

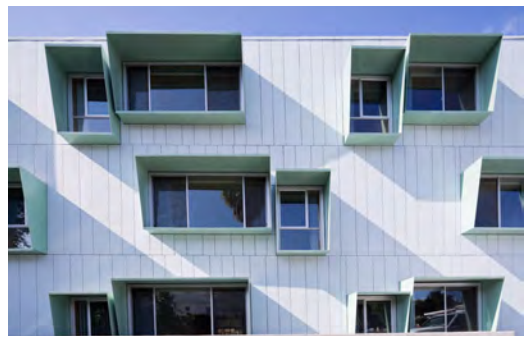
A woman with red braided hair, wearing a dark grey t-shirt and black leggings, is riding a yellow bicycle on a paved path. A young child wearing a pink helmet and a colorful striped shirt is seated in a grey child seat on the back of the bicycle. The bicycle has a front basket containing a grey jacket and a purple bag. The background shows palm trees, a blue sky, and a wooden railing overlooking the ocean. The text 'CITY OF SANTA MONICA' is at the top, followed by 'CLIMATE ACTION & ADAPTATION PLAN' in large white letters. Below that is the subtitle 'A 2030 COMMUNITY PLAN TO REDUCE CARBON EMISSIONS & BECOME CLIMATE RESILIENT'. At the bottom right, it says 'PUBLIC COMMENT DRAFT FEBRUARY 2019'.

# CITY OF SANTA MONICA CLIMATE ACTION & ADAPTATION PLAN

A 2030 COMMUNITY PLAN  
TO REDUCE CARBON EMISSIONS  
& BECOME CLIMATE RESILIENT

PUBLIC COMMENT DRAFT  
FEBRUARY 2019







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# LETTER FROM THE MAYOR

In recent years, California has experienced historic drought, higher average temperatures, heat waves, and devastating wildfires and mudslides. Climate change is no longer a threat in a distant future. It is here now. And it will get worse unless we act.

Climate change is a global issue that requires all governments to act, no matter their size. Unfortunately, it appears that not every level of government recognizes the problem or is willing to act on it. Accordingly, cities have emerged as front-line leaders in the fight against climate change.

Santa Monica has long been a leader in promoting sustainability and tackling climate change. In 2016, we reduced our carbon emissions 20% below 1990 levels, a goal the State of California seeks to achieve by 2020.

We have the tools to achieve carbon neutrality and meet the Paris Climate Agreement by 2050 or sooner, and still our toolkit is expanding. New developments in the energy and mobility industries are pushing the City to innovate and adapt to these new opportunities which will help Santa Monica reach its goals.



This Climate Action & Adaptation Plan looks ahead to the ambitious goals and transformation we need to achieve and lays the groundwork for embracing innovation and disruption. By achieving the objectives laid out in the plan, we will achieve an 80% reduction in our emissions below 1990 levels by 2030. This will give us momentum to achieve carbon neutrality well before 2050.

In addition to reducing emissions, we also recognize the need to adjust to our changing climate and prepare for more frequent and intense climate change impacts. This plan also provides a pathway to enhance our community resilience and infrastructure to be climate ready.

The next few years are critical to reducing our carbon emissions so we can avoid the worst climate change impacts. This transformation will disrupt the status quo and require community investment in the goal and a willingness to change behaviors. This plan is a call to action for our government, businesses, and residents.

Great challenges offer great opportunities. We must be bold, ambitious, and daring. We know that this transition to a carbon-free future will improve our quality of life, our community wellbeing, and our prosperity. We invite you to join us and participate in this communitywide effort.



*Glean Q. Davis*

**GLEAN DAVIS, MAYOR**



# EXECUTIVE SUMMARY

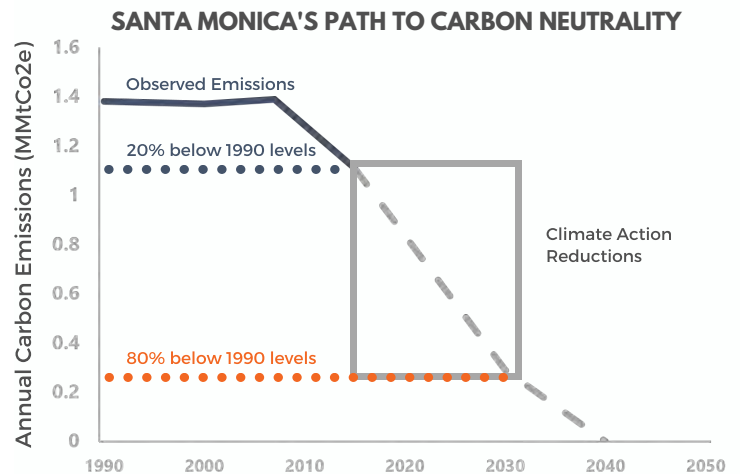
Cities are on the front lines when it comes to climate change. Cities are also leading the world in reducing carbon emissions through aggressive policies and adoption of clean technologies.

Santa Monica's Climate Action & Adaptation Plan (Plan) builds off of its success and legacy as a sustainable community to move closer to carbon neutrality, by establishing an interim goal of reducing carbon emissions 80% below 1990 levels by 2030.

The Plan is the product of collaboration and engagement with the public, businesses, stakeholder groups, and subject matter experts from academia, industry and interdepartmental staff representatives. It provides an ambitious, community-focused platform to advance policies that enhance quality of life and wellbeing, embrace smart city innovation and improve social equity.

The Plan focuses on eight objectives in three sectors to reduce emissions: Zero Net Carbon Buildings, Zero Waste and Sustainable Mobility. Early action is required to avoid significant cost and social and environmental risks to our community. In addition to California's policies, like the Low Carbon Fuel Standard and the Renewable Portfolio Standard, these actions are estimated to achieve the Plan's estimated 80% reduction.

- STATE POLICIES 41% of total reductions**
  - Renewable Portfolio Standard
  - Low Carbon Fuel Standard
  - Building Energy Standards
- ZERO NET CARBON BUILDINGS 25% of total reductions**
  - Achieve 100% renewable grid electricity
  - Install 100 MW of local solar energy
  - Reduce fossil fuel use 20% in existing buildings
  - Discourage fossil fuels in new buildings
- ZERO WASTE 3% of total reductions**
  - Divert 95% of materials from landfills
- SUSTAINABLE MOBILITY 31% of total reductions**
  - Convert 50% of local trips to foot, bike, scooter & skateboard
  - Convert 25% of commuter trips to transit
  - Convert 50% of vehicles to electric or zero emission

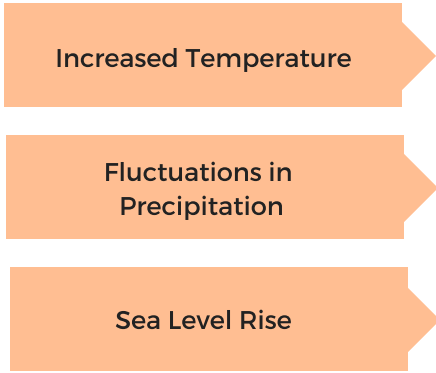


Between 1990 and 2015, Santa Monica reduced its emissions by 276,324 metric tons of carbon dioxide equivalents (mtCO<sub>2</sub>e) to achieve 20% below 1990 levels at a rate of 0.8% per year. In order to achieve an 80% reduction by 2030, Santa Monica would need to reduce total emissions by about 929,693 mtCO<sub>2</sub>e, at a rate of over 4% per year, significantly increasing the scale and speed of reductions. This 'bending of the carbon curve' is essential to meeting the Paris Climate Agreement and avoiding worsened climate change impacts.

