on car-free Sundays. The study also found that increased pedestrian flow in the public realm offered more opportunities for social interaction.[51]

Business owners often fear losing car-based customers during car-free events, and are often concerned about delivery services. However, strong evidence points to how retail can flourish in car-free areas through increased customer turnover, lower shop vacancy rates, increased sales level, increased foot traffic and increased property values.[52]

During San Francisco's Sunday Streets program, for example, small businesses can expect an increase in customer activity and sales during the event, and a total output of $9.32 was generated for every dollar spent during the event.[53]

Implementation Tips

Strong community and business support is critical for a car-free project to be successful and repeated. Project-location and initial project-size decisions are also important factors to success. An overly ambitious pilot may result in less participation, which can reduce the possibility of further attempts. However, an overly cautious initial phase can produce little tangible benefits which can damage the future prospects. The cities are encouraged to conduct a full stakeholder analysis, seeking input from all relevant groups, organizations, and agencies prior to piloting a car-free district.

1.8. Implement low-carbon cargo zones in hot spots for air pollution and congestion by creating consolidation spots for delivery companies and requiring the final leg of deliveries to be completed by walking, rolling, or ZEV.

Last-mile delivery of goods is considered to be the most expensive and polluting segment of the supply chain network. Heavy-duty vehicles account for 27.2% of total highway transportation energy consumption and 66.4% of total highway vehicle PM2.5 emissions.

Delivery consolidation could significantly reduce urban congestion and vehicle emissions if structured properly. One effective method for reducing last-mile delivery costs is to consolidate goods at specific locations, which can significantly reduce congestion and emissions. Urban consolidation-center strategies can generate cost savings when pursued at a larger scale, with the bulk of savings coming from lowering logistics costs.[54]

Studies have shown that using urban consolidation centers in combination with final-leg deliveries being completed by walking, rolling or ZEV can be highly effective with a reduction of CO2 emissions per parcel delivered by 20-40% when compared to using diesel vehicles.

In London, a stationary and office-supply company conducted a trial using consolidation centers in combination with ZEVs such as cargo tricycles and electric vans for delivery. The results showed that the total distance travelled and the CO2 emissions per parcel delivered fell by 20% by using cargo tricycles and by 40% using electric vans, against that emitted by diesel vehicles.[55]

Technology required to use ZEV for transporting large amounts of goods to locations, such as to grocery stores or other large stores, may not yet be available or deemed cost-effective. Implementation of low-carbon cargo zones will likely need to be phased in upon the availability of such technology, and may be piloted in areas that suffer from greater pollution levels to support research and development.

Opportunities for Neighborhoods and Businesses

Improved air quality and reduced congestion in the low-carbon cargo zones can have a significant effect on surrounding neighborhoods. By piloting low-carbon carbon zones in areas that experience higher levels of pollution and congestion, combined with extensive business outreach and workforce development, the cities can provide multiple benefits to marginalized communities.

According to a 2018 survey, 81% of global consumers expressed that it is extremely or very important for companies to implement programs to improve the environment, while 73% said that they would either definitely or probably change their consumption habits to reduce their impact on the environment.[56] These numbers speak to the importance of sustainability for consumers; and with last-mile delivery being the most polluting sector of the supply chain, reducing the last-mile environmental impacts would have a positive effect on business.

Implementation Tips

One method for long-term success of urban consolidation centers is to look to the consumer instead of the provider of goods. A model by a Dutch company targets small and independent receivers within the serviced area instead of targeting large shippers. This means that the consolidation center becomes the only method for the small customers to receive their goods. Large shippers who want to do business with the customers must go through the center, and then share the cost of last-mile deliveries with the consolidation center.[57]

Amazon, UPS and DHL are testing using cargo bikes in New York City in a pilot focused on reducing congestion. The New York City Department of Transportation set a goal of launching 100 cargo bikes in the program, which will occur in an area of the city where a congestion-pricing plan is set to begin in 2021.[58]

Strategy Recommendation #2: Transit and Shared Mobility

Expand and improve transit and shared mobility services to be more accessible, affordable, timely, and attractive than single occupancy vehicle use so that

- 30% of all trips are by transit and pooled shared mobility by 2030, and
- 50% of all trips are by transit and pooled shared mobility by 2045.

To achieve carbon zero, transit must be at the center of a robust multi-modal transportation network. Particularly for longer trips where active transportation may not be feasible, transit and pooled shared-mobility options should be prioritized. In Sacramento and West Sacramento, only about 4% trips are currently completed by transit, and drastic changes will be needed to achieve the recommended targets of 30% by 2030 and 50% by 2045.

A 2017 poll conducted by the American Community Survey found that about 15.4 million Californians use a vehicle to get to work. In those 15.4 million, approximately 13.5 million were commuting alone. Only about 920,000 choose to take public transportation.[59] A 2016 Brookings Institute study also revealed that 76.3% of working Americans commute in single-passenger vehicles, while only 19% used alternative methods (telecommute, carpool, public transportation).

The Carbon Zero Opportunity

By creating a robust multimodal transportation network centered around electrified mass transit, the cities can effectively reduce transportation-related emissions by shifting users away from single-occupancy vehicle trips. The rapid evolution of the transportation sector in recent years has brought online numerous shared mobility services - from bike- and scooter-shares to ride-sharing and ride-hailing services. Looking beyond traditional public transportation, the cities can leverage both transit and shared-mobility services to encourage residents to use multiple clean-mobility options to meet their travel demands.

Commuting by transit has proven to be one of the most significant actions to reduce household carbon emissions, and widespread adoption would generate even deeper reductions. In addition to saving 4,800 pounds of carbon emissions per year, taking transit to work can save a two-worker household more than $6,000 annually.[60]

Overcoming Potential Hurdles

The cost of expanding transit infrastructure and services remains the single largest barrier. The cities are encouraged to engage with regional partners and transit agencies to create new mechanisms to generate revenue, such as establishing low-emission zones and congestion pricing through a phased approach. The cities can also identify innovative, lower-cost solutions to providing transit service such as by expanding micro-transit services or partnering with shared mobility service providers.

The accessibility and affordability of transit and shared mobility are common concerns among users, particularly low-income marginalized populations. The cities should engage residents to identify locations for new transit stops and provide free or discounted transit passes to low-income riders. The cities should also establish requirements for city-regulated, private shared-mobility service providers to ensure access for people with disabilities, and install kiosks that enable transportation users to access mobility options with alternative methods of payment.

To further encourage transit use, the cities will need to address the social stigma of vehicles serving as markers of success, as well as notions that transit is not safe or reliable. The cities can partner with organizations to conduct a robust outreach campaign to demonstrate the benefits of transit and shared

mobility, and create user surveys to identify and implement improvements for transit stations and shared-mobility services.

Implementation Tactics

2.1. Adopt a transit-first policy in arterial corridors and any new highway expansions to direct funding and capacity to expand and electrify mass transit. Funding should be proportionally allocated to make possible the mode shift targets.

A transit-first policy would ensure investments in the transportation sector reduce VMTs and emissions from passenger vehicles, the single largest source of emissions for both cities and many communities throughout California. Any new transportation investment should prioritize transit over passenger vehicles to meet the ambitious yet necessary mode-shift targets to achieve carbon zero.

With the cost of transit infrastructure and service improvements serving as the biggest barrier, funding must be prioritized to enable the improvements needed to make transit more accessible, convenient and safe for all users. Transit-priority improvements can also include designated transit lanes and improved signalization to expedite the movement of transit vehicles and improve pedestrian safety, parking policies for areas well-served by transit to discourage vehicle trips, and targeted investments to ensure transit access for new developments.

Opportunities for Neighborhoods and Businesses

Adopting a policy that promotes transit use and expedites the movement of transit vehicles can encourage ridership by reducing headways and enabling travelers to reach their destination faster. As transit is a much more affordable option compared to owning and operating personal vehicles, a transit-first policy can foster an environment that makes taking transit more convenient and attractive.

Proximity to transit is also generally considered a net benefit for real-estate assets because it enhances accessibility to jobs and other amenities. A transit-first policy can help to spur local economic activity, particularly by expanding services to commercial districts.

Implementation Tips

The cities can review existing transit-first policies to inform their own policies, such as policies adopted by San Francisco Municipal Transportation Agency and City of El Cerrito.

2.2. Create integrated mobility hubs near transit stops, prioritizing under-resourced communities, to address first/last mile connections. The pilot hubs can showcase innovative mobility solutions while supporting community placemaking efforts by serving as a destination for travelers and residents to meet their daily needs, incorporating new technology as it becomes available.

Gaps in transit services between one's origin or destination to a transit stop can deter the use of transit. These first/last-mile connections are particularly of concern for users with particular mobility needs such as people with disabilities, older populations, and families with young children. For all types of users, first/last-mile gaps can lengthen trips and make transit an impractical or unfeasible option to meet their daily needs.

By creating integrated mobility hubs near transit stops, multiple clean modes can be brought together to address first/last-mile connections, such as bike storage facilities, bike- and scooter-shares, ZEV carshares and microtransit services. These hubs should also include ZEV charging/fueling stations and seamlessly connect to a network of active transportation routes. Leveraging mobility hubs as a placemaking initiative can create economic opportunities that preserve the community's culture while supporting travelers in meeting their daily needs, such as through art, local stores and produce shops.

Integrated mobility hubs can reduce transportation-sector emissions by making transit and clean-mobility options more accessible and attractive, which can further encourage users to adopt longer-term changes to their transportation patterns. A study in Bremen, Germany, found that mobility hubs led to the replacement of more than 4,200 privately owned cars on the road with 290 carshare vehicles.[61] Many low-cost mobility services can be introduced to mobility hubs to support cost-effectiveness.[62]

Opportunities for Neighborhoods and Businesses

Mobility hubs can support transit-dependent populations, often low-income households and those who are not able to drive such as people with disabilities, youth, and elders. This tactic focuses on prioritizing under-resourced communities to enable residents with the least resources to benefit first from the more accessible and affordable travel options that mobility hubs provide.

Mobility hubs can directly spur local economic activity by drawing more people to nearby shops and services and by creating opportunities for new businesses that provide traveler amenities. By showcasing innovative solutions and technology, mobility hubs can also create more visibility and excitement to enable these solutions to take root and become more viable and widely adopted.

For example, public agencies are partnering with Green Tech Education and Employment to develop a $1 million mobility hub that offers zero-emission transportation options to low-income residents in Del Paso Heights. This hub will turn a blighted lot into a landscaped area with a 12-car lot, space for an electric ridesharing bus to make stops, trees, benches and a parking space for a food truck.[63] The hub is expected to provide a range of benefits to residents, and spur local economic activity.

Implementation Tips

The cities can turn to established mobility hubs that offer valuable lessons, such as those in Bremen, which were created in 2003. Several efforts currently underway can also help to inform hub development, such as initiatives in Los Angeles to create local Neighborhood Mobility Hubs, larger Central Mobility Hubs that offer car share, bus shelters and other amenities, and Regional Mobility Hubs that connect to regional transit providers.

2.3. Encourage the use of transit among low-income and underserved populations by working with communities to identify new transit stops, increasing route frequency, providing discounts to low-income riders, seniors, and people with disabilities, and partnering with community organizations to highlight alternative mobility choices.

Effective transit services are essential to achieving carbon zero, particularly for low-income and underserved populations, as transit is much more affordable than purchasing a ZEV or using paid shared-mobility services on a daily basis. Nationwide, trips under two miles represent 46% of travel, but just 2% of those trips use transit. Many of these trips in the afternoon or evenings – such as to daycare centers, laundromats or grocery stores – when buses run less frequently.[64]

To make transit an accessible and convenient option, community needs must be met. Key unmet needs and factors that may discourage transit use include the lack of nearby transit stops, infrequency of services, long waits for transfers, inefficient routes and connections, and the lack of bus shelters, benches and lighting. Some community members have also expressed concerns about safety at bus stops and light-rail stations, and on buses and trains. The cities should work with transit agencies and community-based organizations to assess user needs to strategically improve and expand transit services in a way that will increase ridership among their most underserved communities.

Opportunities for Neighborhoods and Businesses

High fares are a major deterrent for low-income riders. Even with subsidies and fare discounts for certain groups, transit can still be cost-prohibitive for certain residents.[65] Engaging with community members to understand their needs can inform how different levels and types of incentives can encourage greater use of transit.

Increasing transit use can create a positive feedback loop, as increased ridership can generate additional revenue for transit agencies to invest back into their systems and operations, which can further increase ridership.

Implementation Tips

The cities should use the Mobility Equity Framework developed by Greenlining Institute to:

1. Identify the mobility needs of a specific low-income or underserved community.

2. Conduct the mobility equity analysis to prioritize transportation modes that best meet those needs while maximizing benefits and minimizing burden.

3. Place decision-making power in the hands of the local community.

2.4. Establish requirements for city-regulated private shared-mobility service providers to ensure access for people with disabilities, expand service to underserved communities, establish more affordable options for low-income users, provide alternative methods of access and payment, and electrify shared mobility operations. Encourage bike-share providers to add cargo e-bikes and options for people with disabilities.

Transportation Network Companies (TNCs) such as Lyft and Uber have become widely available in cities across the U.S. and beyond. Approximately 170,000 TNC vehicle trips were estimated to occur in San Francisco during a typical weekday, representing approximately 15% of all weekday vehicle trips, according to an analysis using data from 2016. Another study found TNC trips to account for approximately 50% of the change in congestion in San Francisco between 2010 and 2016.[66]

While TNCs and the emergence and expansion of other shared-mobility services – including electric bike-, scooter- and car-share programs – have created viable alternatives to owning and driving personal vehicles, both the emissions and equity issues that result must be addressed.

A recent study by the Union of Concerned Scientists explored the common issue of deadheading, which results in higher per-trip emissions, finding that a non-pooled ride-hailing trip generates about 47% greater emissions than a private trip in a vehicle with average fuel efficiency. This increase in emissions can be mitigated by using pool rides or by using ride-hailing to connect with transit, or when drivers use electric vehicles.[67]

SB-1014 (signed into law in 2018) requires TNCs to measure their GHG emissions on a per-passenger-mile basis. The cities should seek to engage and ultimately require TNCs and shared mobility-service providers to electrify their operations – from the shared vehicles themselves to delivery vehicles that transport electric bikes and scooters to charging sites.

Opportunities for Neighborhoods and Businesses

To enable all residents and travelers to use and benefit from shared-mobility services, the cities should strengthen their regulatory oversight over those companies to ensure accessibility and affordability. Through requirements or partnerships, the cities can work with shared-mobility service providers to pursue creative solutions that increase access to people with disabilities, marginalized neighborhoods, low-income households, users without credit cards and other users who face barriers to using shared-mobility services.

As many residents increasingly rely on these services (whether to get around town or as a source of income), the cities must be mindful to not cause unintended harm. Early and ongoing engagement with the companies, employees and users will be critical to identify solutions that reduce emissions, expand access, and avoid unintended consequences. For example, a phased approach to requiring TNCs to electrify their fleets can help to minimize disruptions to their operations and drivers.

Implementation Tips

Many cities are turning their attention to making shared-mobility options cleaner and more accessible, which can provide valuable lessons and ideas for Sacramento and West Sacramento. For example, the cities should look to adaptive bike-share pilot programs for people with disabilities in Portland, Detroit and Oakland.[68] To address financial barriers, many companies are exploring alternative payment options, such as shared-mobility memberships paid through phone bills or partnerships with credit unions.

The cities can use resources such as the Shared Mobility Policy Playbook guide strategic transportation planning and assess how shared mobility can be incorporated into transportation plans and models; and reference best practices, lessons learned, and case studies to aid policy development.

2.5. Develop a comprehensive package of incentives, disincentives and policies to reduce inbound/outbound VMT between neighboring jurisdictions. The savings from these programs should be reinvested in transit and shared mobility.

The pervasive car culture requires a comprehensive package of incentives to discourage single-occupancy vehicle trips and encourage lower emission modes of travel. As cities throughout the SACOG region work toward the 19% VMT reduction target, Sacramento and West Sacramento can lead this effort and coordinate with neighboring jurisdictions to align incentives.

The cities should also work with employers to incentivize low-carbon transportation options:

- Provide monetary incentives for active transportation.
- Subsidize transit fares.
- Eliminate parking incentives for Internal Combustion Engine (ICE) vehicles.
- Install charging stations for ZEVs at workplaces.
- Offer carpool programs that may be coordinated with other nearby employers or by providing cash payments to employees who carpool or vouchers that cover fees for participating in existing vanpool programs.
- Establish Guaranteed Ride Home programs for commuters who regularly carpool, vanpool, walk, roll or take transit to work to provide a free and reliable ride home when unexpected emergencies arise.
- Encourage telecommuting or flexible working hours to allow employees to encourage work-life balance and reduce the need to travel.

A moratorium on highway expansions can also further discourage single-occupancy vehicle trips by accepting congestion levels and investing instead in active-transportation infrastructure and transit improvements.

Opportunities for Neighborhoods and Businesses

Incentives are needed to enable and encourage residents and employees to break their current transportation patterns and experience the benefits of cleaner alternatives. Incentives can be targeted to address challenges that both employees and businesses face, such as lost productivity, poor work-life

balance and retention. A survey found that 23% of American workers have quit a job they would have otherwise kept because the commute was unsustainable.[69]

A Stanford study observing a travel agency in Shanghai found that telecommuting enabled employees to perform "true work shifts" by avoiding commutes, which led to greater productivity and significant cost savings to the company – saving $2,000 per telecommuting employee by renting less office space.

Implementation Tips

One example of a successful employee transportation program is Microsoft's MERVE, a by-reservation network of buses that fans out into the region to pick up employees near their homes at set times and brings them to and from work in areas where Microsoft employee commute routes are underserved by transit. MERGE will soon tie into the regional bus and van-pool network, showing departure and arrival times from at least three different metro bus agencies.[70]

2.6. Recognizing the reality of transit patterns, develop a strategic plan to invest in a Northern California mega-regional, innovative rail and transit network in partnership with Capitol Corridor, Caltrans, San Joaquin Rail, ACE Rail, SACOG, and SF Bay Area MTC with a goal of electrifying corridors and reducing travel time to one hour from Sacramento to the Bay Area.