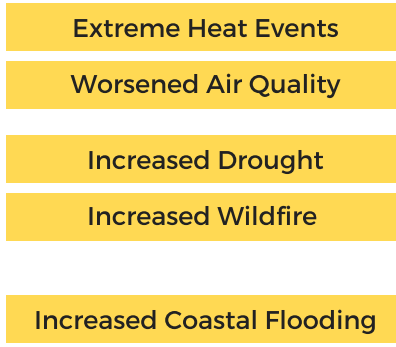
The Plan provides a roadmap to advance the goals across programmatic and departmental lines. In many cases, the actions described also require new community and regional partnerships to develop and test new strategies that will build on Santa Monica's leadership role in sustainability and innovation. These key actions identify what can be accomplished within the next decade to continue progress toward the goal of achieving carbon neutrality by 2050 or sooner.



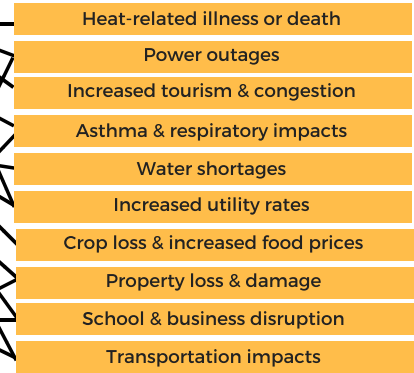
## GRADUAL CLIMATE CHANGES



## LOCAL CLIMATE HAZARDS



## DIRECT IMPACTS



Even if all emissions were eliminated today, we would still see climate change impacts in the future. The chart above shows the anticipated changes, hazards and impacts Santa Monica may face.

Not everyone will experience climate change the same. The people who are older, have chronic respiratory illnesses, are lower on the socio-economic spectrum, or speak English as a second language are likely to be impacted the hardest by climate change and may be the least able to adapt and prepare.

The Plan lays out a framework for enhancing Santa Monica’s resilience to climate change through four sectors: Climate Ready Community, Water Self-Sufficiency, Coastal Flooding Preparedness and Low Carbon Food & Ecosystems. The Plan identifies areas in local government, community building and support to augment by including climate change considerations and adaptation measures.

### CLIMATE READY COMMUNITY

- Increase community resilience to climate change
- Protect vulnerable groups from impacts
- Integrate climate change impacts into City planning, operations & infrastructure projects

### WATER SELF-SUFFICIENCY

- Achieve water self-sufficiency by 2023

### COASTAL FLOODING PREPAREDNESS

- Enhance natural systems to prevent damage from coastal flooding
- Increase resilience of public and private assets in coastal flood zone

### LOW CARBON FOOD & ECOSYSTEMS

- Increase self-reliance through local food production
- Reduce or sequester carbon emissions from food production, consumption, waste and landscape management and natural processes

Through the last two adopted Capital Improvement Program budgets, Santa Monica has already committed to spending \$380M on climate action and adaptation projects. Staff estimate that implementation of the plan will cost an additional \$800M-\$1B over the next 10-12 years, with some projects and programs still not fully conceived.

The investment by the community to support the Plan will be many times greater than the City's own costs. The City will need to provide support to residents and businesses in need of funding to decarbonize their buildings, vehicles and lifestyles. At the same time, it should discourage carbon-emitting activities through fee-based systems or carbon taxes to shift community investment away from fossil fuels to clean technologies.

In order to ensure full implementation of the plan, an interdepartmental team of city staff in collaboration with civic leaders must be assembled to maintain momentum and ensure accountability. Staff will provide annual progress reports, conduct biennial greenhouse gas inventories and prepare an update to the plan after 5 years.

This plan provides a pathway to accelerate our historical success to eventually make climate change history. It is also a call to action to residents, community institutions and businesses to take an active part in our transition to a low carbon future and clean economy.

In this process, we will foster a vibrant economy, increase our resiliency and support Santa Monica’s vision for a livable and sustainable community for generations to come.



# INTRODUCTION

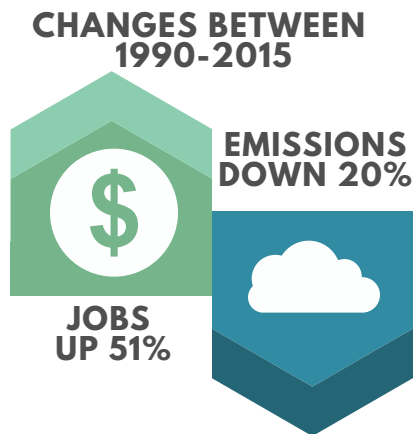
Cities are uniquely threatened by climate change and are uniquely positioned to do something about it.

Cities are on the front lines when it comes to climate change impacts. Cities also have significant roles to play in the fight against climate change.

Santa Monica has long held ambitious sustainability goals and took early actions to meet them. We are on track to become a water self-sufficient community by 2023 and a zero waste community by 2030. We are also on track to keep peak hour vehicle trips at or below 2009 levels, as targeted in the City's General Plan. All of these efforts contribute to our carbon reduction goals.

**In order to achieve carbon neutrality by 2050 or sooner, we are committing to an interim goal of 80% reduction of emissions below 1990 levels by 2030.**

Since 1990 we have seen a 20% reduction in our carbon emissions. At the same time, we increased local employment by over 50%, demonstrating that a cleaner and more prosperous economy is possible.



An 80% reduction in carbon emissions by 2030 will require a massive shift in our lifestyles and investments. Deep emissions reductions will need to be achieved at a scale and pace unlike the City has seen before. This plan provides a road map to transition to low-carbon lifestyles and technologies and significantly reduce our fossil fuel consumption.

Even if all emissions were eliminated today, we would still see climate change impacts in the future. This plan also outlines a strategy to build resilience by developing strategies to prepare, adapt and respond to unavoidable impacts.

By achieving the objectives of this plan, we will be joining a global movement of communities doing their part to fight climate change. Ultimately, the benefits of our actions will be local: we will improve our quality of life and ensure a stable climate for generations to come.







# OUR CLIMATE ACTION VISION



It is 2030, we have reduced our carbon emissions 80% below 1990 levels. All of our electricity comes from renewable sources. Mobility options are zero carbon, shared and active, reducing congestion and air pollution. Nearly all of our waste is reused, repurposed or recycled.

There is a culture of awareness and action. We utilize smart city technology and principles to advance efficiency in our energy and transportation systems and infrastructure.

Our prosperous economy and quality of life have benefited from this transformation. We are connected, equitable and resilient.



# CLIMATE LEADERSHIP



Former Mayor Ted Winterer signing the C40 Deadline 2020 Commitment at the 2018 Global Climate Action Summit in San Francisco. (Credit: Chris Menges)

Santa Monica has committed to meeting the goals of the Paris Climate Agreement to limit global warming below 2 degrees Celsius and pursue action to limit warming to 1.5 degrees. C40's Deadline 2020 Commitment offers a global pathway of city-level, inclusive climate action, that would put cities on a trajectory consistent with the ambitions of the Paris Agreement from now until the end of the century.

Meeting this increased ambition requires transformational actions to reduce transportation emissions, improve building energy efficiency, increase the supply of green energy, and change consumption

patterns, while strengthening the ability to deal with the impacts of climate change through adaptation.

Santa Monica is committed to pursuing aggressive action and publicly reporting our efforts to increase awareness and maintain accountability.

We publicly report our progress and actions through various platforms and collaborate with local governments around the world to advance best practices in sustainability and climate action.

**PLEDGE & COMMIT**



**WE ARE STILL IN**



Chicago Climate Charter



**REPORT**



GLOBAL COVENANT of MAYORS for CLIMATE & ENERGY



**LEAD, ADVOCATE & COLLABORATE**



Local Government Sustainable Energy Coalition





# DEVELOPING THE PLAN

This plan was developed over a 3-year period using extensive analysis, modeling, stakeholder input, and community engagement to ensure buy-in and feasibility.



## STEERING COMMITTEE

A Steering Committee representing City staff, local institutions, community groups and regional experts provided guidance and feedback throughout the project

## EMISSIONS ANALYSIS

City staff and consultants modeled various scenarios of future carbon emissions, taking into account population changes and statewide policies. The team developed strategies to estimate the potential carbon reductions of Santa Monica's future efforts. These measures were prioritized by the Steering Committee.

## COMMUNITY PRESENTATIONS

Presentations were given at 19 community and business meetings reaching approximately 300 people. These included various meetings of neighborhood associations, community organizations, church groups, business improvement districts and business events.

## CLIMATE CORPS YOUTH PROGRAM

Climate Action Santa Monica, a grassroots climate organization, leads the 'Climate Corps' program offering summer internship and volunteer opportunities for students and young adults. The Climate Corps gauge resident and visitors' concerns about climate change issues and support for the City's climate policies.

## SEA LEVEL RISE AUGMENTED REALITY

Augmented reality viewers were installed on the Santa Monica Pier, providing residents and visitors a view into a future with sea level rise. Over 10,000 participants were surveyed on their climate change concerns and adaptation preferences.



## COMMUNITY CLIMATE ACTION SUMMIT & CLIMATEFEST

In 2016, Santa Monica held its first ever Community Climate Action Summit, inviting residents, visitors and businesses to contribute to the plan. Over 250 individuals participated in the day-long event filled with expert speakers, interactive workshops, open discussion and exhibitors. Following on the success of the Community Climate Action Summit, the City held ClimateFest in May 2018. The event featured local experts on climate policy and provided accessible resources for individual climate action. Over 600 people attended, interacting with various themes of the plan.





# COMMUNITY THEMES

Climate change and climate action affects all levels of City government and community issues. A plan that addresses climate change and community resilience is a plan that creates a more livable community.

## SUSTAINABILITY, WELLBEING & RESILIENCE

Resilience is the ability of a community to withstand chronic stressors or sudden shocks, and grow and thrive beyond; and is a function of both wellbeing and sustainability. Wellbeing and environmental stewardship go hand in hand when fostering a more resilient city and improving quality of life.

Santa Monica's Wellbeing Index measures individual and community wellbeing to help improve peoples' lives. The Wellbeing Index and the Sustainable City Plan have been integrated into The Framework for a Sustainable City of Wellbeing to guide City decision-making and investments using performance-based metrics.

By strengthening our social connections, mobility systems, buildings and infrastructure, Santa Monica will enhance its ability to withstand and recover from earthquakes, drought and heatwaves.

## EQUITY IN CLIMATE ACTION

Vulnerable groups are often the least able to access resources and least likely to have a seat at the table when policies are developed. In the transition to a low-carbon future, we must create a future that is accessible to all Santa Monicans.

The policies outlined in this plan will use an equity lens to prioritize the needs of low-income communities and communities of color ensuring the just distribution of the benefits while addressing unequal burdens from climate change.

The people who are the most impacted by climate change and the least likely to be engaged in civic affairs tend to be older, people of color, lower on the socio-economic spectrum, and/or don't speak English as their native language. Rising temperatures and worsening air quality disproportionately impact these vulnerable populations. Additionally, each of these communities have different needs.

Policy-making and program design must address both the systems that worsen climate change and inequality while reducing the disproportionate impact of climate change on the vulnerable.

## SMART CITY INNOVATION

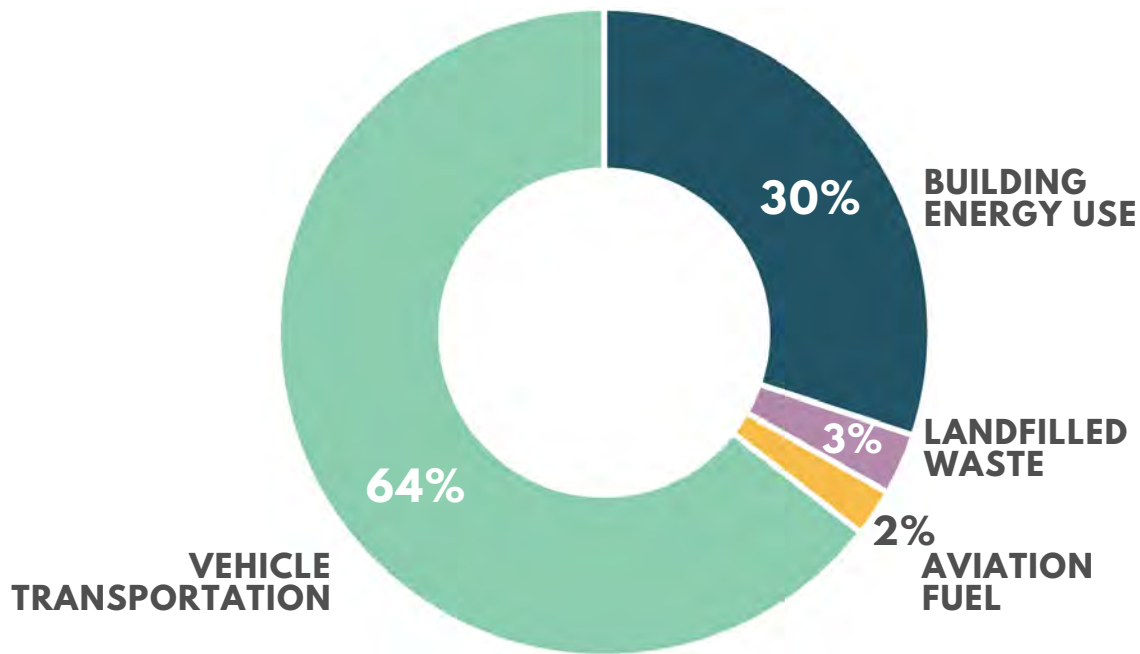
This plan recommends that the City adopt a Smart City Strategy to advance technologies in City infrastructure and leverage public-private partnerships that foster community goals.

Smart technologies, such as cloud-based sensors for buildings, traffic signals and waste bins, can allow local governments to provide services faster and more efficiently while reducing energy use and carbon emissions.

Smart technologies and infrastructure will create opportunities to improve resource efficiency and performance, while enhancing customer service, safety and wellbeing in the digital age.



# PATHWAY TO CARBON NEUTRALITY



**SANTA MONICA'S CARBON EMISSION SOURCES (2015)**

Santa Monica's carbon emissions are generated primarily from fossil fueled transportation and energy use in buildings.

The City conducted a carbon emissions inventory to evaluate the impact of the 15x15 Climate Action Plan (CAP). At the end of 2015, Santa Monica's annual emissions had declined by 20% compared to 1990 levels, exceeding the City's 15% target. The 15x15 CAP actions and State level policies, such as increased renewable energy generation and vehicle fuel efficiency, resulted in the decline.

Currently, per capita emissions is approximately 11.1 mtCO<sub>2</sub>e (metric tons of carbon dioxide equivalent). If Santa Monica reduces its emissions to 80% below 1990 levels, per capita emissions would be 2.3 mtCO<sub>2</sub>e.