While the workforce in the Northern California region increased by 17% between 2010 and 2013, commuters crossing regional boundaries have grown by 78%. Of all 191,500 commuters crossing regional boundaries in 2013, 68.7% were commuting into the Bay Area for work. This pattern of movement is in part caused by the Bay Area's lack of affordable housing for its employees who live in and commuting from other parts of the region.

This rapid shift has increased congestion on major roadways and illustrates the importance of transportation agencies coordinating to improve the usability and speed of interregional public transportation. Currently, each of the mega-regional transit lines carry more than 1 million passengers annually, and ridership growth is especially strong on the routes serving the Northern San Joaquin Valley.[71]

In the Bay Area, the Caltrain corridor alone is responsible for avoiding more than 200 metric tons of GHG emissions per day. Over the course of the year, that amounts to 50,000 metric tons of avoided emissions, and more than $1 million on the cap-and-trade market. The successful implementation of California's State Rail Plan 2040 vision and the anticipated mode shift from highways to rail, emissions would reduce by nearly 20 times per passenger mile.

Opportunities for Neighborhoods and Businesses

The rail system has the potential existing latent capacity to provide additional service, with more efficient performance. With longer trains, more frequent services, better connectivity and greater ease of access, the number of riders will grow, thus reducing the average per-passenger costs.[72]

Electrification of the rail network would not only reduce emissions, but also generate a number of other benefits. Electric trains can accelerate and decelerate faster and stay at top speeds for longer periods of

time, which allows trains to make more trips and provide shorter trips for passengers. Due to regenerative braking capabilities and less power lost when the train is idling, electric trains are much more energy-efficient. Electric trains are also quieter and can offer lower operating and maintenance costs.[73]

Implementation Tips

The cities are encouraged to work with transit agencies to:

1. Support the Altamont Corridor Express' growing ridership with improved level of service by increasing the frequency of trips and expanding the service area.
2. Make Capitol Corridor a more attractive option for commuters by increasing frequency, expanding the service area, and reducing travel time.
3. Improve and expand the San Joaquin Amtrak service as the current frequency and times of service are major impediments to serve the commuter market.
4. Improve rail connectivity at the state level, prioritizing investments in transit hubs in Livermore, San Jose and Oakland.[74]

2.7. Eliminate minimum parking requirements where appropriate and feasible based on community needs and incentivize developers to offer options in lieu of vehicle parking spaces. Implement a performance parking program with equity measures that includes unbundled parking, ending monthly passes, and implementing demand-based pricing to ensure appropriate occupancy to eliminate cruising.

Minimum parking requirements for developments place a significant burden on planners and developers and incentivize personal vehicle ownership, and thereby increase emissions from passenger vehicles. While the cities removed minimum parking requirements for some districts, this policy can be more widely adopted and aligned with alternatives that would support cleaner modes of transportation. For example, the cities can enable and incentivize developers to provide transit passes, bike parking facilities or carshare pods in lieu of vehicle parking spaces.

Performance parking programs can be used to manage the demand for parking by implementing higher curbside parking meter rates combined with more stringent parking restrictions in residential neighborhoods and time limits to encourage higher turnover in commercial districts. These disincentives for parking can promote non-automotive transportation, reduce congestion, and encourage walking, rolling and transit use in lieu of private-vehicle travel.

Opportunities for Neighborhoods and Businesses

Replacing minimum parking requirements with incentives for active transportation and transit use can deliver cost savings for both residents and developers. The high price of vehicle ownership, from purchasing and insuring to fueling and maintaining their cars, is already cost-prohibitive for many low-income households. The cost of constructing parking spaces can also make affordable housing more expensive for both tenants and developers.

In 2012, the average construction cost of parking structures in 12 American cities was $24,000 per space for aboveground parking and $34,000 per space for underground parking. Eliminating minimum parking

requirements can reduce infrastructure costs by 67% for aboveground structures and 93% for underground structures.[75]

The elimination of minimum parking requirements can boost local economic activity by increasing amounts of affordable housing and thereby improving employers' abilities to attract and retain employees and remain competitive in the global economy.

Implementation Tips

A UCLA study found that, around the country, 700,000 renters who do not have cars are nevertheless paying for parking to the tune of $440 million a year.[76] Numerous cities have reduced or abolished parking minimums citywide, along transit lines or in urban districts. For example, Seattle developers built 40% less parking than would have been required prior to the reforms, resulting in 18,000 fewer parking spaces and saving an estimated $537 million.[77] Seattle also passed a bill to allow for flexible use parking.

2.8. Rapidly accelerate shared, electric, and pooled rides through parking pricing incentives, a range of public and private mobility options, and coordination with commuter programs and ride-matching, with the inclusion of accessible vehicles and autonomous vehicles.

The mobility sector is continuing to evolve rapidly as new services become online, including on-demand microtransit services in West Sacramento and SacRT's smaRT ride. In March 2020, a new rideshare service called "Go360" also entered the Sacramento marketplace, serving users in dense, urban areas through all-electric pooled rides to support first- and last-mile connections.[78]

While the rapid launch of new mobility options provides increased transportation options for consumers, enabling more residents to forego car ownership, transportation emissions continue to rise. A Union of Concerned Scientists study found ride-hailing trips from shared mobility TNCs created 69% more pollution on average than the trips they replace. On the other hand, an electric, pooled ride-hailing trip can cut emissions by 68% compared to a private vehicle trip.[79]

Recognizing this issue, SB-1014 (signed into law in 2018) requires TNCs to measure their GHG emissions on a per-passenger-mile basis. The cities should engage TNCs to capitalize on this momentum to maximize the number of pooled and shared rides, and encourage fleet electrification to make on-demand rides a tool for achieving carbon neutrality.

Opportunities for Neighborhoods and Businesses

Reducing one's carbon footprint is often regarded as a privilege as many low-income and marginalized communities have more immediate needs that must be met, which can make adopting changes more challenging. Incentives can play an important role, especially if tailored to meet the needs of target communities, such as Yolo Commute's Rideshare Incentive Program, which is designed to reward commuters who try other means of commuting than the single-occupant vehicle and by changing daily commute habits. Rideshare services also need to be accessible and the cities can adopt regulations to require accessibility. For example, City of New York Taxi and Limousine Commission set rules that 80% of wheelchair-accessible trips by TNCs must arrive in under 10 minutes.

Waymo (an Alphabet subsidiary) became the first autonomous-vehicle company to offer rides to customers when it provided self-driving minivans to Lyft to test in Phoenix in 2019. The Sacramento-region California Mobility Center is in a prime position to make the greater Sacramento region a testbed for autonomous ride-sharing companies to enter the California market, which can spur local economic activity and attract investments.

Implementation Tips

Recognizing how the mobility sector is continuing to evolve rapidly, the cities should look to existing best practices and resources:

- The Institute for Transportation & Development's policy guidelines for cities to work with shared-mobility TNCs
- The TNC Regulatory Landscape Report

2.9. Ensure that mobility strategies for suburban communities account for inequitable access to transit and safe active transportation networks, and identify targeted, community-based solutions for shared and/or zero-emission vehicle services to address mobility barriers.

Residents in urban cities – due to higher population, density and concentration of communities of color – generally have better access to transit than their suburban counterparts. However, suburban areas alone account for one-half of the total U.S. household carbon footprint. Many people commute to Sacramento and West Sacramento for work, with nearly 12,000 workers commuting from Elk Grove in 2017, according to U.S. Census Bureau data. The population increase in surrounding suburban areas and the lack of transit services contributed to incremental increase in commuting time over the past years, and to more emissions from passenger vehicles for commuting.[80]

Due to the regional nature of transportation patterns and the resulting emissions, the cities should ensure its suburban communities have access to clean mobility options and work with neighboring jurisdictions to create a seamless, low-emission transportation network.

Opportunities for Neighborhoods and Businesses

Admittedly, providing equal access to transit services in suburban communities can be challenging due to the economies of scale that need to be achieved to ensure transit services are sustainable and financially viable. However, the cities can engage with these communities to better understand their needs and travel demands to pursue creative strategies, such as microtransit services, vanpooling and other shared-mobility services.

Employers also have a lot to gain, as the affordable housing crisis has led to many employees living further away from their places of work. Providing residents and employees in suburban areas with additional clean-mobility options can reduce stress and the costs related to work commutes completed by single-occupancy vehicle trips, such as traffic congestion and delays.

Implementation Tips

The cities should review existing resources and best practices to support suburban communities, such as the Transportation Research Board's Guidebook for Evaluating, Selecting, and Implementing Suburban Transit Services.

Strategy Recommendation #3: Zero-Emission Vehicles

Develop a comprehensive package of incentives, disincentives, and policies to encourage the adoption of zero-emission vehicles (ZEVs) so that:

- **70% of new vehicle registrations will be for ZEVs by 2030, and**
- **100% of all public, private, and shared fleets will be electrified by 2045.**

Due to the costs and equity issues related to expanding ZEV infrastructure and purchasing ZEVs, the Mobility TAC wants to first discourage vehicle ownership and encourage the use of active transportation, transit and shared mobility, and then to electrify remaining vehicles – recognizing that some users need their cars to meet their travel needs.

Rather than setting a target around a specific number of ZEVs as the State of California and many cities, including the City of Sacramento, have done, this strategy instead focuses on new vehicle registrations. Ultimately, to achieve carbon zero, all public, private and shared fleets will need to be electrified by 2045.

The Carbon Zero Opportunity

Currently, approximately 0.8% of light-duty ZEVs registered in the cities are ZEVs, demonstrating the scale of the significant challenge at hand. With passenger vehicles being the single largest source of emissions, the opportunity to reduce emissions by accelerating ZEV adoption is equally significant. This strategy coincides with the Mobility TAC's vision of reducing personal-vehicle ownership and single-occupancy vehicle trips to reduce emissions, congestion and vehicular accidents. Trips that may not be possible through active transportation, transit or shared-mobility services, should be through ZEVs.

By creating a strategic network of public charging and hydrogen fueling stations, including the installation of chargers at workplaces, multifamily housing developments and community hubs, the cities can build confidence among drivers to purchase ZEVs instead of Internal Combustion Engine (ICE) vehicles. Such a transition can also spur economic growth, and workforce development and transition programs should be a core part of the cities' ZEV strategy to create living wage jobs for low-income workers.

Overcoming Potential Hurdles

Concerns for low-income residents: The strategy is focused on new vehicle registrations for 2030, targeting those with the means to purchase new vehicles rather than inadvertently burdening low-income communities. Provide all low-income residents with access to free or affordable ZEV carshare programs to ensure that all residents have access to ZEVs regardless of income and resources.

Technological barriers: Partner with the California Mobility Center, Plug-In Partnership, and similar initiatives to incentivize innovation to deploy ZEV pilots for medium- and heavy-duty vehicles, goods movement, and autonomous vehicles. Engage industry to identify the needs and barriers of adopting

electrified, automated transportation beyond CARB regulatory requirements. Establish medium- and heavy-duty electrification zones to promote accelerated adoption and create living wage job opportunities.

Transportation user perceptions: Partner with organizations to conduct a robust outreach campaign to demonstrate the benefits of ZEVs, such as by hosting ride events. Leverage CARB's One-Stop-Shop, which streamlines access to transportation incentives including rebates for purchasing ZEVs.

Implementation Tactics

3.1. Develop public-private partnerships and accelerate public deployments to expand the cities' network of affordable public charging and hydrogen fueling stations.

To foster widespread adoption of ZEVs, the cities need to create a strategic network of affordable public charging and hydrogen fueling stations. In a Green Car Reports poll, 61% of respondents said the lack of charging stations holds back their purchase, and 58% said their biggest concern is running out of power.

ZEV charging and hydrogen fueling stations should be prioritized to increase connectivity to other clean-transportation options, including near transit hubs, mobility hubs, community centers and multifamily housing complexes. This can help to address first/last mile connection concerns and provide a suite of seamless options for travelers to meet their daily needs in a cost-effective manner.

Ultimately, the cities should work with partners to make charging and hydrogen fueling stations as accessible as possible. The cities should seek to install stations in locations that provide daily amenities and encourage and incentivize charging at workplaces.

Opportunities for Neighborhoods and Businesses

As the cities work together with other public agencies and private companies to expand charging infrastructure, their investments can be leveraged to meet other community needs. For example, create charging stations that can be used by shared-mobility providers to charge electric bikes and scooters, by residents to charge powered wheelchairs, and by building owners to support energy storage.

To ensure affordability and to avoid unintended consequences, the cities should consider pricing techniques that address concerns related to higher costs of electricity compared to some fossil fuels. This is particularly important for those who spend more of their income to meet their transportation and energy needs. With lower transportation costs and more mobility options, residents will be able to access businesses that are otherwise unreachable, which can spur local economic activity.

Implementation Tips

Sacramento and West Sacramento can look to other cities:

- City of Palo Alto's Residential Electric Vehicle Supply Equipment Expedited Guidelines
- Culver City's Residential and Nonresidential EVSE Guidelines
- Alameda County's Guidelines for Future EV Charging Stations at County Facilities

3.2. Adopt CALGreen Tier 2 standards that establish minimum requirements for EV capable parking spaces based on building type, and advance EV charging together with building electrification strategies to reduce housing costs and accelerate affordable, clean, and equitable housing and mobility options holistically.

The cities should adopt CALGreen Tier 2 standards that establish minimum requirements for EV capable parking spaces:

- Residential: 20% of the total number of parking spaces on a building site, provided for all types of parking facilities, but in no case less than one, shall be electric vehicle charging spaces capable of supporting future EVSE.
- Non-residential: 10% of new parking spaces must be EV capable.
- New multifamily dwellings (sites with 17 or more multifamily dwelling units constructed on-site): 5% of the total number of parking spaces provided for all types of parking facilities, but in no case less than one, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE.

Opportunities for Neighborhoods and Businesses

Installing EV capable parking spaces in stand-alone retrofits is typically 4 to 6 times more expensive compared to installing such spaces during new construction or when certain alterations and additions (such as repaving parking surfaces and "gut" rehabilitation of buildings) are made to buildings.[81] By aligning EV charging with building electrification strategies, the cities can drive deeper reductions in emissions while making housing more affordable and enabling tenants to benefit from clean-mobility options. For example, an all-electric apartment complex in Utah installed a solar array that produces enough electricity to meet the buildings' energy demand and for its 100 EV chargers.[82]

Implementation Tips

Numerous cities have adopted CALGreen Tier 2 standards for electric-vehicle readiness and many have even adopted reach codes to go beyond requirements. Sacramento and West Sacramento can look to these cities – such as the City of Fremont – to learn lessons and replicate model policies.

3.3. Work with major employers including the State of California to encourage ZEV adoption and sustainable commute habits through TDM programs, management of parking privileges, and by providing workplace charging options where possible. Incentivize businesses to convert fleets to ZEVs and enable employers to use business assistance loans and incentives to purchase ZEV fleet vehicles and install ZEV infrastructure. Identify solutions to address challenges in converting medium/heavy-duty vehicles to ZEVs.

To achieve ZEV adoption targets, the cities should encourage employers to support sustainable commute habits, such as by providing workplace charging and managing parking privileges to discourage ICE vehicles. Major employers in the Sacramento region – the State of California, Dignity Health and UC Davis Health – should be prioritized given the sheer size of their workforce and potential to influence travel behavior. While many employers already provide incentives for sustainable commutes, these incentives can be expanded to drive deeper reductions in emissions.

Parking cash outs reduce total vehicle emissions for commuting by 12%, according to a State study. State law currently requires employers who offer subsidized parking as an incentive for employees to offer cash as an alternative for forgoing the parking benefit. However, this law is only applicable to employers who have: 50 persons or more, worksites in an air basin that is designated nonattainment for any state air quality standard, and employee parking subsidizes for parking that they do not own.[83]

Executive Order B-16-12 also directs state agencies to offer ZEV charging stations and infrastructure at employee parking facilities. The Department of General Services offers TDM incentives for their employees such as reduced monthly parking rates for ZEV at its facilities and priority access to its parking.[84]

The cities can expand upon these State policies to require all employers, regardless of size, to provide preferential parking and subsidies for ZEVs and cash payments for active-transportation and transit users. The cities should also connect employers to available rebates and incentives for ZEV charging infrastructure to encourage workplace charging, or even require employers of a certain size to install chargers.

For businesses that own and operate vehicles as part of their standard operations, the city can offer incentives for businesses to convert their fleets to ZEVs. Cities and counties throughout California (such as San Mateo County) have been converting their own fleets to ZEVs.[85] A similar model can be created to incentivize businesses to electrify their fleets.

Opportunities for Neighborhoods and Businesses

While this tactic could be focused on ZEVs ownership, it is important that any incentives adopted by businesses around ZEV parking for employees also cover employees who do not own their own ZEV but instead participate in a ZEV carshare program. This strategy should work in tandem with strategies that advance free or affordable carsharing programs and encourage active transportation and transit.

The limitations of small businesses must also be considered to avoid unintended consequences of bold policies. Small businesses without existing commuter benefit programs may need guidance and incentives, and the cities should engage with these businesses to better understand their barriers and needs.

Implementation Tips

Sonoma County Transportation Authority offers a toolkit for employers to explore and implement transportation and commute benefits to employees. Recommended benefits include emergency Guaranteed Ride Home programs, preferential parking for vanpools, parking fees for single-occupancy vehicles, flexible work arrangements, shuttles to transit, financial incentives to carpool, on-site ZEV carshare programs and on-site bikeshare programs.

3.4. Expand "electric first" guidelines that direct city departments to purchase ZEVs and develop a plan to convert 100% of all light-duty vehicles in the cities' fleets to ZEVs by 2030 while forging partnerships to pilot medium/heavy-duty ZEVs upon availability of technology and promoting the electrification of school buses.