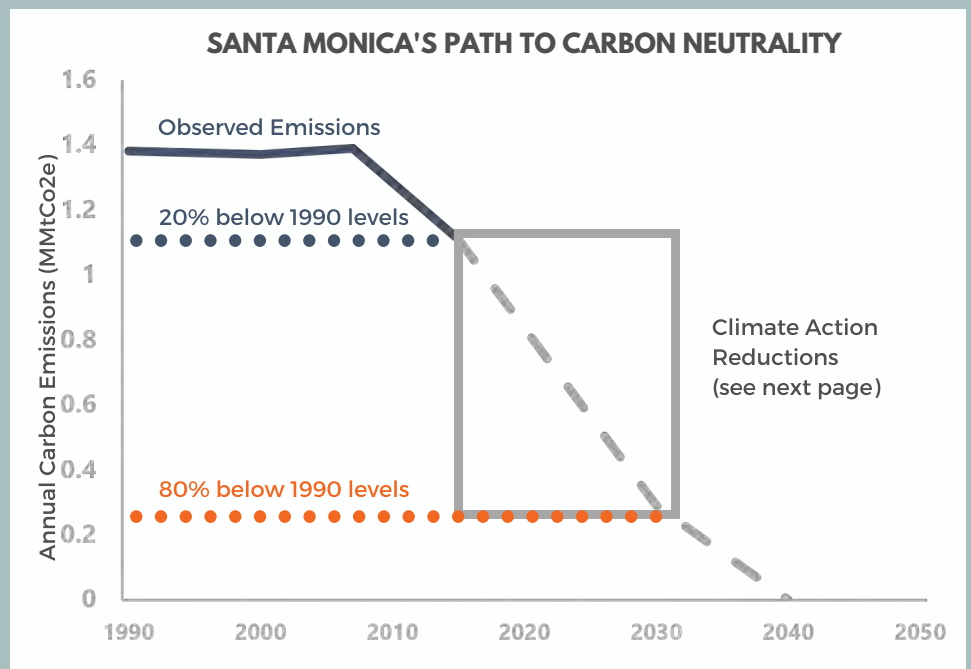
A dramatic transformation of our building energy and transportation systems will be necessary to achieve this significant reduction.

## BENDING THE CARBON CURVE

Between 1990 and 2015, Santa Monica reduced its emissions by 276,324 mtCO<sub>2</sub>e to achieve 20% below 1990 levels at a rate of 0.8% per year.

In order to achieve an 80% reduction by 2030, Santa Monica would need to reduce total emissions by about 929,693 mtCO<sub>2</sub>e, at a rate of over 4% per year, significantly increasing the scale and speed of reductions. This 'bending of the carbon curve' is essential to meeting the Paris Climate Agreement and avoiding worsened climate change impacts.

These charts (this page and next) illustrate the relative impact each Climate Action sector in contributing to the 2030 target.



**BUSINESS-AS-USUAL** — — — — —

If left unabated, population and economic growth by 2030 would increase Santa Monica's emissions.

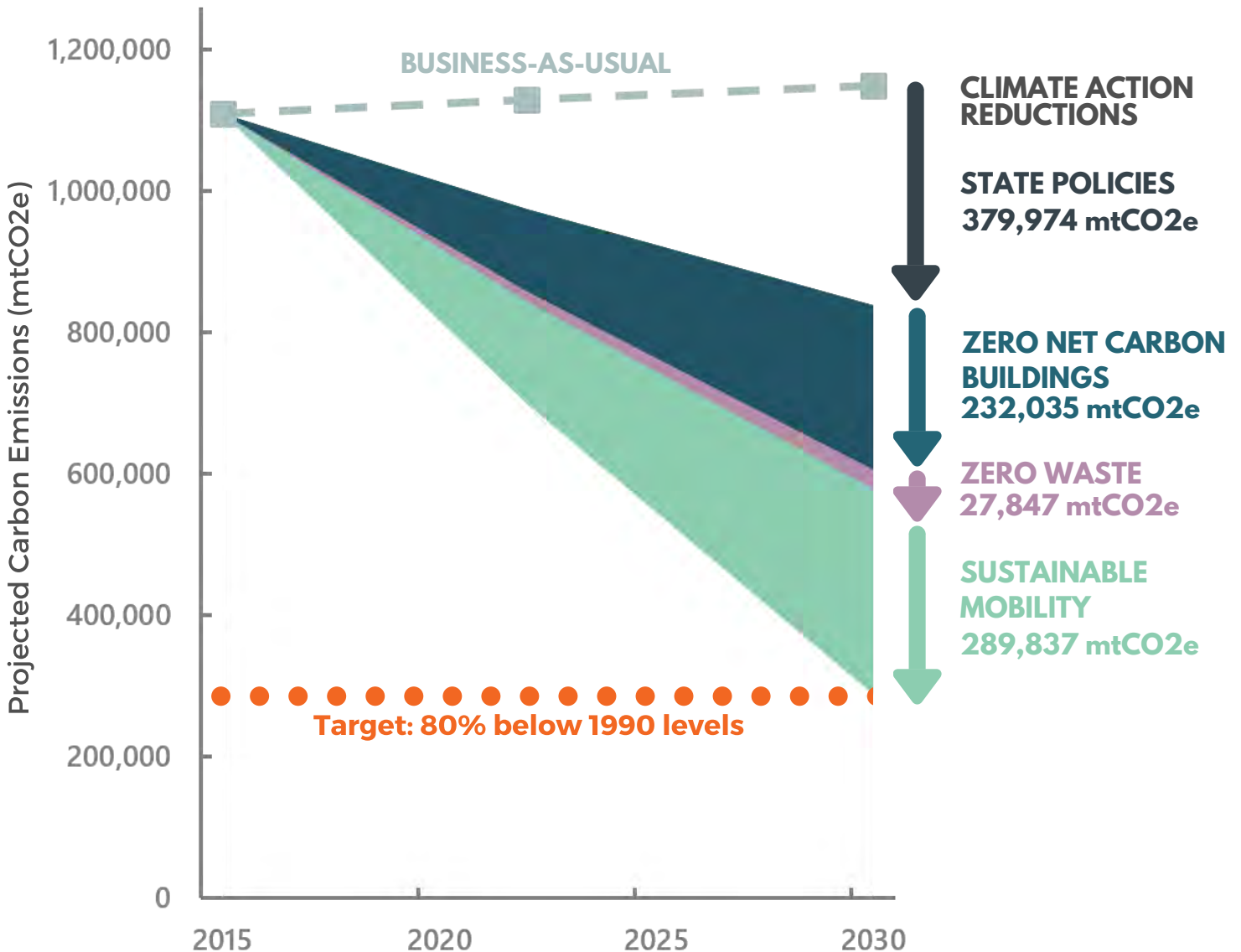
**41%** **STATE POLICIES**  
 California's ambitious climate policies (such as the Renewable Portfolio Standard and vehicle fuel efficiency standards) are expected to reduce Santa Monica's emissions by an estimated 33% below 1990 levels by 2030.

**3%** **ZERO WASTE**  
 • Divert 95% of materials from landfills

**25%** **ZERO NET CARBON BUILDINGS**  
 • Achieve 100% renewable grid electricity  
 • Install 100 MW of local solar energy  
 • Reduce fossil fuel use 20% in existing buildings  
 • Discourage fossil fuels in new buildings

**31%** **SUSTAINABLE MOBILITY**  
 • Convert 50% of local trips to foot, bike, scooter & skateboard  
 • Convert 25% of commuter trips to transit  
 • Convert 50% of vehicles to electric or zero emission

**SANTA MONICA  
 PROJECTED CARBON EMISSIONS**












# PLAN AT A GLANCE

This plan details 3 sectors and 8 objectives with strategies and actions to achieve the interim goal of a 80% reduction in emissions by 2030. This plan also details 4 sectors and 8 objectives with strategies and actions to increase Santa Monica's resilience to climate change hazards and impacts. This Plan is implemented through related plans and initiatives that are developed and executed across multiple City departments. In order to achieve our climate goals, these plans must be fully funded and implemented. The Climate Action & Adaptation Plan works with and through these plans by providing a planning and monitoring framework for achieving climate change goals, highlighting critical actions for reducing emissions and fostering resilience to climate impacts, and guiding consideration of emissions reduction potential across the range of City plans.

## CLIMATE ACTION

SECTOR	OBJECTIVES	SUPPORTING EFFORT
<b>ZERO NET CARBON BUILDINGS</b>	 <ul style="list-style-type: none"> <li>• Achieve 100% renewable grid electricity</li> <li>• Install 100 MW of local solar energy</li> <li>• Reduce fossil fuel use 20% in existing buildings</li> <li>• Discourage fossil fuels in new buildings</li> </ul>	<ul style="list-style-type: none"> <li>• Zero net energy residential construction (2017)</li> <li>• Mandatory solar for commercial (2017)</li> </ul>
<b>ZERO WASTE</b>	 <ul style="list-style-type: none"> <li>• Divert 95% of materials from landfills</li> </ul>	<ul style="list-style-type: none"> <li>• Plastic Bag Ban (2008)</li> <li>• Zero Waste Strategic Operations Plan (2014)</li> <li>• Disposable Food Serviceware Ordinance (2018)</li> </ul>
<b>SUSTAINABLE MOBILITY</b>	 <ul style="list-style-type: none"> <li>• Convert 50% of local trips to foot, bike, scooter &amp; skateboard</li> <li>• Convert 25% of commuter trips to transit</li> <li>• Convert 50% of vehicles to electric or zero emission</li> </ul>	<ul style="list-style-type: none"> <li>• Land Use &amp; Circulation Element (2010)</li> <li>• Bike Action Plan (2011)</li> <li>• Pedestrian Action Plan (2016)</li> <li>• Electric Vehicle Action Plan (2017)</li> </ul>

## CLIMATE ADAPTATION

SECTOR	OBJECTIVES	SUPPORTING EFFORT
<b>CLIMATE READY COMMUNITY</b>	 <ul style="list-style-type: none"> <li>• Increase community resilience to climate change</li> <li>• Protect vulnerable groups from impacts</li> <li>• Integrate climate change impacts into City planning, operations &amp; infrastructure projects</li> </ul>	<ul style="list-style-type: none"> <li>• All Hazards Mitigation Plan (2015)</li> <li>• Santa Monica Organizations Active in Disaster (2018)</li> </ul>
<b>WATER SELF-SUFFICIENCY</b>	 <ul style="list-style-type: none"> <li>• Achieve water self-sufficiency by 2023</li> </ul>	<ul style="list-style-type: none"> <li>• Sustainable Water Master Plan (2018)</li> <li>• Water Neutrality Ordinance (2017)</li> </ul>
<b>COASTAL FLOODING PREPAREDNESS</b>	 <ul style="list-style-type: none"> <li>• Enhance natural systems to prevent damage from coastal flooding</li> <li>• Increase resilience of public and private assets in the coastal flood zone</li> </ul>	<ul style="list-style-type: none"> <li>• Local Coastal Program Land Use Plan (2018)</li> </ul>
<b>LOW CARBON FOOD &amp; ECOSYSTEMS</b>	 <ul style="list-style-type: none"> <li>• Increase self-reliance through local food production</li> <li>• Reduce or sequester carbon emissions from food production, consumption, waste and landscape management and natural processes</li> </ul>	<ul style="list-style-type: none"> <li>• Urban Forest Master Plan (2015)</li> </ul>

# HOW TO READ THE PLAN



## ZNC1: Implement a Community Choice Energy (CCE) Program

Implement CCE in Santa Monica, offering the highest amount of cost-competitive renewable energy. Develop programs to incentivize new local renewable-energy projects. Adopt rates to achieve 100% renewable energy by 2025.



CPA

OSE

Initiated

## 1 STRATEGIES & ACTIONS

The general approach, programs, policies and steps that help achieve each Objective.

## 2 CARBON REDUCTION POTENTIAL

Each Action displays a potential reduction in carbon emissions. Reduction potential was approximated relative to each sector and is presented using a 1 to 4 scale.

- Large Reduction
- Medium Reduction
- Small Reduction
- Marginal Reduction

## 3 COST TO CITY

Cost to the City represents the direct costs that may be borne by the City, currently not allocated or budgeted within the existing operating budget, to implement the programs, policies and steps. Costs include consultants, new programs, incentives and grants, and infrastructure. Does not consider potential for outside sources of funds.

- High Capital Cost; Requires large one-time investment or sustained investment; outside sources of funding necessary
- Medium Cost; Potential funding through Capital improvement Program, may be supported with outside funding
- Low or No Cost; potential funding from existing budget

## 4 COMMUNITY BENEFITS

Details on next page.

## 5 LEAD

City division responsible for leading implementation, collaboration, evaluation and reporting of action.

## 6 PARTNERS

City division, non-City entity or community sector responsible for supporting implementation, collaboration, evaluation and reporting of action.

### CITY DEPARTMENTS & DIVISIONS

- ASD = Architecture Services Division
- BBB = Big Blue Bus
- BM = Beach Manager
- BSD = Building & Safety Division
- CCS = Community & Cultural Services Department
- CED = Civil Engineering Division
- CPD = City Planning Division
- CRD = Community Recreation Division
- EDD = Economic Development Division
- FD = Fleet Division
- FIN = Finance Department
- FacMD = Facilities Maintenance Division
- FMD = Farmers Market Division
- HD = Housing Division
- ISD = Information Systems Department
- MD = Mobility Division
- OEM = Office of Emergency Management
- OSE = Office of Sustainability & the Environment
- OWB = Office of Civic Wellbeing
- PLD = Public Landscape Division
- PWD = Public Works Department
- RRR = Resource Recovery & Recycling Division
- WRD = Water Resources Division

### NON-CITY PARTNERS

- Business = Local businesses to be impacted by action
- CalTrans = California Department of Transportation
- CPA = Clean Power Alliance of Southern California
- Metro = Los Angeles County Metropolitan Transportation Authority
- MWD = Metropolitan Water District
- Nonprofits = Local environmental/sustainability organizations
- SQAMD = South Coast Air Quality Management District
- Utilities = Southern California Edison, Southern California Gas Company
- Schools = Santa Monica College, Santa Monica-Malibu Unified School District, private schools, teachers

## 7 STATUS OR TIMEFRAME

- Near term = 0-2 years
- Mid term = 2-5 years
- Long term = 5+ years



# COMMUNITY BENEFITS

Actions and policies that prevent and prepare for climate change also reduce pollution, improve public health and support a local green economy that benefits the entire community. This plan will seek to achieve not only the goals of the Paris Climate Agreement, but also address community concerns such as systemic inequities, sources of negative public health issues and community cohesion. Nearly all of the Actions in this plan generate additional community benefits and support the City's Framework for a Sustainable City of Wellbeing (Framework).



## Meets Paris Climate Agreement

Action has high carbon reduction potential to reduce emissions necessary to meet 1.5C global warming limit of the Paris Climate Agreement.



## Potential to Address Equity

Action has potential to reduce environmental injustice or be designed and implemented to prioritize unequally burdened and vulnerable populations.



## Advances Smart City Concepts

Action supports deployment of smart city technology in City operations and private sector.