The City of Sacramento's fleet consists of approximately 50% ZEVs, including all-battery EVs and hydrogen-fuel cell vehicles. Its Fleet Sustainability Policy was amended to establish a "ZEV First" commitment and a pledge to achieve at least 50% of annual light-duty fleet purchases to be ZEV by 2018 and 75% by 2020. While the City of West Sacramento has not adopted an electric-first policy, it has taken steps to curb emissions and pollution from their diesel engine truck fleet. The cities should demonstrate further leadership by converting 100% of all light-duty vehicles in the cities' fleets to ZEVs by 2030.

Opportunities for Neighborhoods and Businesses

Widespread adoption of medium- and heavy-duty ZEVs can yield tremendous air quality benefits, particularly for communities near major goods movement corridors. Opportunities to provide more localized benefits include electrifying school buses and working with local retailers to electrify delivery vehicles. The cities should play a leading role in advancing research and development to deploy pilots and support market growth.

Many agencies and companies are coming together to accelerate technological advancements. The cities should engage with the California Clean Mobility Center, to advance and pilot medium- and heavy-duty ZEVs to support industry maturation, drive down costs, and demonstrate feasibility to other businesses.

Implementation Tips

The cities should leverage and learn from other efforts to deploy medium- and heavy-duty ZEVs. For example, BAAQMD's Heavy-Duty ZEV Program incentivizes fleet operators to deploy heavy-duty ZEVs when replacing older, compliant vehicles, and when expanding their fleet. This program provides funding to reimburse a percentage of the difference in cost between a ZEV and a conventionally fueled vehicle.

3.5. Through a phased approach, establish low-emission zones and implement congestion pricing to deter the use of polluting vehicles. Adopt and enforce anti-idling policies at railway crossings, stop lights, drive-through restaurants, and schools. Work with a resident advisory group to ensure equitable benefits and impacts to road users and leverage revenue to fund incentives for clean mobility solutions.

Congestion pricing harnesses the power of the market to reduce traffic congestion, discourage driving, and reduce transportation-related emissions. Congestion pricing shifts purely discretionary highway travel to other transportation modes or to off-peak periods by requiring motorists to pay fees for driving in city centers and congested corridors. These pricing signals can remove a vehicles from congested roadways; removing even a small fraction of vehicles from congested roadways can enable the system to flow more efficiently, reduce emissions from idling, and encourage drivers to explore alternatives, like transit. Special attention is needed when establishing congestion pricing to ensure transit operating on shared rights-of-ways does not experience delays.

Generally, consensus has been reached among economists that congestion pricing represents the single-most viable and sustainable approach to reducing traffic congestion. Congestion pricing can be implemented through four main pricing strategies, including variable priced lanes, variable tolls on entire roadways, cordon charges and area-wide charges.[86]

Vehicle idling is another issue that must be addressed. Researchers estimate that idling wastes nearly 6 billion gallons of fuel annually in the U.S. – eliminating unnecessary idling would be equivalent to taking 5 million vehicles off the road.[87] The cities are recommended to adopt and enforce anti-idling policies, particularly in areas where idling is most common and harmful such as at stop lights, retail drive-throughs and schools.

Opportunities for Neighborhoods and Businesses

Congestion pricing can benefit drivers and businesses by reducing delays and stress by increasing the predictability of trip times and by allowing for more deliveries per hour. It also benefits mass transit by improving transit speeds and the reliability of transit service by increasing transit ridership and by lowering costs for transit providers. Revenues can be used to improve the quality of transportation infrastructure and services, such as addressing deficiencies in active transportation infrastructure and expanding transit routes.

However, the cities must ensure that congestion pricing does not lead to unintended consequences, such as increasing the financial burden of driving for low-income households that currently do not have viable alternatives to meet their daily needs. A resident advisory group can be created to ensure equitable benefits and impacts to road users, such as determining pollution hot spots where low-emission zones should be created and fee exemptions for low-income drivers.

Implementation Tips

The cities should look to existing anti-idling and congestion pricing policies, such as Vancouver's Idling Regulation and New York City's Congestion Pricing Plan.

3.6. Partner with the California Mobility Center, Plug-In Partnership, and similar initiatives to incentivize innovation to deploy ZEV pilots for medium/heavy-duty, goods movement, and autonomous vehicles. Engage industry to identify the needs and barriers of adopting electrified, automated transportation beyond CARB regulatory requirements. Establish medium- and heavy-duty electrification zones to promote accelerated adoption.

With numerous initiatives to deploy ZEV pilots, particularly for medium- and heavy-duty vehicles, goods movement vehicles, and autonomous vehicles, the cities can partner on these initiatives as a cost-effective way to accelerate electrification.

The California Mobility Center, a joint public-private initiative between SMUD and local and regional institutions to build an electric vehicle prototyping facility that will develop and promote electric and autonomous vehicle technologies in the greater Sacramento region, will bring together tech companies, manufacturers, utilities, entrepreneurs, top researchers and investors to provide innovative products and services in the rapidly expanding mobility market. The Center will:

- Promote the development of clean-transportation and autonomous-vehicle technology to cut emissions.
- Accelerate the commercialization of electric mobility technologies and services.

- Facilitate development of open-sourced standards and policies for connected and autonomous vehicles.
- Conduct advanced research, development and demonstration projects that can be quickly commercialized for worldwide adoption of electric mobility.
- Establish a mobility network in Sacramento that will provide an innovative environment for new and prospering companies, entrepreneurs, advanced technologies and investors.

Opportunities for Neighborhoods and Businesses

Designating electrification zones for medium- and heavy-duty vehicles can support accelerated adoption of ZEVs and send a clear signal to businesses about the cities' commitment to electrifying the transportation sector. By prioritizing electrification zones in areas that experience greater levels of pollution, the cities can help to mitigate environmental burdens and improve the health of residents.

Implementation Tips

The cities are encouraged to learn from and replicate other successful efforts, such as SDG&E's initiative to build charging stations for about 3,100 medium- and heavy-duty ZEVs and BAAQMD's incentives for purchasing and leasing heavy-duty ZEVs.

3.7. Leverage electrification opportunities to create employment opportunities through workforce development and transition programs and to achieve equitable access to ZEV technologies and benefits for low-income populations and underserved communities.

The cities' pursuit to electrify the transportation sector can create employment opportunities by supporting the emergence of new industries and providing pathways for the existing workforce to transition to engage in these industries. From manufacturing and maintaining ZEVs to installing charging infrastructure, the potential for new jobs is significant. With strategic planning, the increase in demand for electrification jobs can be targeted to ensure access for low-income populations and underserved communities.

Opportunities for Neighborhoods and Businesses

Low-income communities and communities of color face disproportionate health impacts from environmental pollution, and ZEVs offer great potential to improve air quality and health outcomes. However, providing equitable ZEV access requires intentional action, which includes access to new job markets and employment opportunities. To ensure equity, investments are needed in people and the cities should incorporate workforce development as a core part of their ZEV strategy, not as an afterthought or added benefit.

Implementation Tips

The cities can model workforce development programs after other successful programs. For example, GRID Alternatives partnered with Homeboy Industries, which provides training and job opportunities for people coming out of the criminal system, to create a workforce development program in the solar industry.

3.8. Provide all low-income residents with access to free or affordable ZEV carshare programs, such as by working with SMAQMD to expand Our Community CarShare, and create pathways for ZEV ownership by providing rebates and assistance with financing and insurance.

As ZEVs become more readily accessible with expanded charging infrastructure and technological advancements, low-income residents cannot be left behind in this transition. Expanding existing ZEV carshare programs can prove to be a cost-effective way to increase access to ZEVs among low-income households.

Our Community CarShare is a free, membership-based transportation service where residents can reserve ZEVs to run errands, get to appointments, and take local trips. This program should be expanded to enable more communities to benefit from participation.

It can also be leveraged to create pathways for ZEV ownership by providing rebates and assistance with financing and insurance. Program participants who already recognize the benefits of ZEVs may be interested in purchasing their own ZEV, but hesitant to take action due to the costs and complexities of the vehicle purchasing process. The cities can consolidate the range of rebates and assistance programs already available to provide streamlined support to residents.

Opportunities for Neighborhoods and Businesses

In addition to increased mobility and reliable transportation, ZEV carshare programs improve public health and reduce exposure to environmental contaminants by reducing emissions from vehicles operating in or near communities. By increasing access to reliable transportation modes, local businesses may be able to reach new customers.

Implementation Tips

The cities can seek funding to support the expansion of ZEV carshare programs, such as California's Clean Mobility Options program, which provides funding for zero-emission carsharing, carpooling and vanpooling, bike- and scooter-sharing, and other programs in underserved communities.

3.9. Forge partnerships to conduct a robust outreach campaign to encourage ZEV adoption and help residents and businesses navigate the decision-making process for using ZEVs for shared mobility programs and buying or leasing new or used ZEVs where appropriate.

By forging partnerships to conduct robust outreach about the benefits of ZEVs, the cities can raise awareness among residents and businesses and encourage ZEV adoption. As part of that outreach program, the cities should work with partners to help residents and businesses navigate the decision-making process for buying or leasing new or used ZEVs, including providing guidance to TNCs for electrifying their fleets. An effective campaign between the cities can also be expanded across the region to achieve deeper reductions in transportation emissions by bringing ZEV opportunities directly to residents and business owners, which can generate excitement, increase overall participation, and allow for a smoother transition.

Opportunities for Neighborhoods and Businesses

In comparison to fossil-fuel powered vehicles, ZEVs can lower operating costs and the total cost for ownership. However, purchasing new ZEVs can be cost-prohibitive to many low-income residents and small businesses. By working with rental-car companies and car dealerships to increase their stock of ZEVs, more drivers can experience the benefits of ZEVs and encourage those who need a personal car to lease or buy used ZEVs at lower costs.

Implementation Tips

California's Clean Car Campaign is one example of the effectiveness of robust campaigns that encourage ZEV adoption. In 2015, California led the founding of the International ZEV Alliance, a collaboration of countries and subnational governments in hopes to accelerate the global development of ZEVs. Fourteen states and countries in the ZEV Alliance are partnering to share best practices for incentives, utility programs and consumer outreach. In 2016, a zero emission vehicle standard was adopted to help get 100,000 ZEVs on the road by 2020. These successes exemplify the role that an outreach campaign can play in engaging local partners to catalyze change on a national and international scale.

Mobility TAC Roster

Mobility TAC Co-Leads: **Kacey Lizon** | Sacramento Area Council of Governments and **Chris Flores** | Sacramento Regional Transit

- **Justin Tweet** | 350 Sacramento
- **William Barrett** | American Lung Association in California
- **Katherine Crocker** and **Tiffany Harter** | California Public Employees Retirement System
- **Brian Sehnert** | bVerdant
- **Jack Ehnes** | CalSTRS
- **Jeanie Ward-Waller** | Caltrans
- **Mackenzie Wieser** | City of Elk Grove Planning Commission
- **Fedolia Harris**, **Helen Selph**, **Jennifer Venema and Jennifer Donlon Wyant** | City of Sacramento
- **Sarah Strand** and **David Tilley** | City of West Sacramento
- **Bill Magavern** | Clean Air Coalition
- **Ralph Propper** | Environmental Council of Sacramento
- **Sharon Sprowls** | Franklin Boulevard Business District
- **Chris White** | Frontier Energy
- **Orville Thomas** | Immigrant Policy Center
- **Steve Cohn** | InterCity Rail Corridor Working Group
- **Khaim Morton** | Sacramento Metro Chamber
- **Becky Heieck** | North Natomas Jibe
- **Chelsea Minor** | Raley's
- **Laith Younis** | *Resident*
- **April Wick** and **Russell Rawlings** | Resources for Independent Living
- **Ryan Gardner** | Rincon Consultants, Inc.
- **Debra Banks** | Sacramento Area Bicycle Advocates
- **Dave Tanner** | Sacramento Association of Realtors
- **Guy Hall** | Sacramento Electric Vehicle Association
- **Glenda Marsh** | Sacramento Metro Advocates for Rail and Transit
- **Alberto Ayala** and **Ashley Reynolds** | Sacramento Metropolitan Air Quality Management District
- **Bill Boyce** | Sacramento Municipal Utility District
- **Henry Li** and **James Boyle** | Sacramento Regional Transit

- Mollie D'Agostino | UC Davis 3 Revolutions Future Mobility Program
- Meg Arnold | Valley Vision
- Kirin Kumar | Strategic Growth Council
- Chris Dougherty | West Sacramento DOT
- Kimberly Boyle | World Relief Sacramento
- Jose Perez | Yolo County Transportation District

COMMUNITY HEALTH AND RESILIENCY

The Community Health and Resiliency sector includes carbon-reduction strategies that deliver important public health benefits while building resilience to the impacts of climate change. Strategies included within this sector recognize that considerable investments will be needed to protect and benefit all residents, particularly underserved communities that have historically borne the greatest burden from the effects of pollution, disinvestment, and marginalization. Creative collaborations among traditional and non-traditional partners will be necessary to marshal these investments and achieve the desired outcomes.

Mounting evidence continues to demonstrate the multitude of negative health outcomes and health inequities associated with an extractive fossil-fuel based economy, the continued emissions of carbon pollution, and impacts from a changing climate. In Sacramento and West Sacramento, low-income communities of color are often located near heavily polluting industries or congested roadways, bearing a disproportionate burden from pollution that contributes substantially to disease and early deaths. Marginalized populations that lack access to safe, affordable, and clean mobility and housing options, secure living-wage jobs, affordable healthy food options, health care services, decision-making power, and other basic needs are often those with least capacity to not only adopt carbon reduction measures but also adapt to climate-related impacts. Climate change is a threat-multiplier and will exacerbate existing inequities, particularly for those most vulnerable. This reality demands a focused equity lens.

Efforts to advance equity and improve baseline community health will only strengthen the capacity of communities to better respond to, recover from, and "bounce forward" from the negative impacts associated with climate change, especially for those on the frontlines. And strengthening these frontlines can have economic benefit for all residents in the region.[88]

The State of California has sent clear signals to local jurisdictions and communities on the urgent need to adapt and build resilience to climate change impacts. In 2015, SB-246 established the state Integrated Climate Adaptation and Resiliency Program (ICARP) to coordinate regional and local efforts with state climate strategies to adapt to climate change impacts. With the passage of SB-379, local jurisdictions are required to identify climate change risks and adaptation strategies as part of their local hazard mitigation plans and/or in the safety element of their General Plans. In subsequent years, additional state laws have expanded this mandate:

- SB-1035 requires cities and counties to review and revise their general plan safety elements to address climate adaptation strategies, no less than every eight years.
- AB-747 requires safety elements to be reviewed and updated to identify evacuation routes and their capacity, safety and viability under a range of emergency scenarios. SB-99 further requires the identification of residential developments in hazard areas that do not have at least two emergency evacuation routes.
- SB-1000 also creates a newly required environmental justice element and requires cities and counties to identify objectives and policies to reduce the unique or compounded health risks of disadvantaged communities, identify objectives and policies to promote civil engagement in the

decision-making process, and identify objectives and policies that prioritize improvements and programs that address the needs of disadvantaged communities.

Climate action strategies aimed at reducing existing health, racial, and economic inequities can build community capacity, achieve tangible community benefits, and help to ensure greater community acceptance and adoption of these measures. The cities have a unique opportunity—and responsibility—to reduce GHG emissions, build resilience to climate change impacts, and achieve important health equity goals.

TAC Vision & Recommendations

The Community Health and Resiliency TAC envisions that all residents will have the resources and capacity to meet their basic needs with the authority to shape the decisions that impact their communities. Investments that accelerate climate action will be leveraged to eliminate existing health, racial and socio-economic inequities. The cities will be global leaders and their comprehensive approach to reduce emissions, build resilience, and address societal inequities will serve as a model for all to follow.

The Sacramento and West Sacramento communities will not only survive in the face of climate change but thrive. Communities will be healthy, equitable, and vibrant with an abundance of trees, green space and local farms and gardens, and a civically-engaged population working in partnership with the cities to continue building climate resilience.

Through its group discussion process, the Community Health and Resiliency TAC identified a prioritized set of recommendations focused on expanding access to green space and trees, addressing food insecurity, and supporting communities in meeting their basic needs and building resilience to climate change impacts. These strategies can drive deeper reductions in GHG emissions and sequester greater levels of carbon, while reinforcing and supporting the successful implementation of Built Environment and Mobility measures.

The Commission has adopted the following strategies, which are each supported by a set of implementation tactics and financing options identified by the Finance TAC.

1. Urban Greening and Forestry
   Expand green infrastructure to ensure that all neighborhoods, starting with historically marginalized communities and tree-deficient neighborhoods, have:
   - Access to green space within a quarter mile by 2030.
   - A baseline canopy of 25% by 2030.
   - A baseline canopy of 35% by 2045.

2. Sustainable Food Systems
   Increase food security and access to healthy, affordable food for all communities while supporting a regenerative food system by:
   - Sourcing 25% of food locally within a 200-mile radius by 2030.

- Sourcing 40% of food locally within a 200-mile radius by 2045.
- Reducing 50% of aggregate food waste by 2025.
- Reducing 75% of aggregate food waste by 2030.

3. Community Climate Resilience
   Identify climate vulnerabilities and adaptation strategies as part of the Climate Action Plan or General Plan updates by 2022. Develop and implement preparedness measures, with a priority focus initially on increasing the resilience of communities most vulnerable to climate change impacts by investing in existing community assets and networks to increase community adaptive capacity.

These strategies are supported by potential implementation tactics, which are described in further detail in the following sections.

Strategy Recommendation #1: Urban Greening and Forestry

Expand green infrastructure to ensure that all neighborhoods, starting with historically marginalized communities and tree-deficient neighborhoods, have:

- **Access to green space within a quarter mile by 2030.**
- **A baseline canopy of 25% by 2030.**
- **A baseline canopy of 35% by 2045.**

Green Infrastructure includes natural areas and nature-based design features that deliver a wide range of ecosystem services including stormwater management, improved air quality, heat mitigation, and more. While green infrastructure often requires more upfront holistic planning and design, it can achieve comparable or better outcomes than gray infrastructure at lower costs and with greater benefits to human health.

An EPA report on 17 developments using varying degrees of green infrastructure found significant cost savings were realized when using green infrastructure for site grading and preparation, stormwater infrastructure, site paving and landscaping. The study estimates that capital cost savings ranged from 15% to 80% when green infrastructure was used. A 2006 study in the City of Philadelphia found that 196 heat-related fatalities could be avoided over a 40-year period by using green infrastructure to manage polluted runoff and reduce combined sewer overflows. Based on the EPA's value of a statistical life in 2006, reductions in urban heat island-related fatalities in Philadelphia could save the public more than $1.45 billion.

The Carbon Zero Opportunity

Green infrastructure offers opportunities for increased carbon sequestration, reduced energy consumption and a range of community health and resilience benefits. Increasing and maintaining tree canopy, vegetation and green spaces allows for greater GHG sequestration as plants grow and thrive. Green infrastructure elements can help regulate building temperature, providing thermal insulation to

decrease cooling and heating demands for buildings and thereby reducing energy use and associated costs.

Expanding green infrastructure and canopy cover will also support the achievement of other carbon zero strategies, such as by creating a more pleasant environment for active transportation. Trees and vegetation can also improve air quality, offering numerous physical health benefits. Increasing access to public spaces, green space and parks also increases exposure to nature, promotes outdoor physical activity and play, and improves physical and mental health.

Implementing nature-based solutions offered by green infrastructure can also promote climate resilience by protecting communities from extreme heat and floods. However, urban beautification and neighborhood revitalization can lead to gentrification, and efforts must be targeted to areas of greatest need and coupled with anti-displacement policies.

Green infrastructure has proven to be cost-effective with long-term benefits outweighing costs. A Chicago study of future benefits and costs of a tree planting program found that the projected value of trees, when measured by such things as increased property values and decreased energy use, is nearly three times greater than the projected costs.[89]

Overcoming Potential Hurdles

Embedding tree planting requirements into other kinds of activities, the cities can engage other institutions, including schools and healthcare partners, to expand tree planting and stewardship efforts. The cities can also engage with community-based organizations to identify, pool and leverage resources for planting and maintaining trees.

Challenges in capturing the socialized benefits of green infrastructure to justify private and public costs may also be a hurdle in implementation. However, the cost of not doing something will be much higher in the long run. The multitude of research and resources on the social benefits of trees, such as public health benefits and crime prevention, should be used, discussed and promoted as critical benefits outweighing costs. Engaging with trusted institutions – such as those in the healthcare sector – to conduct a robust communication campaign that demonstrates the benefits and importance of trees can help to spread awareness of these benefits.

Promoting equity in the expansion of green infrastructure is an important consideration – and a challenge. Green infrastructure may lead to increases in property values and rent; anti-displacement and anti-gentrification policies and actions must be implemented to discourage this. A lack of space for tree planting in marginalized communities is a challenge in increasing the baseline canopy and helping to ensure green infrastructure benefits communities equitably. Water usage must also be considered.

Engaging with property owners to encourage tree planting on private property along sidewalks and connecting them to tree-planting incentives and stewardship resources helps to address this challenge. Investments should be targeted to retrofit streetscapes that lack parkways for tree planting, such as reclaiming currently paved spaces for trees and green space, which may allow for additional residential density.

Implementation Tactics

1.1. Partner with SMUD, Sacramento Tree Foundation, and other organizations to achieve 550,000 new trees by 2045, 100,000 of which will be trees on front yards and along key transportation corridors. Prioritize planting trees in marginalized communities and leverage workforce development programs, such as community college urban forestry programs.

Rising temperatures and more frequent and severe heat waves will present significant threats to public health, which will be further exacerbated by the urban heat island effect. Planting trees can build resilience to extreme heat, sequester carbon, reduce energy demand, improve air quality and stormwater management, and support biodiversity.[90]

Trees provide much-needed shading to reduce energy demand and create a more comfortable environment for active transportation. The cities are therefore recommended to target 100,000 of the 550,000 new trees on front yards and along key transportation corridors as a strategy to target the cities' largest source of emissions. Given the significant tree-canopy disparities across neighborhoods (where wealthier neighborhoods benefit from more trees),[91] SMUD and the cities should prioritize plantings in marginalized communities even if it means having to establish community facilities districts (CFDs) or similar funding mechanisms. As with any neighborhood improvement, particularly in historically disinvested areas, the cities will need to ensure that strong anti-displacement measures are in place to protect residents from the threats posed by gentrification.

Trees sequester carbon dioxide and provide shade that reduces the amount of energy needed to cool buildings. In California, estimates for strategically planted trees can generate an estimated 6.3 million metric tons of saved carbon dioxide emissions per year.[92] The economic value of avoided mortality, morbidity and electricity consumption by increasing canopy cover is an estimated $21-49 annually per capita.[93] In an analysis of five cities across the U.S., cities spent $13-65 annually per tree and benefits ranged from $31 to $89 per tree.[94]

Opportunities for Neighborhoods and Businesses

In addition to lowering energy bills and providing cooling benefits, research has linked the presence of urban trees to reduced levels of air pollution, improved mental health outcomes and lower rates of cardiac and respiratory diseases. However, trees are far more common in more affluent neighborhoods. For example, Sacramento maintains an average canopy cover of 20%, but canopy cover varies neighborhood to neighborhood – with 43% in Land Park and 12% in Meadowview.[95]

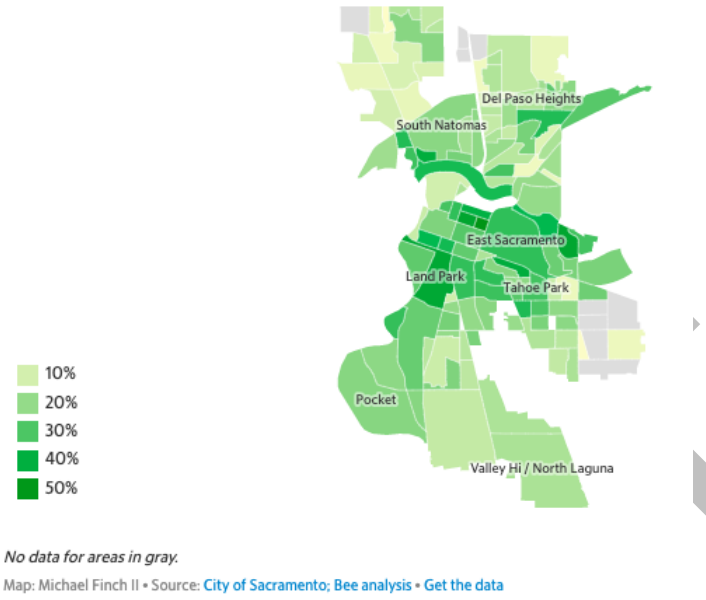


Figure X. Disparities in tree canopy across Sacramento neighborhoods.

Planting and maintaining urban trees is a labor-intensive process that requires skilled workers. By investing in this tactic, the cities can create new jobs and target workforce development programs to benefit unemployed and under-employed residents. Greater canopy cover can also bolster local economies by creating a more enjoyable environment for pedestrians, which can increase foot traffic and drive retail sales and business activity.[96]

Implementation Tips

The cities are encouraged to forge partnerships to leverage and expand existing programs, such as SMUD's Free Shade Tree Program and Sacramento Tree Foundation programs. Programs should adjust their policy guidance to allocate public funding to the most vulnerable and canopy-deficient communities. Findings from the Capital Urban Heat Pollution Mitigation Project, which explores the efficacy of vegetation cover in providing cooling benefits, can also be leveraged to guide the cities' efforts.

1.2. Maintain the health of existing trees by promoting community stewardship programs that support tree management, care, and removal through education, volunteerism, and workforce development.

Planting new trees offers many benefits for communities and the environment, but both new and existing trees must be maintained to reap those benefits. Healthy, large trees (over 77 cm in diameter) sequester 90 times more carbon than small trees less than 8 cm in diameter.[97] To maximize carbon sequestration potential, trees must be monitored and maintained to ensure that they are receiving enough water, are not plagued by pests or disease, and continue to grow and thrive as the climate and their surrounding built environment changes.[98] Early detection in communities can help stop the spread of pests and disease, thus helping to avoid high costs of management and removal.

Community stewardship programs can be very effective in promoting the viability of street trees and the urban forest, as residents can learn to proactively recognize threats to street trees and can leverage

support to care for trees. One study found that volunteer citizen stewardship services further supported with tree rescue resources substantially reduced mortality rates of established and recently planted trees.[99] Tree maintenance has also been found to be cost-effective, with studies estimating that spending just $8 per person per year on average would allow American cities to meet tree funding gaps and stop the loss of urban trees and their potential benefits.[100]

Opportunities for Neighborhoods and Businesses

Promoting community stewardship programs offer opportunities to engage community members through education, volunteerism and workforce development. Neighborhoods benefit from community residents feeling invested and empowered in caring for their local environments. Individual businesses and the economy as a whole benefit from workforce development for tree care, as the labor pool widens for arborists and related jobs.

Implementation Tips

Both cities should review their code definitions and operating procedures to ensure that "protected trees" are truly offered protection in practice and the options for maintaining existing trees are fully explored before removals are approved. Many existing local programs and organizations dedicated to tree care and maintenance can be leveraged and partnered with to support this tactic:

- Sacramento Tree Foundation
- California ReLeaf
- California Native Plant Society (CNPS)
- UC Davis Environmental Horticulture and Urban Forestry Major | Department of Plant Sciences

1.3. Implement water conservation measures that prioritize tree growth and survival, including leak detection programs and guidelines for mulching of all city street and park trees. Partner with local organizations to host educational workshops and develop and implement a comprehensive greywater ordinance for residential landscapes and gardens by 2021.

Rising temperatures and the likelihood of more frequent and severe droughts necessitate water conservation, especially to preserve sufficient water supplies to maintain the health of new and existing trees. The cities are encouraged to expand or create programs that seek to reduce water use, such as leak-detection programs, tree mulching and ongoing public education. Developing and implementing a comprehensive greywater ordinance – that incentivizes or requires gently used water from sinks, showers and washing machines for yard and garden irrigation – can further reduce energy use.

Promoting water conservation contributes to reductions in GHG emissions as energy is required to extract, pump and treat water.[101] Water conservation also leads to significant cost savings for both water utilities and customers,[102] and the cities can approach this tactic in a cost-effective manner by leveraging existing education campaigns and working with the many active water conservation nonprofits. The State should also provide funding to make recycled water available to communities lacking it.

Opportunities for Neighborhoods and Businesses

Water conservation measures can reduce water bills for residents and businesses alike, which can free up funds to invest into the local economy or for low-income residents to meet more of their basic needs. Promoting water conservation efforts could potentially impact businesses like gardening and landscape companies and plumbers. These businesses may be supported by increased demand as residents look to implement irrigation solutions or plumbing to direct greywater to beneficial uses. Conversely, water conservation measures also reduce demand for water-related services. The cities should engage with businesses and strategically pursue measures that prevent potential negative impacts and amplify positive impacts, such as job creation.

Implementation Tips

The cities should leverage existing programs and partnerships, as well as the many best practices that have resulted from California's recent seven-year drought from 2011-17. For example, the cities should review the water efficiency ordinance adopted by the City of Los Angeles, which includes greywater stipulations, calls for increased water efficiency in new buildings, and requires buildings to be constructed to be graywater-ready.

1.4. Develop or expand cash-for-grass incentives to encourage property owners to replace lawns with water-efficient landscaping with a goal of converting 40% of existing residential lawns to native pollinator-friendly plants by 2023.

Roughly one-half of urban water use in California came from landscape watering in 2015.[103] By developing or expanding cash-for-grass incentives, the cities can offer rebates or other incentives to property owners for replacing lawns with drought-tolerant, water-efficient landscaping and native plants, which can reduce energy use and ensure sufficient water supplies for tree maintenance. Promoting native, pollinator-friendly plants can also increase carbon sequestration while creating habitats and supporting local biodiversity.

Replacing lawns with water-efficient landscapes has demonstrated cost-effectiveness when factoring costs associated with lawn maintenance include watering, fertilizing and pesticide use. For example, the Southern Nevada Water Authority in Las Vegas offers a $3 rebate per square foot of grass converted to a desert landscape. If property owners convert more than 10,000 square feet, the Authority offers a $1.50 rebate with a maximum of $500,000 per fiscal year. Studies suggest individuals save $79 annually on lawn maintenance and $150 annually on water bills after replacing lawns with water-efficient landscapes. The study also estimated that the cash-for-grass program saves the Authority $0.89/kgal-water per year.[104]

Opportunities for Neighborhoods and Businesses

Installing water-efficient landscapes reduces people's water bills and serve as a longer-term cost-saving measure for homes, and the financial incentives offered by cash-for-grass programs can make it more feasible for low-income residents to benefit from replacing their lawns. The cities should seek to broadly promote cash-for-grass programs and raise awareness of the benefits of water-efficient landscaping, particularly to property owners with low-income renters and in marginalized communities. Programs should also include methods for reducing up-front costs of lawn replacement to increase participation.[105]

Implementation Tips

Current and future cash-for-grass programs can be improved by promoting replacement outside of drought years to prepare for future droughts. Water-conserving plants take time to develop their deep root structures, so by encouraging replacement during wet or normal years, these programs give replaced landscapes a better opportunity to thrive. While the City of Sacramento currently offers turf conversion rebates, additional rebates may be layered to increase participation, such as rebates from the Sacramento County Water Agency (targeting both residential and commercial customers) and the statewide turf-replacement program.

1.5. Implement Urgent Action Road Diets and utilize blighted lands and underutilized rights-of-way to expand green space for public uses. Begin implementing green space pilot projects in marginalized communities by 2021.

Implementing road diets – which encourage the reimagination of ways in which public spaces can be used beyond maximizing capacity for carrying cars – can make streets safer, expand green space for public uses, and promote Low Impact Development (such as curb cuts and bioswales). Road diets call for removing at least one car lane and using that space for other purposes, such as bike lanes, green space or parklets. They are typically applied to streets with excess capacity to avoid increasing congestion, but the cities can also choose to accept a certain level of congestion to promote active transportation.

Blighted lands – including underutilized or vacant buildings and lots within city perimeters that do not offer social or economic benefits to the community – can be transitioned to bioswales, pocket parks, community gardens, and other green spaces that sequester carbon, improve air quality, and mitigate the urban heat island effect.

Expanding green spaces and vegetation can reduce energy costs associated with cooling buildings in a cost-effective manner.[106] In addition to sequestering carbon, green spaces instead of developing or expanding roads could avoid new sources of emissions, while decreasing car usage and promoting active transportation. Lastly but importantly, a Highways Safety Information System study in California and Washington cities found that road diets led to a 19% decrease in total crashes, which increases commuter safety and provides significant health benefits and associated cost.[107]

Opportunities for Neighborhoods and Businesses

Green spaces offer many community benefits: They decrease urban heat, improve air quality, provide space for physical activity and social interaction, reduce crime, and improve mental health.[108] However, access to green space is currently inequitable with greater access associated with higher levels of education and income. This lack of access for marginalized communities can have compounding impacts, such as increased air pollution, higher energy use and costs, and fewer opportunities for supporting physical and mental health.

Members of marginalized communities are also disproportionately killed in traffic crashes,[109] while low-income communities of color experience double the rate of pedestrian fatalities compared to wealthier neighborhoods.[110] This amplifies the urgent need to pilot green-space projects in marginalized communities as part of a comprehensive strategy to reduce traffic-related injuries and fatalities. The

cities can also support the creation of community gardens where residents can grow their own food to help address food insecurity, particularly in food deserts.

Repurposing blighted lands and underutilized rights of way, implementing road diets, and constructing and maintaining green spaces all offer opportunities for job creation and can spur local economic activity. However, unintended displacement due to increased property values – a likely result of increasing access to green space – should be mitigated through strong anti-displacement policies for both residents and small businesses.

Implementation Tips

While implementing road diets, the cities should collaborate with emergency management departments to ensure evacuation needs are met when redesigning roads. When implemented effectively, road diets can improve emergency-response efforts by providing a more predictable path through commuter routes. The cities can also partner with local nonprofits (such as WALK Sacramento and Urban Land Institute) to pursue state grant programs, such as the Natural Resources Agency's Urban Greening Grant Program to fund pilots in marginalized communities.

1.6. Adopt an ordinance by 2021 that requires the use of zero-emission landscaping equipment and hand tools for municipal, residential, and private properties by 2025, identifying plans for early adoption through education and incentives.

Gas-powered landscaping equipment and hand tools contribute to local air pollution. Residential landscaping equipment typically use small off-road engines (SORE), and while emissions from these small engines have been found to be significant, regulations have not been updated since 1990. According to the Air Resources Board, operating the best-selling commercial lawn mower for one hour emits as much smog-forming pollution as driving a Toyota Camry (2017's best-selling passenger car) about 300 miles, while operating the best-selling commercial leaf blower for one hour emits smog-forming pollution comparable to driving that Toyota Camry about 1,100 miles.[111]

By adopting an ordinance by 2021 that takes effect by 2025, the cities can establish their own regulations while providing a predictable runway for the replacement of gas-powered landscaping equipment. Education and incentives will be critical to support small landscaping businesses as they work to comply with the mandate.

Opportunities for Neighborhoods and Businesses

A complete transition to zero-emission landscape equipment would effectively eliminate air pollution and GHG emissions produced by the largest class of SORE equipment. This would lead to immediate air-quality improvements and support positive health outcomes, particularly for equipment operators with a high degree of exposure to equipment emissions.