## Enhances Community Resilience

Action has potential to increase resilience of buildings & infrastructure and/or people through social networks and increased capacity.



## Potential for Cost Savings, Local Investment and Jobs

Action requires investment in local projects and programs, creating local green jobs. Action may also yield cost savings from utilities, transportation costs or avoided waste. May support Economic Opportunity outcomes and metrics from the Framework.



## Improves Public Health & Safety

Action has potential to improve public health through improved environmental quality, increased access to healthy food, reduced pollution. Action may also improve public safety through energy resilience, and protected pedestrian & biking infrastructure. May support Health and Safety outcomes and metrics from the Framework.



## Enhances Environmental Quality

Action has potential to foster green spaces & infrastructure and/or improve air quality, habitat & biodiversity. May support Place & Planet outcomes and metrics from the Framework.



## Government Leadership

City of Santa Monica will implement action in City operations to demonstrate leadership to the community and beyond.





# CLIMATE ACTION

## ZERO NET CARBON BUILDINGS

- Achieve 100% renewable grid electricity
- Install 100 MW of local solar energy
- Reduce fossil fuel use 20% in existing buildings
- Ban fossil fuels in new buildings

## ZERO WASTE

- Divert 95% of materials from landfills

## SUSTAINABLE MOBILITY

- Convert 50% of local trips to foot, bike, scooter & skateboard
- Convert 25% of commuter trips to transit
- Convert 50% of vehicles to electric or zero emission





# ZERO NET CARBON BUILDINGS



## 2030 OBJECTIVES

---

- Achieve 100% renewable grid electricity
- Install 100 MW of local solar energy
- Reduce fossil fuel use in existing buildings by 20%
- Discourage use of fossil fuels in new buildings

**25%**  
**OF TOTAL**  
**REDUCTIONS**



# ZERO NET CARBON BUILDINGS



## GETTING TO ZERO NET CARBON

Buildings generate 30% of Santa Monica's total carbon emissions from their use of energy. Electricity is generated from a mixture of fossil fuel and renewable energy sources, and natural gas is used for cooking, water and space heating.

In 2017, Santa Monica became the first city in the world to require that newly constructed homes generate as much energy as they consume. This Zero Net Energy (ZNE) requirement still allowed for the use of natural gas.

In 2019, Santa Monica started to receive 100% renewable energy from the Clean Power Alliance. This action has the potential to reduce the city's emissions by 19% from present day. (See next page) As the grid supply of electricity becomes cleaner, the next carbon source to eliminate is natural gas.

The majority of natural gas is consumed by residents for cooking, and space and water heating. In order to fully "decarbonize" our buildings, switching natural gas systems to electric powered by renewable energy is essential. This is also known as fuel switching or building electrification.

Electric appliances for water and space heating can be cost effective and efficient, while providing health and safety benefits through reduced indoor air pollution. Targeted incentives, regulations and educational resources will be essential to transforming the way we heat our buildings and water.

Where fuel switching is not viable in new development, the City could explore alternative and renewable sources of gas – like landfill gas and waste-to-energy gas— or requiring the use of offsets or in lieu fees for carbon reduction projects.



**BUILDINGS  
CONTRIBUTE 30%  
OF COMMUNITY  
EMISSION SOURCES  
(2015)**

## TRANSFORMING THE BUILT ENVIRONMENT

Reducing building energy use remains a priority to reduce costs and increase the resilience of buildings. Currently less than 2% of Santa Monica's electricity needs are met by solar systems on local rooftops. Increasing local solar will require addressing energy efficiency as well as advanced systems like district energy heating and cooling systems, microgrids and battery storage.

While new construction provides opportunities for innovation, the greatest potential for emissions reductions lies in the buildings that are already standing.

In order to reduce energy use and carbon emissions in buildings, building owners first need to understand their energy use. In 2018, the California Energy Commission implemented AB 802 requiring buildings over 50,000 square feet to benchmark their energy use. The City will implement similar requirements for buildings over 20,000 square feet and include carbon reduction targets for specific sectors.

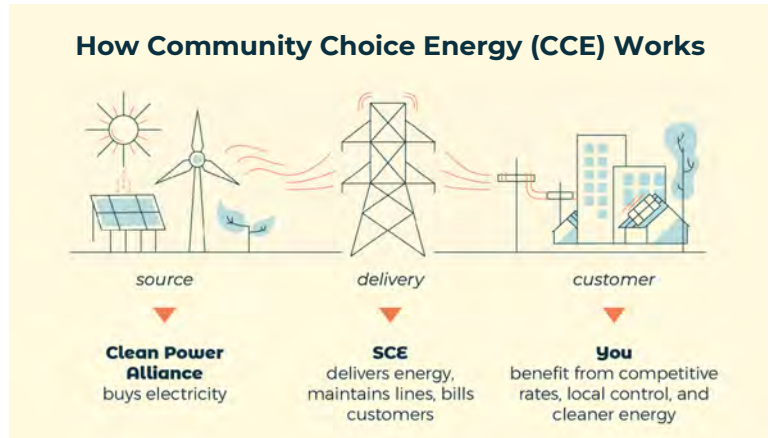
In addition to regulations to disclose energy use and carbon emissions, public-private partnerships will be essential to increase the scale and speed of improving energy performance in existing buildings. The City will work with small and large property owners to increase the demand for sustainable energy retrofit services. Working together will reduce the costs to individual property owners.

Web-based technologies and smart appliances will also provide an opportunity to promote energy-efficient behaviors and advance smart grid technology. Individuals and businesses could soon be able to respond in real time to price signals for beneficial energy behaviors.

# CLEAN POWER COMING TO SANTA MONICA

In February 2019, Southern California took a big step toward a clean energy future. The Clean Power Alliance of Southern California (CPA) started serving Santa Monica, along with 30 cities and the counties of Ventura and Los Angeles, with electricity sourced from a higher content of renewable energy sources. Santa Monica's residents and businesses receive a default 100% renewable electricity.

CPA is the largest Community Choice Energy (CCE) program in California. CCE allows local governments to aggregate the buying power of individual customers to get alternative energy on a community-wide scale. CCE will play a critical role in accelerating the adoption of clean energy by creating programs that will support local renewable energy, building electrification and electric vehicles.



## ACTIONS

### SUSTAINABLE LOCAL ENERGY

#### ZNC1: Implement a Community Choice Energy (CCE) Program

Implement CCE in Santa Monica, offering the highest amount of cost-competitive renewable energy. Develop programs to incentivize new local renewable-energy projects. Adopt rates to achieve 100% renewable energy by 2025.

	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
ZNC1: Implement a Community Choice Energy (CCE) Program		\$		CPA	OSE	Initiated

#### ZNC2: Adopt a Sustainable Energy Master Plan

Develop a plan identifying citywide energy needs; and systems or programs that meet local energy needs and reduce greenhouse gas emissions at the neighborhood or district level. Potential projects include microgrids, district energy systems, and community solar.

ZNC2: Adopt a Sustainable Energy Master Plan		\$		OSE	CPD, ASD	Near Term
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#### ZNC3: Pilot and Promote Distributed Energy Resources

Pilot technologies like energy storage, vehicle-to-grid charging stations, web-enabled devices and microgrids within City facilities evaluate their ability to reduce utility costs and carbon emissions.

ZNC3: Pilot and Promote Distributed Energy Resources		\$\$\$		OSE	ASD, CPA, SCE	Ongoing
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#### ZNC4: Increase Local Solar for Residential and Commercial Tenants

Develop and advocate for programs and resources tailored to addressing the barriers faced by residential and commercial tenants to installing renewable energy that benefits their leased spaces.