According to the U.S. Bureau of Labor Statistics, 56% of landscaping services workers are non-white, with the largest non-white demographic being Hispanic or Latino.[112] It is important that changes to regulations governing landscaping companies avoid unintended consequences to businesses, job opportunities and Sacramento-area communities. By providing Incentives and education for converting equipment can help

to avoid overburdening small landscaping companies and also protect the long-term health and well-being of their personnel.

Implementation Tips

The statewide Mower Program includes a Lawn and Garden Replacement program that funds the replacement of gas-powered lawn mowers with cordless, zero-emission mowers. Many California many air districts – including districts in the San Joaquin Valley, South Coast, Antelope Valley, Bay Area, Calaveras, El Dorado County, Mojave Desert and San Diego County – are also already offering commercial and residential incentives to switch to electric landscaping equipment.

The cities should encourage regional agencies to expand the clean-air incentives that they already offer, including those provided by the PG&E, Sacramento Metropolitan Air Quality District, the Yolo Solano Air Quality District and SMUD.

1.7. Update and enforce parking lot shade ordinances and retrofit existing barren parking lots with shade trees, or with solar shading where trees are not feasible, to meet urban heat island reduction goals and stormwater quality goals by 2023.

The City of Sacramento adopted an ordinance that requires parking lots to be 80% shaded, and in 2018, the City of West Sacramento drafted a zoning ordinance that calls for 50% of non-landscaped areas in parking lots to be shaded.[113] Updating and enforcing these ordinances offer opportunities to work toward the target of 550,000 new trees recommended as part of this strategy. As a first step, the cities are encouraged to request that private sector lot owners take immediate action to come into compliance with current law and also begin conducting an audit to identify parking lots that are out of compliance.

As previously noted, shade trees sequester carbon and provide a range of community health and resilience benefits in a cost-effective manner. Due to their dark surfaces, parking lots absorb a considerable amount of heat. Therefore, targeting parking lots can be effective in mitigating the urban heat island effect. Planting trees in parking lots also helps to improve stormwater quality, as runoff from impervious surfaces can carry pollutants into precious waterways.[114]

The cities may also consider revising their ordinances to allow for solar shading, which are more costly than traditional shade structures but increase renewable generation to support the carbon-zero vision.[115]

Opportunities for Neighborhoods and Businesses

Shaded parking lots support public health and safety as temperatures rise. Solar shading structures that power businesses that provide community amenities, cost savings from lower energy bills can also be reinvested to improve the amenities and quality of services provided.

Planting and maintaining shade trees and installing and maintaining solar shading offer job opportunities, which should be matched with workforce-development programs and job opportunities for youth to optimize benefits to marginalized communities.

Implementation Tips

Enforcement has been a challenge when implementing past ordinances. The cities can explore creative opportunities to reduce enforcement costs, such as encouraging residents to help identify out-of-compliance parking lots through the existing 311 line in Sacramento. Prior to penalizing lot owners, the cities can encourage compliance by highlighting available incentives and resources, such as those provided by PG&E, SMUD and the Sacramento Tree Foundation.

1.8. Decrease existing impermeable surfaces by 15% by 2025 by adopting ordinances and updating design guidelines to enforce robust green infrastructure standards for residential and commercial properties, built infrastructure, and land use projects. For new pavements and existing pavements undergoing major construction, require the use of permeable paving materials by 2022.

As climate change accelerates and increases the risk of extreme weather events and flooding in the region, stormwater management will become increasingly important. Impermeable surfaces, which not only increase the likelihood of localized flooding but produce high rates of stormwater runoff and water pollution, will need to be replaced to safeguard Sacramento and West Sacramento communities.

Permeable pavements – porous surfaces that catch precipitation and runoff, allowing water to infiltrate into the ground below[116] – provide multiple benefits for water management and climate resilience. Permeable pavements also have lower surface temperatures, which can mitigate heat impacts and reduce energy demand and have less embodied carbon compared to their impermeable counterparts. A Berkeley street constructed with permeable pavements demonstrated a 90% reduction in GHG emissions compared to an asphalt road.[117]

While installation can be more expensive, permeable pavements ultimately deliver cost savings when considering their dual purpose of serving as a paved surface and supporting stormwater management. A study on green infrastructure in Philadelphia found the installation of porous asphalt drainage systems saved $930,000, a 26% decrease in the overall stormwater-management cost.[118]

Opportunities for Neighborhoods and Businesses

Permeable paving options often involve creating small separations between pavers to allow water to infiltrate, but steps should be taken to ensure pavements are still accessible to people of all ages and abilities and not lead to safety risks for people who use wheelchairs, walkers, canes or other support tools. The cities should also ensure that permeable pavements are installed in neighborhoods that experience greater risks of flooding and heat to safeguard vulnerable populations. Support should be provided to businesses that offer permeable paving materials and services to protect and create jobs.

Implementation Tips

The cities should look to other jurisdictions pursuing similar ordinances to learn from and contribute to best practices. The cities should also partner with and consult people with disabilities and organizations dedicated to promoting accessibility to ensure new permeable pavements support people of all ages and abilities.

1.9. Implement Complete Streets Plans by 2025 to increase street trees to shade roads, transit stops, and active transportation corridors, prioritizing tree-deficient areas with transit-dependent populations and locations in need of safety improvements.

Complete Streets are designed and operated to support mobility and safety for people of all ages and abilities and all users, including pedestrians, bicyclists, transit riders and drivers. Implementing Complete Streets Plans – with a particular focus on increasing tree shading – will allow for strategic investments that address the cities' largest source of emissions – transportation.

Complete streets can encourage the use of cleaner mobility modes, namely active transportation and transit, both of which must be widely adopted to achieve carbon zero. Efforts to increase canopy cover is relatively low-cost, and complete-street projects have proven to be cost-effective over time as long-term investments that support community health and provide environmental benefits.[119]

Opportunities for Neighborhoods and Businesses

Complete streets support first/last mile connections that hinder transit use and should be pursued first in tree-deficient areas near transit stops, as well as locations that need safety improvements. The implementation of complete streets can also offer opportunities for employment, and increased economic activity by creating more pleasant environments. Studies indicate that pedestrian improvements bolster retail sales and other aspects of local economies.[120]

Implementation Tips

Rather than starting from scratch, existing ordinances should be leveraged and improved, such as Sacramento's Pedestrian Friendly Street Standards ordinance. Many resources are available to support implementation, such as Caltrans' Complete Streets Program and ChangeLab Solutions' Complete Streets policy resources, which include a comprehensive plan, model ordinance and model resolution.

1.10. Collaborate with regional agencies to create and adopt a Regional Open Space and Biodiversity Plan that establishes shared goals and a funded program to preserve, restore, expand, and maintain open space by 2030.

Open space provides many benefits to communities, including protecting the environment, improving quality of life, and preserving elements of local heritage, culture and economy. Open spaces, agricultural land and natural systems sequester carbon and have significantly lower rates of GHG emissions than urban areas. [121] Regional action and commitment can support open space and biodiversity in a way that prevents fragmentation of conserved lands.[122] A Regional Open Space and Biodiversity Plan should aim to restore and maintain natural areas, increase native park space, evaluate drainage canal systems for naturalizations as green space, incentivize conversion of lawns to open space, and aim to reduce and stop the use of harmful pesticides and insecticides.

Opportunities for Neighborhoods and Businesses

Open and natural spaces have been linked to improvements in mental health, can promote health lifestyles, and can help safeguard water resources, air quality and other environmental services that

enhance human health.[123] Public open spaces created by a Regional Open Space plan should seek to be inclusive and culturally competent of all people to ensure equitable access, particularly for marginalized communities.

Expanding and maintaining open space curbs development opportunities that businesses utilized in the past when the significant costs of greenfield development were not as well understood and were subsidized with other public expenditures. Preserving open space and biodiversity have substantial, sustainable economic benefits and also provide incentives for more sustainable, higher density forms of development. Parks and open spaces attract investment, boost tourism, can stimulate commercial growth, and protect farming economies. Maintaining biodiversity is also essential for organic waste disposal and decomposition, soil health, agricultural systems, forests and natural ecosystems that filter our water and air.[124]

Implementation Tips

The cities are encouraged to collaborate with SACOG, Sacramento County, Yolo County, Sacramento Area Flood Control Agency (SAFCA), water and energy utilities, and other key regional partners to create shared goals. The cities can also partner with land and resource conservation groups, such as the Yolo County Resource Conservation District and the Sacramento Valley Conservancy.

Strategy Recommendation #2: Sustainable Food Systems

Increase food security and access to healthy, affordable food for all communities while supporting a regenerative food system by:

- **Sourcing 25% of food locally within a 200-mile radius by 2030.**
- **Sourcing 40% of food locally within a 200-mile radius by 2045.**
- **Reducing 50% of aggregate food waste by 2025.**
- **Reducing 75% of aggregate food waste by 2030.**

Creating a local, regenerative food system will avoid emissions related to food transport and food waste while providing a range of community health and resilience benefits. If food waste could be represented as a country, it would be the world's third-largest GHG emitter behind the U.S. and China.[125] In California, food waste is the single-most prevalent item in landfills.[126] To combat this reality, several State laws seek to reduce food waste:

- AB-1826, which mandates commercial organics recycling.
- AB-341, which establishes a statewide 75% recycling goal by 2020.
- SB-1383, which seeks to reduce organic waste methane emissions and establishes targets of 50% reduction in statewide organic waste disposal from the 2014 level by 2020, and a 75% reduction by 2025.

In addition to reducing food waste, the cities need to address food insecurity. In 2017, 14.4% of residents in Sacramento County and 16.67% in Yolo County experienced food insecurity at some point during the

year.[127] By promoting local food procurement and creating a regenerative food system, the cities can drive down costs and increase productivity.

Regenerative food systems seek to actively reinstate and regenerate the environment and ecosystems that have been destroyed or damaged by industrial agriculture. Those impacts include soil erosion and degradation, lack of affordability and inaccessibility of nutrient-rich foods, meat-centric production and inequitable treatment of workers within the current food system, many of whom are not making a living wage.[128]

The benefits of local food systems have proven themselves in the Sacramento region. A study of the Sacramento region found that for every $1 million in food produced by local farmers and sold through direct marketing, such as farmers markets, 31.8 jobs are generated, in comparison to for every $1 million in food sold through indirect marketing channels, such as large-scale distributors, 10.5 jobs are generated.[129]

A thriving local food system can support farmers who practice environmentally beneficial agriculture, local feed mills, hatcheries, seed houses, local processors, distributors, retailers and restaurateurs. It can create jobs and circulate money within communities, improve food programs at institutions like schools and hospitals, and improve access to nutritious food.[130] USDA reports that operators of fruit and vegetable farms with local food sales generate an estimated 13 full-time equivalent jobs per $1 million in sales, which is estimated as greater than the number of jobs created by fruit and vegetable farms not engaged in local food sales. The City of West Sacramento's primary economic development objective is to be a "food hub" involving all sectors involved with food production, research, transportation, etc.

Overcoming Potential Hurdles

Tracking and monitoring progress towards local food procurement and food waste targets will be imperative to successfully implementing this strategy, but may be challenging. The cities should partner with institutions with existing local food procurement and food waste programs, including UC Davis Health System, Sacramento State and Golden1 Center, to develop clear metrics and pilot a methodology for gathering data and tracking progress.

Establishing city food-waste collection infrastructure may also be a challenge. Engaging with cities (such as Berkeley and Oakland) that collect residential food waste to get guidance and best practices for establishing citywide compost-collection services will help solve this challenge. The cities can engage and partner with local organizations that collect compost, such as the Green Restaurant Alliance Sacramento (GRAS), to learn about local waste-collection services that could be expanded.

Implementation Tactics

2.1. Develop and implement a policy that requires and incentivizes institutional buyers, particularly schools and hospitals, to achieve local food procurement targets. Provide additional incentives for food procured within 100 miles and to local farmers and food producers for transitioning to low-carbon, climate-resilient food production practices. Further reduce emissions from food transport by partnering with the California Clean Mobility Center, other agencies, manufacturers, and food delivery companies to advance ZEV food delivery vehicles.

Sacramento's largest employers and institutions, such as the UC Davis Medical Center and Mercy Hospital, have the buying power to significantly reduce emissions through their procurement policies. By requiring institutional buyers to purchase food produced and manufactured within a 200-mile radius, emissions related to importing food can be significantly reduced. These reductions can be further magnified through incentives for food procured within a 100-mile radius and by advancing ZEV food-delivery technology in partnership with the California Clean Mobility Center.

To further decarbonize the food supply chain, the cities can provide incentives to local farmers and food producers to transition to low-carbon food production practices, such as the adoption of low- or zero-carbon equipment, energy efficiency and electrification upgrades in food processing plants, and production of crops with smaller carbon footprints.

Procuring food locally can result in significant time savings and cost savings, depending on the crop. One study found that local food procurement resulted in time savings of 14 weeks, and procuring local grains resulted in over 50% cost savings.[131] Research also shows that every dollar that schools spend on local foods adds between $1.60 and $3.12 to the local economy in the form of business profits, employee wages, investor dividends, interests/rents and government revenue from sales and excise taxes. Studies estimate multiplier effects for spending on locally produced foods to be between $1.32 and $1.90, meaning that for every dollar spent on local products, between $0.32 and $0.90 worth of additional local economic activity takes place.[132]

The local food procurement target of 25% by 2030 and 40% by 2045 should provide enough flexibility to institutional buyers to determine the most cost-effective foods to procure locally. The cities should engage with buyers to understand products that are cost-prohibitive to procure from local sources to develop a longer-term plan that address these gaps.

Opportunities for Neighborhoods and Businesses

By promoting local food procurement among institutional buyers, the cities can support local small farmers and producers.[133] Revenue increases can also create jobs on local farms and help to keep money in the local economy. Incentives can make it feasible for small farmers to decarbonize their operations while helping them prepare for the challenges that climate change will bring by transitioning to more resilient crops and practices.

Implementation Tips

Many institutional buyers in the region may already have local food procurement objectives. Early engagement with institutional buyers can help the cities understand the opportunities and barriers related to local food procurement to create more effective policies and incentives. The cities should also review available resources related to climate risks and adaptation strategies for the agricultural sector, such as USDA's California Climate Hub and Regional Conservation Partnership Program, to provide support to local farmers.

2.2. Establish a "food recovery to food security" network with restaurants, catering companies, convention spaces, event producers, grocery stores, local food banks, and community food hubs to reduce food waste and address food insecurity by 2025. Partner with a nonprofit to develop a mobile

application that connects food insecure residents with donated food from the network. Create incentives for convenience stores in food deserts to provide healthy and affordable produce.

Food waste accounts for 30-40% of the national food supply,[134] yet 12.3% of American households have difficulty in providing enough food for all their members.[135] Californians throw away nearly 6 million tons of food each year, compromising about 18% of all material that goes to landfills.[136] According to data from Feeding America, 14.4% of the Sacramento County population experienced food insecurity at some point during 2017,[137] and according to the U.S. Census Bureau, 16.67% of Yolo County residents experience food insecurity.

This tactic seeks to address this disjuncture between food waste and food insecurity by establishing a "food recovery to food security" network. This network will connect places with excess food to residents and organizations in need of food. Developing a mobile application will support this network by establishing an easy, accessible way for residents to find donated and recovered food. This tactic also calls for the creation of incentives for convenience stores in food deserts to provide healthy, affordable produce, which would further increase food security.

Opportunities for Neighborhoods and Businesses

This tactic provides opportunities to improve neighborhoods by reducing hunger and food insecurity, increasing connections between residents and local businesses, promoting equity, and increasing investments and awareness of community health.

Food recovery helps businesses save money and improve company culture. Tracking food waste through food recovery can help businesses make more informed purchases and promote efficiency in the handling, preparation and storage of food. Organizations that donate and recover surplus food have reported an increase in staff morale and pride, because staff know their food is given to people who need it.[138]

Implementation Tips

There are many food-recovery programs and organizations that can inform and inspire a food recovery to food security network, such as Waste Not OC, Copia, Epicure Extras at Sacramento State, Food to Share, Fresno State Food Recovery Network, and the Riverside HEAL Zone Initiative. To create a mobile application connecting residents with donated food, network creators can partner with Code for Sacramento, a volunteer team of programmers and coders who support local governments in the SACOG region.

2.3. Expand local food-related business development opportunities by establishing an online portal to streamline new business licensing and permitting and connecting small businesses to loan programs, facade improvement grants, and technical assistance. Advocate for changes in State policies that hinder entrepreneurial ventures that increase food security.

This tactic aims to support local food-related businesses development. Streamlining licensing and permitting, and providing resources for loan programs, grants and technical assistance, all make business

development easier. This tactic also calls for advocating for changes in state policies that currently hinder food security entrepreneurial ventures.

Opportunities for Neighborhoods and Businesses

Increasing access to local food-related businesses can increase food security and offer neighborhoods increased access to a wide variety of food. In neighborhoods with limited access to supermarkets, fresh food, and other healthy food choices, this tactic could help encourage development of food-related businesses.

Supporting business development and improvements offer many opportunities for new and existing businesses, and can uplift local economies. Strategies suggested in this tactic would connect businesses to additional resources and streamline business processes. These impacts can extend beyond local food-related businesses if the online portal is also open to other local businesses.

Implementation Tips

The cities can partner with online-application developers to create a user-friendly, easy-to-maintain portal. The cities can leverage existing efforts, such as SACOG's Sacramento Region Food Hub, and learn from existing policies, such as from Monterey County.

2.4. Expand community-wide composting initiatives and implement citywide food waste collection and organic waste recycling programs by 2025, starting first with institutions and businesses while aligning local requirements with state regulations. Return at least 20% or organic waste resources back to local communities to improve soil health and water retention. Collaborate with Sacramento State and UC Davis to develop technologies and programs to support large-scale organic waste recycling initiatives in the region.