ZNC4: Increase Local Solar for Residential and Commercial Tenants		\$		OSE	CPA, SCE	Near Term
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### EXISTING BUILDING EFFICIENCY

#### ZNC5: Adopt a Carbon Reduction Ordinance for Existing Buildings

Adopt a Carbon Reduction Ordinance to require energy benchmarking and carbon performance of existing buildings over 20,000 sq ft, including multifamily buildings. Require a reduction of fossil fuel use of covered buildings by 15% in five years and elimination of fossil fuel use by 2050.

ZNC5: Adopt a Carbon Reduction Ordinance for Existing Buildings		\$		OSE	CPD, EDD, Business, Utilities, CPA	Near Term
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Carbon Reduction Potential	Cost to City \$ Low \$\$ Medium \$\$\$ High	Supports Paris Agreement Advances Smart City Concepts	Potential for Cost Savings, Local investment and Jobs Enhances Environmental Quality	Potential to Address Equity Enhances Community Resilience	Government Leadership Improves Public Health & Safety
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# ACTIONS

EXISTING BUILDING EFFICIENCY	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
<p><b>ZNC6: Implement a Resilient Building Retrofit Accelerator Program</b></p> <p>Develop an accelerator program to streamline the delivery of energy retrofit services and technologies for public and private buildings. Reduce capital costs for property owners by offering financing options and bulk-purchasing of technologies and services. Create partnerships to increase the speed and scale of energy-retrofit measures across the city. Prioritize assistance to owners with fewer resources and less technical ability, including smaller buildings and nonprofits.</p>		\$\$		OSE	CPD, EDD, Business, Utilities, CPA	Near Term
<p><b>ZNC7: Implement a Green Leasing Program</b></p> <p>Develop a green leasing program to provide assistance and incentives for introducing leases that support investment in energy efficiency measures. Partner with local stakeholders to engage commercial and residential property managers.</p>		\$		OSE	EDD, Business	Near Term
<b>BUILDING ELECTRIFICATION</b>						
<p><b>ZNC8: Adopt Carbon Neutral Construction Codes</b></p> <p>Require New Construction for commercial, mixed-use and multi-family properties to achieve zero net carbon onsite or pay in-lieu carbon impact fee to offset fossil fuel use. Require electric-ready construction for future electrification of appliances and buildings systems. Ensure that affordable housing developers have additional financing or compliance alternatives available. Require new residential construction for single-family homes to use only electric appliances and building systems or pay in-lieu fee to support more local renewable energy and electrification projects.</p>		\$		OSE	CPD, BSD	Mid Term
<p><b>ZNC9: Convert Existing Natural Gas Equipment &amp; Appliances to Electric</b></p> <p>Develop programs, resources and incentives to support gas-to-electric conversion of appliances, hot-water heaters and HVAC systems. Establish electrification retrofit upon sale requirements for low-rise residential, and small multifamily and commercial buildings.</p>		\$		OSE	CPA, SCE	Mid Term
<b>EQUITY THROUGH ENERGY</b>						
<p><b>ZNC10: Provide Educational &amp; Workforce Cleantech Opportunities</b></p> <p>Partner with Santa Monica College and Santa Monica-Malibu Unified School District to offer professional development opportunities in the clean energy economy.</p>		\$		OSE	SCG	Mid Term
<p><b>ZNC11: Create Equitable Access to Clean Energy Programs</b></p> <p>Partner with utilities and the Clean Power Alliance to provide free home-energy audits and upgrade incentives for low-income households and affordable housing developers and property owners.</p>		\$		OSE	SCG	Mid Term

**ESTIMATED 2030 NET ZERO CARBON BUILDINGS REDUCTIONS**

**232,035 mtCO<sub>2</sub>e**

**ESTIMATED PERCENT OF TOTAL 2030 REDUCTIONS**

**25%**

# ZERO WASTE



## 2030 OBJECTIVE

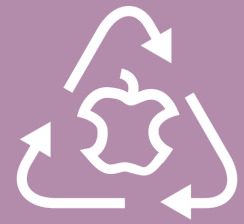
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- 95% of waste is diverted from the landfill

**3%**  
**OF TOTAL**  
**REDUCTIONS**



# ZERO WASTE



Becoming a zero waste community means rethinking the way we consume and manage materials and goods throughout their entire lifecycle.

Santa Monica aims to eliminate landfilled waste through reducing the amount of waste generated, reducing consumption, limiting waste generation and increasing recycling and composting.

Daily decisions to use reusable bags, bottles and utensils can add up to a big impact. Limiting the use of disposable goods will reduce the use of natural resources, the strain on our waste management infrastructure and the littering in our neighborhoods and on our beaches.

Local regulations, like the City's single use plastic bag and single use plastic food service ware bans, have proven to be successful in changing and individuals' behaviors and shifting markets away from single use disposable products.

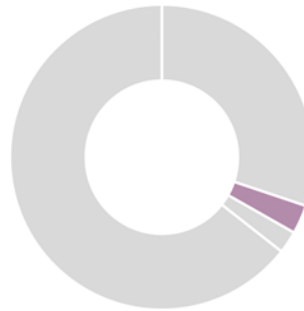
Education and awareness are essential to ensuring everyone understands how they can contribute to the solution by providing them resources to be successful. Proper diversion systems like collection bins and signage are also crucial to support the needs of residents and businesses, while ensuring proper separation of recycling and organics streams.

## COMPOST: THE NEXT FRONTIER

Organic materials, like food scraps and yard waste, are extremely valuable natural resources that can be transformed into earth-enriching compost. However, businesses and residents have historically been provided limited options to sort and manage their organic materials.

State regulations now require all commercial properties and large residential properties to utilize composting services.

To help residents and businesses, Santa Monica-based Global Green conducted waste audits, and provided food scrap pails, educational materials, outreach and program implementation assistance for apartment dwellers. The "Eco-Ambassador" program is now being scaled up to include restaurants, connecting unused food to community pantries.



**LANDFILLED WASTE CONTRIBUTES 3% OF COMMUNITY EMISSION SOURCES (2015)**

## “TO ROT OR NOT” MAIN STREET PILOT

In 2016, City of Santa Monica piloted an organics-recycling program called “To Rot or Not” on Main Street with participation of 172 businesses. This program improved the way restaurants dispose of their food waste by giving businesses two containers.

One is the “Rot” container which consists of materials that breakdown naturally and can be composted. The “Not” container is comprised of materials that cannot breakdown naturally like aluminum, ceramics, and sponges. These items are recycled or sorted for landfill disposal.

This simplifies the material streams and reduces contamination - or placement of non-recyclable or non-compostable items in a recycling or composting container.