This tactic seeks to collect, redirect and repurpose food waste, calling for community-wide composting and citywide food waste collection and organic waste recycling programs. Composting breaks down yard and food waste into regenerative sources for improving soil quality and growing plants.[139] Organic waste (such as green materials and food materials) are recyclable through composting and mulching, anaerobic digestion and pyrolysis.[140] Anaerobic digestion and pyrolysis can be used to generate different types of fuels for heating, transportation and electricity.[141]

There are many community and citywide organics recycling efforts in the Sacramento region, and this tactic calls for creation of local requirements that align with state regulations. AB 1826, signed by Governor Brown in 2014, requires businesses to recycle their organic waste on and after April 2016, with additional dates and waste levels stipulated in the law.

Organics recycling decreases emissions by reducing and repurposing food waste. In landfills, food waste releases significant levels of greenhouse gas emissions. However, practices such as composting reduce or prevent the release of methane as organic matter breaks down.[142] The use of compost in local communities can also decrease the need for synthetic fertilizers in gardens and other green spaces; and most of these synthetic fertilizers produce 4-8 lbs. of CO_2 emissions per ton throughout their production and transportation.[143]

Opportunities for Neighborhoods and Businesses

This tactic calls for returning at least 20% of organic waste resources to communities to improve soil health and water retention, which can improve neighborhood green spaces, support community gardens, and support individuals in planting and caring for gardens. Compost can be used to help grow crops and vegetation, thus reducing the need for chemical fertilizers.[144]

Encouraging organics recycling offers opportunities for waste service businesses, and can impact institutions and businesses by requiring this type of recycling. Support should be offered to institutions and businesses to support them in complying with organics recycling.

Implementation Tips

There are many programs that can be leveraged or replicated, such as ReSoil Sacramento, San Francisco's Mandatory Recycling and Composting Ordinance, and Zero Foodprint Initiative.

2.5. Create a network of community food hubs that provide food distribution and compost collection services, as well as trainings on composting, reducing food waste, gardening, and healthy cooking. Establish one hub in each neighborhood by 2025 by leveraging existing community centers and partners, starting first with historically marginalized communities and food deserts.

This tactic captures policies suggested throughout this strategy and centers them at the community level. Community food hubs can distribute healthy foods to all neighborhoods, raise residents' awareness of the benefits of composting and waste reduction, support residents in learning gardening skills, and increase access to options for healthy cooking. Starting in neighborhoods with historically marginalized communities and food deserts will ensure that residents with the greatest needs are supported first.

Composting and reducing food waste will reduce methane emissions and gardening can further support carbon sequestration. Growing food locally and in your yard also reduces the need for store-bought food; gardeners who can replace 20% of their store-bought food reduce their carbon footprint by 68 pounds of CO2 per year.[145]

More than 80% of Americans may be prematurely throwing away food because of misinterpreted expiration dates, and "imperfect" food and produce is often never sold or prematurely tossed.[146] Education campaigns about food waste, promotion of organic waste recycling, and connecting food sources to people experiencing food insecurity provides environmental, economic and social benefits.

Opportunities for Neighborhoods and Businesses

The environmental and public health improvements offered by compositing, food waste reduction, gardening and healthy cooking are substantial. Community food hubs will help to center system changes on the neighborhood level, and bring the benefits of those changes directly to residents. Studies have found that 58% of Sacramento kids currently use free/reduced lunch programs, and 40% of Sacramento kids struggle with obesity.[147]

Community food hubs help address both these issues by providing food distribution and training on healthy cooking and gardening. Healthy cooking increases can significantly improve health of residents, as healthier diets reduce rates of chronic disease such as Type 2 diabetes. Studies of "healthy food incentive" policies in Medicare and Medicaid show these incentives could decrease healthcare costs by nearly $40 billion.

Leveraging existing community centers and partners can help make implementation of community food hubs and related programs cost-effective. The creation of food hubs also offers opportunities for businesses to support these hubs through food distribution, trainings, and building ties with community residents to garner support and customers.

Implementation Tips

The cities can leverage existing efforts, such as the Sacramento-based Food Literacy Center, Fresno Metro Ministry's Food to Share program and Homegrown Health program, and Riverside's HEAL Zone.

2.6. Adopt ordinances by 2023 or promote existing ordinances to enable urban agriculture and carbon farming techniques that enhance the production of local, healthy food by allowing farming by right in all types of zoning and discouraging the use of synthetic pesticides and fertilizers. Through incentives, maximize space for food production on small farms, community parks, lawns, and vacant lots, including incentives to developers for rooftop gardens and vertical farming.

Updating zoning laws to allow for urban agriculture and carbon farming increases access and production of local, healthy food and helps to maximize the efficiency of urban spaces. West Sacramento has an Urban Agriculture section in its zoning code for example. Recognizing competing demands for limited space in dense areas, the cities should encourage innovative and efficient land uses, such as rooftop gardens, vertical farming and conversion of irregular vacant lots for community gardens and pocket parks.

Land that has been changed from natural ecosystems to agricultural use has typically resulted in the depletion of organic compounds in soil because of the reduction in plant roots and increased soil erosion. On the other hand, healthy soil provides increased water retention, biodiversity, reduction of heat-island effects through increased albedo, reduction of erosion, and carbon sequestration.[148]

Existing farmland should be conserved as converting farmland and rangeland creates 100 times more emissions than the land it is replacing.[149] Promoting urban agriculture and carbon farming increases the amount of soil in urban areas; 80% of the carbon in terrestrial ecosystems is held in soil. It discourages the use of synthetic pesticides, which produce 4-8 pounds of CO2 emissions per ton throughout their production and transportation.[150]

Opportunities for Neighborhoods and Businesses

Incentivizing space in a community for small farms, community parks and vacant lots provides increased green space in a community which has a co-benefit of healthier air quality and reduction of extreme heat through increased albedo. Localized food production can also be a solution to food deserts in neighborhoods.

Urban agriculture offers multiple economic benefits, and has helped revitalize local economies. Local food production helps keep dollars circulating in the local economy, creates jobs, and helps people develop marketable skills and trades. Urban agriculture can also encourage conversation from waste to food, collecting organic waste to help grow new food. This can help encourage economic self-sufficiency and efficiency.

A study in Berkeley found that growing fresh food in urban gardens can be cost-effective if farmers can sell their produce at a premium price in local markets to make up for the costs of irrigating urban farms.[151] It may be possible for many urban farms to sell their produce, but incentives can be created to help farmers recoup costs of urban farms despite not selling their produce.

Implementation Tips

Urban agriculture requires irrigation, so steps should be taken to encourage efficient irrigation and make water cheaper in urban gardens to help promote cost-effectiveness or urban farming.[152]

The cities can look to other local government efforts, including those of National City, Palo Alto, and Measure A in Marin County.

2.7. Collaborate with county departments and other stakeholders to develop a food system impact assessment by 2023 that includes evaluation of emissions tied to the food system and a socio-economic risk assessment of climate change impacts to the food system.

A food system impact assessment will provide valuable information on region-wide impacts, challenges and opportunities for the Sacramento area food system. Gathering this information will help to set emissions reduction goals, plan and prepare for climate change impacts on the food system, and advance socio-economic benefits. An impact assessment can help identify the most appropriate, effective, and efficient food systems interventions. For example, an impact assessment might help identify pre-existing community assets that can best be leveraged to support food system goals, without requiring additional costs and investments.[153]

Opportunities for Neighborhoods and Businesses

Understanding the current socio-economic impacts of the food system can lead to better support for neighborhoods and equity advancements by identifying needs effective ways and opportunities to meet those needs. A food-system impact assessment can also reveal business opportunities to leverage food system improvements for economic growth.

Implementation Tips

Project partners in developing a food system impact assessment may include Sacramento County, Yolo County, Sacramento Food Bank & Family Services, Yolo Food Bank, Sac State Campus Eateries, Food Literacy Center, and other local and regional partners.

There are numerous resources available to support local agencies in conducting a food-system impact assessment, including USDA's The Economics of Local Food Systems: A Toolkit to Guide Community

Discussions, Assessments and Choices and Assessing a Local Food System: The Palouse-Clearwater Food Coalition Assessment Process.

2.8. Promote plant-based diets by partnering with schools and other institutions to add plant-based options to their offerings and by working with local organizations to provide cooking classes and demonstrations at community events.

Plant-based diets are associated with many health benefits, such as a lower risk of heart disease, hypertension, diabetes, colon and breast cancers, obesity and digestive disease.[154] With an abundance of local crops – such as almonds, walnuts, tomatoes, beans, and many kinds of fruit – in the Sacramento Valley, the cities can promote the health benefits of plant-based diets while working to achieve local food procurement goals.

Animal-based products require more resources compared to growing produce. Meats, dairy, eggs, fish and seafood account for 83.5% of GHG emissions in the average American diet, with the majority of those emissions coming from meats (56.6%) and dairy (18.3%).[155] In California, livestock account for 5.3% of the state's total GHG emissions (overall, agriculture makes up 7.6% of total GHG emissions).[156] A 2016 study estimated that if all Americans went vegetarian, the projected annual savings in 2050 would be $35 billion in environmental savings and more than $187 billion in direct healthcare savings.[157] Research on healthcare savings from plant-based diets indicate that they are low-risk, cost-effective interventions that can lower blood pressure, cholesterol levels and body mass index.[158]

Opportunities for Neighborhoods and Businesses

Affordable and fresh plant-based diets have traditionally been less accessible to low-income residents and marginalized communities. Income inequality and systemic racism have led to high levels of food insecurity among communities of color due to the limited access to local grocery stores with fresh produce. Grocers are often hesitant to build stores in low-income areas, which may be viewed as less economically viable locations, and with tax breaks that are not as lucrative as economically-secure areas.[159] Furthermore, meat is often a prominent component for meals in many cultures, and it is important that efforts to create culturally appropriate plant-based options are driven and supported by members of those communities.[160]

Offering plant-based options may also increase local business sales as demand for plant-based options increase. A 2016 poll found that 37% of Americans regularly order meals without fish or meat when eating out.[161]

Implementation Tips

The cities can partner with local farms like Yisrael Family Urban Farm, Soil Born Farms, West Sacramento Urban Farms and New Roots Community Farm to provide cooking classes and demonstrations while encouraging participants to support these local farms.

Strategy Recommendation #3: Community Climate Resilience

Identify climate vulnerabilities and adaptation strategies as part of the Climate Action Plan or General Plan updates by 2022. Develop and implement preparedness measures, with a priority focus initially on increasing the resilience of communities most vulnerable to climate change impacts by investing in existing community assets and networks to increase community adaptive capacity.

While reducing GHG emissions to mitigate climate change is critical to preventing the worst outcomes of climate change, communities are already experiencing the negative impacts of climate change with those impacts expected to worsen over time. SB-379 requires cities and counties to integrate climate adaptation and resilience strategies into the safety elements of General Plans before or beginning in January 2022. The cities will therefore need to identify adaptation strategies, starting with the identification of climate risks and vulnerabilities.

In the Sacramento region, communities will need to prepare for and mitigate a range of climate-related impacts and disasters, including rising temperatures and more severe and frequent heat waves; variable precipitation patterns, drought and flooding; and wildfires and wildfire smoke. The cities will need to conduct vulnerability assessments that evaluate these risks, and identify vulnerable populations on the frontlines of these impacts and communities that will be disproportionately impacted. Numerous studies demonstrate how earlier actions to increase preparedness and resilience are far more cost-effective than taking action in response to disasters or when climate impacts worsen. For example, an international research team analyzed 1,692 cities around the world and found that the future costs of climate change jumped 2.6 times when they took the heat island effect into account, compared with running the model as if warming was evenly distributed around the planet.[162]

The cities alone cannot safeguard communities from the worsening impacts of climate change: Individual- and neighborhood-level action is critical to build resilience and respond to emergencies. Robust community engagement—particularly with those most marginalized and vulnerable—is needed to co-create adaptation strategies and determine appropriate implementation measures that preserve community culture, provide local economic growth opportunities, and create a sense of shared ownership and responsibility for community resilience. By focusing their efforts on investing in existing community assets and networks to increase community adaptive capacity, the cities can build community capacity and resilience in a way that enables all residents to meet their basic needs, enhances social cohesion and self-sufficiency, and empower community voice and decision-making.

Furthermore, an international research team analyzed 1,692 cities around the world and found that the future costs of climate change jumped 2.6 times when they took the heat island effect into account, compared with running the model as if warming was evenly distributed around the planet.[163] Numerous studies demonstrate how earlier actions to increase preparedness and resilience are far more cost-effective than taking action in response to disasters or when climate impacts worsen.

Overcoming Potential Hurdles

The fragmentation of existing communities is a significant hurdle to building community resilience. Strategies for addressing this challenge include partnering with trusted community organizations to leverage existing networks, such as Neighborhood Watch, to engage more residents and build social

cohesion, and creating a communications toolkit for neighborhood associations to raise awareness about climate-change risks and resilience-building activities and resources.

To ensure community resiliency, sustaining adaptation momentum over time will be critical to keeping policies and practices up to date and effective in addressing climate change. Climate resilience must be mainstreamed to make adaptation a shared responsibility across public and private sectors, and climate-resilience duties should be embedded across all city departments, including adaptation measures in regular maintenance activities, and encouraging voluntary action through incentives to engage businesses. The cities should partner with other local and county agencies (including local health departments), academic institutions, community-based organizations and other trusted partners to provide iterative education on climate risks and resilience and further mainstream adaptation into agency operations.

Implementation Tactics

3.1. Create a Community Resilience Network by 2025 that models San Francisco's Neighborhood Empowerment Network, a coalition of agencies, organizations, and institutions that deploys tools and resources for communities to achieve their self-identified resilience goals. Coordinate with the network to expand Community Emergency Response Training programs to train at least 30,000 residents in climate resilience and disaster response skills by 2030. Create pathways for employment by allocating resources to community ambassador positions that support evacuation planning, emergency communications, access and functional needs awareness, and neighborhood-level preparedness and recovery.

Community resilience is the ability of a community to leverage its assets to improve the community's ability to withstand, adapt to, and recover from adversity. Community resilience benefits disaster preparedness by encouraging social connection and support systems.[164] This tactic calls for promoting community resilience through establishing a Climate Resilience Network that models San Francisco's Neighborhood Empowerment Network (NEN). NEN's mission is to leverage the expertise, resources and programs of its member organizations to create and deploy tools and resources that empower communities to achieve their self-identified resilience goals. NEN employs techniques such as place-based planning, human-centered design, asset-based organizing and, servant leadership to engage communities and ensure the transfer of ownership back to the Neighborhood of their resilience.

This tactic also calls for expansion of emergency response training programs for residents, as well as opportunities for employment by creating community ambassador positions to support emergency response and recovery.

Opportunities for Neighborhoods and Businesses

Bolstering community resilience can significantly improve disaster response and recovery. Studies indicate that cities with strong social networks are able to rebound from disasters more quickly than those without.[165] Initial investments in supporting community resilience can quicken disaster recovery and lower emergency response and recovery costs, leading to cost savings.

According to FEMA, supporting community resilience can help prevent loss of life and injury, reduce property damage to homes and businesses, protect cultural and historical assets, and build a sense of place and peace of mind, all of which benefit individuals and neighborhoods. Community resilience benefits businesses and the economy by reducing business interruption and revenue loss as a result of emergencies, and reducing costs associated with disaster recovery. Building strong, resilient communities can also attract new businesses and residents, further strengthening the local economy.[166]

Implementation Tips

The cities can to look to existing community resilience programs, including San Francisco's Neighborhood Empowerment Network, NorCal Resilience Network, and Los Angeles County Community Disaster Resilience Project. The cities should partner with emergency responders, access-and-functional needs groups, adult training organizations, and cultural competency groups to provide comprehensive and equitable trainings.

3.2. Increase the accessibility of existing cooling centers by reducing temperature thresholds and set air quality thresholds for opening clean air centers by December 2020. Add additional centers that can serve as safe havens during times of emergency, leveraging existing community centers that are familiar to neighborhood residents, such as libraries and schools. Ensure at least one center in each neighborhood by 2025, first prioritizing marginalized communities.

Cooling centers, warming centers, and clean air centers provide safe havens during times of emergency and can help to prevent health and safety issues during times of emergency. Heat-related illnesses are the leading cause of death from natural weather events, as high temperatures can lead to heat exhaustion, heat stroke, and trigger respiratory and cardiovascular issues.[167] The health impacts associated with prolonged exposure to wildfire smoke include stress and damage to the cardiovascular, respiratory, immune, neurological, and reproductive systems.[168]

While there are multiple cooling centers in the cities, these centers are inaccessible to many community members due to restrictive thresholds for opening centers and limited hours of operation. Cooling centers are also often not viewed as actual centers that are actively used by residents, and many people may be unaware of the cooling and warming centers available to them.

The City of Sacramento's 24-hour cooling centers are only opened when there are either three consecutive days with high temperatures above 105 degrees, or three consecutive days with low temperatures above 75 degrees. The thresholds for opening warming centers are also restrictive. In 2019, warming centers were not opened in Sacramento as temperatures had not met certain thresholds, such as remaining at or below freezing for three consecutive nights. Sadly, a homeless man died in February 2020 on a night when temperatures hit the low 30's.[169]

The inconsistent hours of operation for cooling centers also make many of these centers inaccessible and unreliable for many community members. In Sacramento, most cooling centers are only open Sunday-Thursday from 2:00–9:00 pm. In West Sacramento, the three city-operated cooling centers each have different hours of operations., and often close before 6:00 pm and don't open until 8:00 am, further reducing accessibility. West Sacramento warming centers, offered as a joint program between the City,

the County and Mercy Coalition of West Sacramento, are currently only open during the winter for five nights per week. Access to these warming centers may be further restricted as the number of centers is limited to the number of participating churches, each of which provide 20 beds.[170]

Furthermore, the cities currently do not have designated clean-air centers, which could support community health and safety during poor air-quality days. These centers are critical to protecting the health of people experiencing homelessness and the general population, as many homes and buildings are not equipped with proper air-filtration systems.[171] Safe haven centers should also be open during storms and periods of extreme precipitation to best protect public health and maximize their utility.

The 2006 California heat wave led to an estimated 600 deaths, 16,000 emergency room visits, 1,1000 hospitalizations, and marginal damages of $5.4 billion, and the human and economic costs of heat waves are expected to increase.[172] As relatively low-cost strategies, cooling centers provide critical relief from heat, which can reduce heat-related hospitalizations, thus offering additional health cost benefits.[173]

Opportunities for Neighborhoods and Businesses

Safe haven centers that provide cooling, warming and clean-air benefits need to be identified through a community-driven process. The proximity of these centers to marginalized populations is important to consider as many of these residents may not have access to a vehicle or nearby transit. The cities are recommended to establish one center in each neighborhood, starting with marginalized communities and working with community members to identify the most appropriate library, school, church or other community facility to serve as a safe haven.

Other barriers that discourage use of safe havens should also be identified and addressed, such as whether pets are allowed. Providing daily amenities such as WiFi, electrical appliance charging options, comfort items, food and drink, feminine hygiene products and basic toiletries can also increase the use of the centers.

Implementation Tips

There are many existing cooling centers, warming centers, and community centers in both cities that should be leveraged while increasing accessibility. Safe haven centers can be established at libraries, community centers, senior centers and recreation centers. The cities can also partner with businesses to increase accessibility to air-conditioned, air-filtered spaces, such as shopping malls.

Although there are currently no clean-air centers in Sacramento, such centers have been established in other cities and can be used as models. For example, Santa Clara County has established multiple clean-air centers.

As an example of a pilot program, the City of Seattle established plans in 2019 to outfit five public buildings with high-tech filtration systems and detection systems to monitor indoor and outdoor air quality. The locations of these pilot centers were selected because they are popular spots for locals, have air-conditioning, and are located in areas with concentrations of residents who likely cannot afford filtration systems for their homes.[174]

3.3. Implement microgrid and energy storage solutions at critical facilities that community members rely upon to prepare for de-energization events, prioritizing residential battery storage and/or solar incentives for households with medical home healthcare needs. Restrict utility shutoffs for households at or below 300% of the federal poverty line, by the end of 2020.

De-energization events can pose immediate health and safety threats to individuals and communities, particularly those who rely on medical devices or medicines that require power or refrigeration. Critical facilities – such as hospitals, nursing homes, blood banks, healthcare facilities, police stations, fire stations, emergency operation centers, drinking water and wastewater treatment plants, and structures storing highly potentially dangerous materials – all rely on energy to operate.

To mitigate the risk of wildfires triggered by transmission lines (as occurred in the devastating Camp Fire), the CPUC adopted Resolution ESRB-8 to enable Investor-Owned Utilities to shut off electric power, referred to as "de-energization" or Public Safety Power Shutoffs (PSPSs), to reduce the risk of utility infrastructure starting wildfires. During the October 2019 shutoffs, Winters Healthcare staff had to decide between keeping their refrigerator full of vaccines running or keeping electronic health records online because their back-up generator did not have the capacity to support both. Ultimately, the facility chose to maintain their files and send vaccines to a sister facility that was not expected to lose power. [175]

As climate change accelerates, de-energization events may become more common. Extreme heat and wildfires (and by proxy, droughts and extreme weather events) can lead to both planned (PSPS) and unplanned (heat waves overloading the power grid) de-energization events. Thus, it is imperative that critical facilities and key community centers where people can congregate in times of emergency are equipped with microgrid and energy storage solutions. Microgrids are useful as they connect to the main power grid, but have the ability to generate their own power. Energy storage gives facilities an option for clean back-up power, rather than resorting to diesel generators.

Installing microgrids and energy storage can be costly, but studies indicate that methods can be taken to make microgrids more economically attractive to install and operate, such as by creating a net-metering system.[176] Furthermore, direct costs and lost revenue resulting from de-energization events are significant for all parties involved – from public agencies to residents and businesses. Additional costs and losses can come in the form of overtime payments to emergency response staff, fuel for backup generators, spoiled food and lost wages, among others.

Opportunities for Neighborhoods and Businesses

This tactic also calls for restricting utility shutoffs for households at or below 300% of the federal poverty line by the end of 2020, recognizing that efforts to prevent future de-energization events should also seek to protect low-income households today. Maintaining power is particularly important for low-income households that have very limited resources for recovering food, supplies, and other necessities that can be damaged during de-energization events.

Microgrids can bolster community resilience and enable neighborhoods to benefit from clean, reliable service during times of emergency. The cities should partner with utilities and seek grant funding and incentives to implement microgrids and storage solutions at critical facilities and popular community

centers that can serve as safe havens. The cities should share these incentives with households with medical home healthcare needs and local businesses.

The economic impact of the 2019 de-energization events were estimated to be over $2 billion,[177] and by encouraging businesses to install clean back-up energy solutions, future economic and business losses may be mitigated.

Implementation Tips

The cities should review studies that evaluate the cost-effectiveness of microgrids and storage to pursue and consult with local energy experts and community members to guide implementation. The cities can also look to other local governments planning for or implementing microgrids:

- Humboldt County is testing the viability of an $11 million microgrid.
- Three Fremont fire stations are connected to a microgrid system. Installation of the first solar array cost $800,000, with the next two solar arrays at $500,000 each. The ROI for this microgrid is projected to be 4-5 years.
- Brooklyn has implemented a blockchain microgrid where participants produce energy for themselves, while maintaining the ability to sell excess energy produced to their neighbors, sell it back to the grid, or store the energy they produced.[178]

3.4. Adopt a Climate Resilient Infrastructure Ordinance to require climate resilience measures, including but not limited to urban heat island mitigation, water conservation, and flood protection measures for all new construction, including roads, and existing infrastructure undergoing major retrofits by the end of 2021, as appropriate. Measures should include cool roofs, cool and permeable pavements, bioswales, graywater collection, low-impact development, and other cost-effective strategies to build resilience to climate change impacts based on vulnerability assessments and climate change models.

The responsibility of adapting to climate change cannot fall solely on local governments. The private sector must also shoulder responsibility, and adopting a Climate Resilient Infrastructure Ordinance will bolster necessary private sector support towards creating more climate ready communities. Establishing an ordinance sets city expectations and requirements that encourages the private sector to use the many cost-effective technologies and strategies available for increasing climate resilience, and increases private-sector responsibility.

The Sacramento region is already experiencing the impacts of climate change, and these effects will continue to increase in frequency and severity in the future. Climate-change impacts, which include extreme heat, drought and extreme precipitation events, the detrimental effects of these climate impacts can either be amplified or mitigated depending on local infrastructure. For example, infrastructure that does not account for extreme heat can lead to even higher urban temperatures as surfaces absorb and radiate heat, however infrastructure such as cool roofs and cool and permeable pavements decrease heat and bolster resilience. Infrastructure must account for climate vulnerabilities, as well as the specific needs of construction areas (such as construction in a flood zone).

Climate resilient infrastructure can support carbon zero by reducing energy needs. For example, cool roofs help maintain lower temperatures, thus reducing air-conditioning use. When many buildings have cool roofs, this can also reduce local air temperature, further decreasing energy use.[179]

Adopting climate-resilient infrastructure for new construction and structures undergoing major retrofits has the potential to improve the reliability of service provision, increase the lifetime of infrastructure and its assets, and protect asset returns. Infrastructure improvements and investments to the built environment can lead to increased property values and gentrification, so efforts should include anti-displacement policies as necessary. Nature-based, flexible and innovative approaches to climate-resilient infrastructure offer opportunities for decreasing costs of implementation.[180] A 2017 study conducted by the National Institute of Building Sciences found that every $1 spent on investing in hazard mitigation for buildings saves $4.[181]

Opportunities for Neighborhoods and Businesses

Infrastructure failings can be extremely detrimental, and sometimes fatal for communities and individuals, particularly those on the frontlines and most vulnerable to climate impacts. Ensuring development of climate-resilient infrastructure helps to decrease risk, exposure, and threats to public health and safety.

Adopting a Climate Resilient Infrastructure Ordinance may lead to higher necessary investment and upfront costs for infrastructure development and retrofitting, which could potentially stress construction businesses and other organizations responsible for development. However, encouraging innovation in infrastructure also offers additional job opportunities. Additionally, infrastructure improvement projects provide an opportunity for further local community engagement and decision-making, especially for marginalized stakeholders who may be directly impacted.

Implementation Tips

To address potential resistance from developers about an ordinance, the cities should conduct public campaigns about the benefits and ultimate cost-savings of climate-resilient infrastructure. The cities can include a robust community engagement process to inform and help guide infrastructure planning and investment decisions. The cities can also look to other jurisdictions in California that have already adopted stipulations for developing climate-resilient infrastructure, such as San Francisco's Green Building Ordinance and limitations on water use for landscaping and Los Angeles' Low Impact Development Standards. Although originally developed for California state agencies, the cities can reference the Governor's Office of Planning and Research's (OPR) "Planning and Investing for a Resilient California" guidebook for ways to integrate climate change into infrastructure planning and investments, as well as incorporate community engagement best practices and equity considerations (see the Equity Checklist).

3.5. Integrate climate vulnerabilities and adaptation strategies in all relevant city plans by 2025. Update adaptation strategies every three years to incorporate evolving climate and risk projections and adaptation best practices, and develop a process for tracking and reporting neighborhood-level progress towards key health and resilience indicators.

SB-379 (passed in 2015) requires cities and counties to integrate climate adaptation and resilience strategies into the safety elements of General Plans before or beginning in January 2022. Considering the far-reaching impacts of climate change across all sectors and facets of society, the cities are encouraged to integrate climate risks, vulnerabilities, and adaptation strategies into all relevant plans.

While SB-1035 requires climate adaptation and resiliency strategies to be assessed at least every eight years, the Community Health & Resiliency TAC recommends strategies to be updated every three years so that the cities use best-available science, models, projections, and practices in the rapidly evolving field of adaptation. Committing to regular updates will enable the cities themselves to adapt and pursue the most appropriate and effective adaptation measures. A 2017 study from the National Institute of Building Sciences found that for every $1 spent on hazard mitigation, the U.S. saves $6 in future disaster costs.[182]

This tactic also calls for a process to track and report neighborhood-level progress toward health and resilience indicators to create transparency around baseline data and city efforts while providing community members with data to pursue their own initiatives.

Opportunities for Neighborhoods and Businesses

The cities alone cannot fully safeguard communities from climate change. Adapting and building resilience to climate-change impacts will require action to be taken by all residents and businesses. Through robust and ongoing outreach, education and training, and most importantly, meaningful and culturally- and linguistically-competent community engagement, the cities can work alongside communities to equip community members themselves with the knowledge and skills needed to prepare for disasters and support the implementation of community adaptation strategies – which should also be informed by community input. Frontline communities should take priority, namely low-income communities of color and vulnerable populations who will be hit first and worst by climate impacts and often with the least resources and capacity to adapt.

Businesses also have a stake and will most certainly face disruptions, whether from disruptions to their supply chain or physical damages to infrastructure. The cities should evaluate climate risks to businesses as part of their planning process and support local businesses in understanding these risks and their vulnerabilities, developing their own disaster preparedness and business continuity plans, and pursuing actions to build resilience.

Implementation Tips

As members of the Capital Regional Climate Readiness Collaborative, both cities should continue engaging in the collaborative to stay up-to-date on the latest news and best practices, as well as funding opportunities for adaptation research, planning and implementation. The cities should also leverage existing and emerging resources, including OPR's Adaptation Clearinghouse and the California Department of Public Health's Climate Change and Health Vulnerability Indicators (CCHVIs), as well as the California Healthy Places Index (HPI), which is useful to help identify and prioritize investments in disadvantaged communities based on social determinants of health indicators.

3.6. Advocate for state policies that promote resilient communities in the face of climate change, particularly through infill development policies such as density bonuses, transfer of development rights, zoning and building codes that inhibit sprawl and open space conversion and incorporate wildfire safety requirements in areas at higher risk for fire, flood and other natural disasters.

In addition to poor forest management, insufficient maintenance of energy infrastructure – and the compounding impacts of climate change, sprawl, and development at the Wildland-Urban Interface (WUI) – contributes to the heightened wildfire risk that many communities are facing. Immediate interventions are needed to limit the risk of catastrophic wildfire and other climate-related risks from growing even larger, including reducing or restricting new development or redevelopment, and protecting existing communities, in areas of higher risk.

Increasing urban density offers opportunities for open space protection and conservation, walkable and rollable neighborhoods, car-free transit, less air pollution, fewer road fatalities, affordable housing and decreased greenhouse gas emissions.[183] Furthermore, increased density ensures that actions taken to bolster climate resiliency and safety requirements for natural disasters can have increased geographic efficiency and reach for greater numbers of the population. Inhibiting sprawl and increasing density can promote active transport and public transit, decreasing transportation emissions and advancing efforts to achieve carbon zero. Such measures improve emergency response times (police, fire, ambulance), as well as cost-effectiveness by reducing development costs and allowing for lower-cost provision of city services.

Opportunities for Neighborhoods and Businesses

Increased density that prioritizes affordable housing, equity, walkability and transit can offer many neighborhood and community benefits, such as decreased commutes, increased safety, and improved health. Research suggests that increased densities and large cities lead to economic development with large labor-markets and networks for innovation. Furthermore, the costs of offering public services are lower in denser areas. Higher demand for goods and services does lead to higher costs, and can make living in cities expensive.[184] Thus, steps should be taken to protect small businesses and low-income residents from rising rents. In general, it is imperative that equity and environmental protection measures are integrated into planning and development to avoid potentially damaging outcomes of densifying and improving urban areas, such as housing unaffordability, residential displacement, more congestion, and increased air pollution.[185]

Implementation Tips

The cities should prioritize equity considerations to prevent unintended consequences resulting from urban densification and development, including increased costs of living, and residential and economic displacement. The cities should work with communities and anti-displacement groups to ensure that measures are in place before development occurs and low-income communities are not harmed by development policies. The cities should review reports and case studies related to creating sustainable, equitable, healthy high-density cities, such as the Urban Land Institute's 10 Principles for Livable High-Density Cities - Lessons from Singapore and Causa Justa Just Cause's Development Without Displacement report.

3.7. Adopt trauma-informed policies and practices to address the mental, emotional, and psychosocial health impacts of climate change and to promote community-based health interventions that address racial and health disparities for key chronic diseases and negative health outcomes exacerbated by climate change. Leverage existing programs that have demonstrated success in marginalized communities.

Climate-change impacts on the environment, economy, and physical health and safety often take center stage in climate-adaptation discussions. However, climate change also significantly impacts mental, emotional, and psychosocial health. Increases in the frequency and severity of climate emergencies and natural disasters such as wildfires, droughts, floods, and heat waves simultaneously increase stress, anxiety, and trauma.

Directly experiencing a natural disaster, as well as fear for future disasters and the climate crisis overall, can induce anxiety, depression, PTSD, grief, survival guilt, compassion fatigue, and suicidal ideation.[186] Stressed and traumatized people often resort to more isolated, self-protective survival behavior that can activate a cycle that causes further harm, which can result in relationship distress, substance abuse, racism, sexism, tribalism, violence and more.[187]

Community-based health interventions for climate resilience can help to address these psycho-social health impacts and may include strategies that support social cohesion and support networks, normalize and increase access to mental health services, establish cooling centers and clean air centers, and increase disaster preparedness.[188]

Interventions should also proactively address chronic illnesses —such as cardiovascular and respiratory diseases—that can be exacerbated by climate change. In California, 80% of all deaths are due to chronic diseases like heart disease, stroke, cancer, Type 2 diabetes, obesity and chronic respiratory conditions.[189] Many of these chronic diseases could be prevented or improved with increased exercise. In fact, approximately 23,000 deaths per year in California are directly attributable to lack of physical activity.[190] There also exists significant health disparities between different racial and ethnic groups. For example, California death rates from stroke have declined overall, but the rate among African-Americans continues to be 50% higher than other groups.[191] Low-income households see rates of diabetes double those of higher-income families.[192] Health interventions that promote physical activity (particularly through active transportation) and locally-sourced healthy diets can thus have substantial physical and mental health benefits and prevent early deaths, as well as support efforts to reduce GHG emissions. Priority should be given to interventions and investments that have the greatest benefits to low-income populations and communities of color experiencing existing health inequities.

These health impacts are also very costly to individuals, communities, and the overall healthcare system. The Academy on Violence and Abuse estimated violence and abuse costs the U.S. healthcare system between $333 billion and $750 billion annually – which amounts to 17%-37.5% of total healthcare costs.[193] In 2010, California spent $98 billion treating six chronic conditions: arthritis, asthma, cardiovascular disease, diabetes, cancer, and depression.[194] On the other hand, preventive healthcare measures reduce the prevalence of chronic diseases, which reduces healthcare costs.[195] The Trust for America's Health found that investing $10 per person per year in community-based programs to increase

physical activity, improve nutrition, and prevent smoking and other tobacco use could save the U.S. $16 billion annually within five years.[196]

Opportunities for Neighborhoods and Businesses

Many racial and ethnic minorities experience higher rates of chronic diseases and premature death compared to rates in populations that are white.[197] These health inequities will be exacerbated as climate change worsens, and addressing physical and mental health impacts can be very costly. Investing in preventative community-based health interventions will be the most cost-effective approach for individuals and industries alike.

By working with local leaders and engaging community members representing vulnerable populations, the cities can identify the most helpful programs, policies, and practices for improving health outcomes and addressing existing racial and health disparities for key chronic diseases, with the recognition that solutions may differ across neighborhoods and population groups.

Implementation Tips

More than 30 states have implemented community-based health interventions, as evident in the Trust for America's Health 2009 report, Examples of Successful Community-Based Public Health Interventions (State-by-State). The cities can also look to the International Transformational Resilience Coalition and their recommendations on building psychosocial and mental health resilience for California. Resilient Baton Rouge also has several toolkits and manuals, including a case study on applying depression collaborative care and community planning to disaster recovery. The cities can also engage with local organizations, including Resilient Sacramento, Resilient Yolo, Healthy Sacramento Coalition and Latino Coalition for a Healthy California.

For guidance on addressing chronic diseases through healthy living, the cities can participate in the Healthy Eating Active Living (HEAL) Cities campaign. Finally, a useful guide for local health departments (and other local agencies) to advance climate change, health, and equity is the American Public Health Association's and Public Health Institute's Climate Change, Health, and Equity: A Guide for Local Health Departments.

Community Health and Resiliency TAC Roster

Community Health and Resiliency TAC Co-Leads: **Kathleen Ave** | Sacramento Municipal Utility District and **Daniel Woo** | California Department of Public Health (for identification purposes only)

- **Laurie Litman** and **Dr. Goli Sahba** | 350 Sacramento
- **Gail Kennedy** | ACES Connection
- **William Barrett** | American Lung Association
- **Brian Shobe** | California Climate & Agricultural Network
- **Glennah Trochet** | California Physicians Alliance
- **Mary Kimball** | Center for Land-Based Learning
- **Roshini Das**, **Trinity Smyth**, **Greta Soos** and **Jennifer Venema** | City of Sacramento
- **David Tilley** | City of West Sacramento

- Nailah Pope-Harden | ClimatePlan
- Arooj Ahmad | *Community member*
- Megan Sheffield | County of Sacramento
- Simeon Gant | Green Tech Education
- May-Lin Chang | HGA Architects
- Karalee Browne | Institute for Local Government
- Carolyn Curtis | Resilient Sacramento
- Lori Chelius | Resilient Yolo
- David Baker | ReSoil
- April Wick and Russell Rawlings | Resources for Independent Living
- Chris Brown | Sacramento Climate Coalition
- Jennifer Kretschman | Sacramento City Unified School District
- Susan Veazey | Sacramento Housing and Redevelopment Agency
- Shelley Jiang | Sacramento Metropolitan Air Quality Management District
- Jose Bodipo-Memba | Sacramento Municipal Utility District
- Torin Dunnavant and Ray Tretheway | Sacramento Tree Foundation
- Tamiko Heim | State of California
- Kirin Kumar | Strategic Growth Council
- Ellinor Arzbaecher | Student
- Rachael Dal Porto | Student
- Brenna Lin | Texas A&M Department of Edu Psychology
- Christine Tien | The California Endowment
- Bernadette Austin and Katie Conlon | UC Davis
- Stephanie Bray | United Way Capital Region
- Meg Arnold | Valley Vision
- Jackie Cole | Veritable Good Consulting
- Elena Sanchez | Western Service Workers Association
- Suzanne Reed | Yolo Healthy Aging Alliance

FINANCE AND FUNDING

The Finance and Funding Technical Advisory Committee (TAC) was created to support the Commission's mandate to identify high-impact strategies to achieve carbon zero by 2045 in the cities of Sacramento and West Sacramento by developing an inventory of financing options to implement the recommended strategies: Mobility, Built Environment and Community Health and Resilience.

The Finance and Funding TAC convened over three meetings to discuss finance and funding options for each of the sector-based recommendations.

The Difference Between Finance and Funding

Funding: Monies provided by government or other entities that do not have to be repaid – likely sourced from taxation, fees, donations or other public sources

- Often applied to projects for which there is no demonstrable financial benefit or a linkage to a revenue stream
- Focus can be applied to generating the biggest impact from funds without the constraint of financial feasibility
- Lack of financial discipline can result in the inefficient allocation of money
- No long term financial self-sustainability

Financing: Monies provided by a lender – public or private – that must be repaid over a specified term, with a specified interest rate and other conditions attached

- Requires compliance with the terms of the borrowed money – and a business case that demonstrates financial viability
- More control over the analysis of the fund application
- Requires the project to demonstrate financial self-sustainability
- Can accelerate funds that might not otherwise be available
- Socially beneficial projects that do show monetary return may not be considered
- Added cost to project
- Added difficulty and timeline to access funds

By combining both funding & financing elements, it may be possible to realize the best of both worlds

- Fund bigger projects or programs relative to what is available at present
- Drive financial sustainability
- Focus on value
- Make unaffordable projects affordable
- Promote a structured business-like approach to decisions

The options identified in the Matrix should therefore be regarded as cumulative/additive, to promote ideas and prioritize the most efficient solution(s).

Summary of Identified Finance and Funding Options

In addition to the strategy specific recommendations in the Matrix of Options, some common themes for all three strategies were identified throughout the process. These are not necessarily funding or finance related and are summarized below for ease:

- A focus on Asset Management: A need for data and a clear understanding of what the starting baseline is was identified. Understanding what the existing assets are, where and how best to measure those going forward will allow to measure the meaningful impact of investments across the asset classes.
- A focus on Capital Planning: In order to be successful, a clear need to prioritize climate investment was identified as essential and must be reflected in the budget. An option was identified to map out the existing funding / finance structures currently in place and review these with a Climate Lens to identify opportunities for change
- A focus on Partnership – To foster success and lessons learnt, partnerships should be leveraged between the cities when developing the best solutions. A 'Program Management Office' can support the management of implementation tactics and the governance around that.
- A focus on Projects at Scale – For more efficient outcomes, focus should be on the development of large projects / investments at scale that are feasible and that address socioeconomic disparities.

The TAC also discussed the need for an organization (which could be non-governmental, a non-profit corporation or joint powers authority) that serves in a project management function, partnering with existing economic development efforts, to accelerate funding, financing and implementation of projects including:

- Aggregating and accelerating projects and identifying funding and financing mechanisms
- Coordinating governmental entities on local permitting process and alignment of capital planning and budgets;
- Coordinating of opportunities to unlock funding and financing opportunities with state and federal government agencies;
- Identifying new opportunities to establish new codes or mandates;
- Providing an educational function to increase demand for carbon-neutral solutions; and
- Working with organized labor, local community colleges and Sacramento State to ensure that the skill sets and knowledge of emerging market programs are effectively built into educational and trades apprenticeship programs.

Matrix of Options

The matrix below details the specific recommendations arising from each workshop for the respective strategies. The matrix is split into options based on their perceived 'ease of implementation'. For instance: charging a licensing fee on a product would theoretically be quicker to implement than a federal tax incentive.

Please note that the Matrix of Options included in this report is a working draft.

EXISTING OR KNOWN MECHANISMS	QUICKER TO IMPLEMENT	MEDIUM-TERM IMPLEMENTATION	LONGER-TERM IMPLEMENTATION
Mobility: **Active Transportation**			
• Caltrans Active Transportation Grant Program • ARB Low Carbon Transportation Investments (ARBLCTI): Sustainable Transportation Equity Project • SGC Affordable Housing and Sustainable Communities Grant Program • SGC Transformative Climate Communities Grant Program • SACOG Green Means Go Pilot Program	• Charge private enterprise for use / licensing fee • Leverage user fees to fund projects (e.g. parking garage fees) • Bring in vehicle licensing fees • Provide funding / incentives from foundations / non-profit • Other incentives (what is the 'right kind' of incentive?)	• Implement congestion pricing and leverage fees • Tax increments / Revenue sharing: Value capture from redevelopment • Development fees (careful balance needed to ensure no disincentive) • Regulatory fees on bicycle / scooter fleet operators • Leverage a parcel tax to raise funding (similar to Measure A in March 2020 for teacher salaries)	• Federal Funding Flexibility • CRA-like policies: in order to do business with City of Sacramento Treasurer, banks would need to demonstrate that they meet certain requirements (e.g. to invest in underserved communities)
Mobility: **Transit & Shared Mobility**			

• Caltrans Transit and Intercity Rail Capital Program
• Caltrans Low Carbon Transit Operations Program
• ARBLCTI Clean Mobility Options Voucher Pilot Program
• ARBLCTI Sustainable Transportation Equity Project
• SGC Affordable Housing and Sustainable Communities Grant Program
• SGC Transformative Climate Communities Grant Program
• SACOG Green Means Go Pilot Program
	• New revenue from:
	  ○ User fees
	  ○ Congestion charge
	  ○ Parking
		• Performance-based KPI financing	• Use of Green Bonds
			• Oakland eco-block type approach; come up with some type of Mello Roos structure for a suite of green retrofits
			• Expand CRA to support community/impact investing, pay for performance, etc
			• Investigate a longer-term legislative fix
			• Establish an Enhanced Infrastructure Financing District (EIFD) through an increment generated from growth in property taxes collected within a designated area

			• Investigate how to leverage Power of eminent domain
EXISTING OR KNOWN MECHANISMS	QUICKER TO IMPLEMENT	MEDIUM-TERM IMPLEMENTATION	LONGER-TERM IMPLEMENTATION
Mobility: **Zero Emission Vehicles**			
• ARBLCTI Clean Cars 4 All • ARBLCTI Advanced Technology Freight Demonstration Projects • ARBLCTI Clean Mobility Options Voucher Pilot Program • ARBLCTI Clean Truck and Bus Vouchers • ARBLCTI Clean Vehicle Rebate Project • ARBLCTI Financing Assistance for Lower-Income Consumers • ARBLCTI Sustainable Transportation Equity Project • ARBLCTI Zero-Emission Truck and Bus Pilot • SGC Transformative Climate Communities Grant Program • SACOG Green Means Go Pilot	• PPP to accelerate deployment of EV charging infrastructure • Workplace charging: utilities will be looking at incentives to get more vehicle charging infrastructure BUT needs strict requirements (e.g. based on employment, or areas where it is essentially minimum wage jobs where they would get access to charging primarily through their employer) • Utilities incentivize companies to invest in EV charging through lower energy rates which helps utility mitigate duck curve • Financing scheme for used EV vehicles	• State Incentives & Programs (e.g. cash for clunkers) • State policies to generate funding through low carbon fuel standard programs • Fleet Vehicles: municipal bonds pay for capex of vehicles with accrued fuel savings paying the debt • As utilities develop their Integrated Resource Plans, they can lead development of EV charging infrastructure and build the cost into their rate base • Utility led on-bill financing for EV charging	• Federal tax credits • Build new homes with EV charging / retrofit (government regulation) • Green bond / green financing program to look at lower cost of electric vs. gasoline (incl. how)
Built Environment: **Sustainable Land Use**			
• VMT-based Impact Fees: development impact fee for mixed-use, infill development • SGC Affordable Housing and Sustainable Communities Grant Program • SGC Sustainable Agricultural Lands Conservation Program • Opportunity Zones	• Congestion charging / fee zones	• Opportunity zones to drive early investment • State level Innovation Zones & Incentives • Green Means Go initiative (SACOG) • EIFDs: Capturing property tax growth and reinvesting it	• Bill Program at federal level to provide infrastructure dollars • CFDs and other traditional options • Eminent domain authority – to compel changes in ownership • Eminent Domain Authority

EXISTING OR KNOWN MECHANISMS	QUICKER TO IMPLEMENT	MEDIUM-TERM IMPLEMENTATION	LONGER-TERM IMPLEMENTATION
Built Environment: **Electrification of New Construction & Existing Buildings**			
• SMUD Incentives: SMUD provides incentives for builders including up to $5,000 for single-family homes and $1,750 for multifamily homes and up to $10,000 in consumer incentives to replace natural gas appliances. • PG&E Incentives: PG&E offers rebates for energy efficiency is exploring potential incentives for all-electric new construction. • IBank Infrastructure State Revolving Fund • IBank Statewide Energy Efficiency Program • U.S. DOE Title XVII Innovation Clean Energy Project Loan Program • Pay as You Save (PAYS) • Property Assessed Clean Energy (PACE) Financing • Commercial Property Assessed Clean Energy (C-PACE) Financing • Metered Energy Efficiency Transaction Structure (MEETS) Financing • Energy Savings Performance Contracting • Opportunity Zones • Sacramento Measure U Funds	• Partnerships with corporations to provide employees incentives to invest in EE. Corporation could benefit from tax deduction, likely at federal level. • Energy Service Companies (ESCOs): Allows upgrades with no upfront capital cost to landowner. Monthly/yearly service fee paid to third party company who guarantees lower energy costs and installs lower energy equipment • Commercial and residential code compliance / enforcement will drive demand for energy efficiency investments with the private marketplace creating additional financing solutions thereafter	• On-Bill financing (utility or tax bill) - Costs of EE investments passed through to ratepayer. Incentives provided by local utility, created through benefits they see. Financing leveraged through the local utility (SMUD, PG&E) which is repaid by an additional line item added to customer bills. • Existing financing options • Healthcare funding for EE upgrades. Contractors can enroll as healthcare providers through insurance company / medicare with EE upgrades covered by insurance. Justification is improved air quality resulting in health benefits. (NY case study))	• NGO / public bank structure that aggregates public sources of funds to accelerate and aggregate investments but not seeking a return. Unlocking state/federal funding opportunities, coordinating local gov't entities, education, marketing, advocacy of these opportunities • Guarantees to facilitate balance sheet neutrality: Retrofit investments in commercial building EE put more financial lean on the building because the investments are not seen as recoverable (negative on balance sheet). A third-party or public agency could be the retail front-end and provide GAAP insurance product for balance sheet neutrality which will attract additional buildings to retrofit.

EXISTING OR KNOWN MECHANISMS	QUICKER TO IMPLEMENT	MEDIUM-TERM IMPLEMENTATION	LONGER-TERM IMPLEMENTATION
Community Health and Resiliency: **Urban Greening & Forestry**			
• CAL FIRE Urban and Community Forestry CCI Grants • CDPR Community Access Program • CDPR Land and Water Conservation Fund • CDPR Regional and Statewide Park Programs • CNRA Environmental Enhancement and Mitigation Grant Program • CNRA Urban Greening Program	• Trees as revenue source - Urban orchard with product that can be used in the region. Need different model to think about harvesting food in the neighborhoods • Raise fees on utilities to hit carbon targets	• Parcel tax: varying tax for vacant property vs. developed building • Create corporate 'tree benefit' programs • Tax increments (hard to scale?) • Opportunity zones – layer in climate / carbon – use as revenue source - best for private?	• State level: Fund bond through fee on property insurance • City wide finance approach • Leverage increased property value to fund tree planting • Carbon Credits. What potential to provide carbon credits for Sacramento's urban forest investment
Community Health and Resiliency: **Sustainable Food Systems**			
• Cal Recycle Food Waste Prevention and Rescue Program • Cal Recycle Organics Program • CDFA Healthy Soils Program • CDFA State Water Efficiency and Enhancement Program • USDA Community Facilities Direct Loan & Grant Program	• Seed funding for local food / waste programs • Leverage a fee based on distance food travelled: Make local food cheaper by increasing imported food costs • Training & Education	• Raise fees on waste to hit carbon targets - Incentivize waste reduction • Logistics experts for food production / waste – levy a fee to pay for their involvement • Biodiesel collection as potential revenue stream	• RUCS Program – leverage research to identify food supply issues • Encourage local sourcing (Farm to Fork narrative) through increased import tariffs
Community Health and Resiliency: **Community Climate Resilience**			
• CNRA River Parkways Program • DWR IRWM Implementation Grant Program • U.S. Bureau of Reclamation WaterSMART Drought Response Resiliency Grants • WCB Climate Adaptation and Resiliency Program	•	•	•

Finance and Funding TAC Roster

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- **Michael McCormick** | Cool Davis Foundation
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- **Deanna Carillo** | California Alternative Energy and Advanced Transportation Financing Authority
- **Alison French-Tubo** and **Renee Webster-Hawkins** | California Pollution Control Financing Authority
- **Tim Schaeffer** | California State Treasurer's Office
- **John Colville** | City of Sacramento
- **Aaron Laurel** | City of West Sacramento
- **Alan Gordon** and **Mike Paparian** | Climate Bonds Initiative
- **Mike McKeever** | Consultant
- **David Zehnder** | Economic and Planning Systems
- **Leilani Barnett** | Federal Reserve Bank of San Francisco
- **Laurie Weir** | *former Investment Director at California Public Employees Retirement System*
- **Nuin-Tara Key** | Governor's Office of Planning & Research
- **Paul Herman**, **Adam Mason** and **Nick Gower** | HIP Investor
- **Barbara Lloyd** | IMPACTS USA Advisory Services
- **Cris Liban** | LA Metro
- **David Weiskopf** | Next Gen America
- **Mark Northcross** | NHA Advisors
- **Matt Carpenter** | Sacramento Area Council of Governments
- **Jason Johnson** | SacRT
- **Joshua Rasin** | SMUD
- **Meg Arnold** | Valley Vision

CONCLUSION

By embarking on a path toward carbon zero by 2045, the cities of Sacramento and West Sacramento are positioning the region as a national and international model for a climate-smart future.

While establishing an ambitious target and prioritizing the strategies recommended by the Commission and the many technical experts and community members involved in this process critical, the most important component is implementation.

Turning this plan into action rests on more than just ideas and good intentions. It requires residents, businesses, City government, and other institutions to urgently rise to the challenge of making big changes – changes in our infrastructure, technological advances, ramped up green workforce development, and change in the decisions we make every day as members of the community. Everyone must play a role to ensure a more equitable, prosperous and resilient future for all residents.

The dramatic steps that government at all levels and the public at large have taken as a result of COVID-19 highlight the ability of our leaders and community members to respond quickly and decisively to crisis. These changes have deeply impacted families and the economy but they have also increased awareness of the weaknesses of our current system— from socioeconomic and racial inequities, to the fragility of global supply chains and the impact of consumerism and car-centric lifestyles on our environment. Despite the immense tragedy we've experienced and witnessed, we've also learned lessons about how quickly things can change— from air quality improvements and increased wildlife to profound human resilience and innovation. The disruption was unavoidable but the ultimate outcome is far from determined— now is our chance to repair and reimagine our systems and rebuild in ways that increase community resilience and equity for all.

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