Eco-Ambassadors Program trains residents to compost kitchen scraps (Source: Global Green)

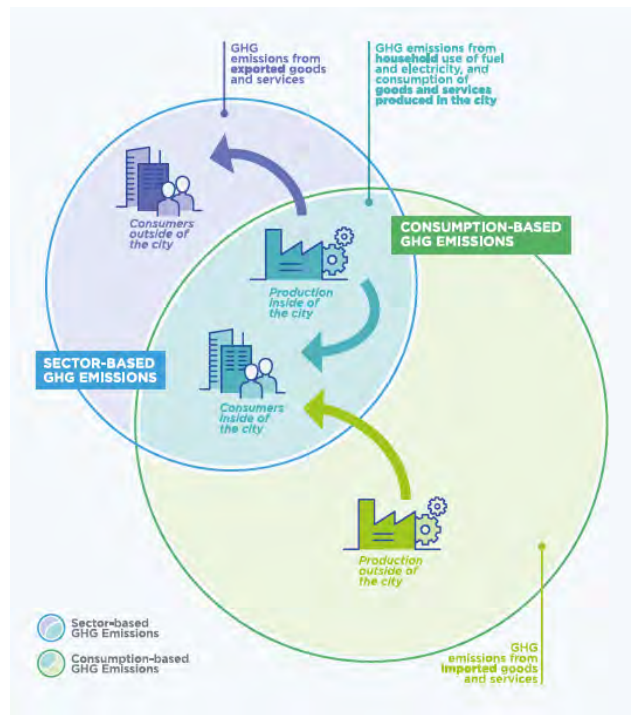
# THE CARBON WE CONSUME

Residents and businesses have the power to influence a global system that delivers the goods, foods, services - and by extension, the carbon - that they consume. Through our purchasing and consumption habits, we can reduce these emissions occurring elsewhere. Climate change happens on a global scale, so emissions reduced in another country or region is equally important as emissions reduced locally.

There are two lenses that cities can use to look at emissions:

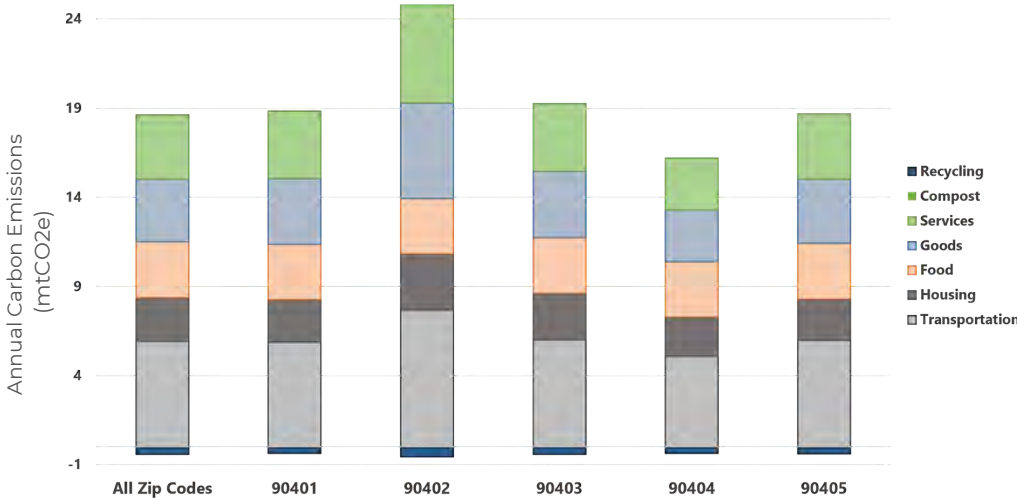
- A sector-based inventory attributes all emissions to the location where the emissions occur. This is the recognized global standard for emissions reporting and action.
- A consumption-based inventory includes the emissions resulting from all consumption activities of a local community of residents. It attributes all emissions to the end consumer, including all emissions released along the supply chain. This is an emerging initiative that takes broader stock of a community's climate impacts.

Research by C40, indicates that consumption-based carbon emissions are approximately 60 percent greater than the emissions generated within city boundaries. While cities do not have direct control over the embodied emissions of most goods and products, they do have many opportunities to design and promote more sustainable urban lifestyles that can help reduce these consumption-based emissions. As work on climate action expands at the City, opportunities to reduce embodied emissions and shift to low carbon consumption patterns will be explored.



Overlap between consumption-based emission inventories and sector-based emission inventories (Source: C40)

## AVERAGE CONSUMPTION-BASED CARBON EMISSIONS PER HOUSEHOLD



The chart on the left shows Santa Monica's consumption-based emissions by zip code. The emissions were estimated using the U.C. Berkeley Cool Climate Network methodology and local data where available. The household footprints include all direct and indirect greenhouse gas emissions resulting from the life cycle of energy, transportation, water, waste, food, goods and services consumed by households in a calendar year, in this case 2015.

Generally, people with higher income tend to spend more money on goods, services and transportation (especially air travel). People with lower income tend to live in smaller dwellings, accumulate less and take public transportation regularly.

## ACTIONS

### ELIMINATE LANDFILL WASTE

#### ZW1: Implement Mandatory Organics Recycling Citywide

Develop outreach and enforcement programs to ensure commercial and residential organics recycling citywide.

Carbon Reduction Potential



Cost to City



Community Benefits



Lead

RRR

Partners

OSE

Status or Timeframe

Near Term

Carbon Reduction Potential

Cost to City  
 \$ Low  
 \$\$ Medium  
 \$\$\$ High

Supports Paris Agreement

Advances Smart City Concepts

Potential for Cost Savings, Local investment and Jobs

Enhances Environmental Quality

Potential to Address Equity

Enhances Community Resilience

Government Leadership

Improves Public Health & Safety



# ACTIONS

## ELIMINATE LANDFILL WASTE

### ZW2: Provide Waste Audits for Businesses and Residents

Analyze waste streams for multiunit dwellings and businesses. Recommend ways to reduce consumption and increase composting and recycling.

Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
	\$\$		RRR	OSE	Ongoing

### ZW3: Institute Wet-Dry Sorting System for Businesses

Implement a wet-dry program that collects wet organic waste separately from dry recyclable waste to more businesses in order to increase waste diversion.

	\$\$		RRR	OSE	Mid Term
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### ZW4: Implement Pricing Signals to Increase Diversion

Explore fees and fines to create more incentives for recycling and composting and discourage landfill waste.

	\$\$		RRR		Mid Term
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### ZW5: Increase Construction and Demolition Debris Diversion Requirements

Explore fees and fines to create more incentives for recycling and composting and discourage landfill waste.

	\$		RRR		Mid Term
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### ZW6: Implement Material and Landfill Bans

Ban divertible materials, such as yard waste and foods, from trash containers. Also keep out materials that cause litter, such as straws and other single-use items.

	\$		OSE		Mid Term
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## REUSE ECONOMY

### ZW7: Expand the Reuse and Repair Economy

Expand programs like the Citywide Annual Yard Sale and quarterly Repair Cafes to avoid wasting goods that are lightly used or damaged. Develop new programs like lending libraries for tools. Promote reusable wares for restaurants and individuals.

	\$		RRR	OSE	Mid Term
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### ZW8: Foster a Food Waste Prevention Network

Convene businesses, non-profits and institutions to develop systems, networks and infrastructure to prevent food waste by fostering connections between sources of unwanted food and communities in need. Partner with local businesses, restaurants, grocery stores and non-profits to reduce food waste and recover edible food through networking and smart phone applications. Develop and maintain a map of fruit and nut trees in Santa Monica to connect gleaners and foragers.

	\$		OSE	RRR, FMD, Business	Mid Term
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### ZW9: Incentivize Reusable Containers and Packaging

Reduce the amount of materials used in packaging. Promote packaging materials that are compostable and recyclable. Incentivize more grocery stores to sell bulk food to customers. Incentivize customers to bring their own reusable containers to the grocery store.

	\$		OSE	RRR	Mid Term
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### ZW10: Support and Pilot Extended Producer Responsibility Programs

Participate in campaigns and pilot programs that offer solutions for hard-to-recycle items, like mattresses and furniture

	\$		RRR	OSE	Mid Term
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### ZW11: Explore Waste-to-Energy Conversion Technologies

Pilot decentralized systems that convert locally collected organic waste into usable energy or byproducts like feedstock.

	\$		OSE	RRR	Mid Term
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**ESTIMATED 2030 NET ZERO CARBON BUILDINGS REDUCTIONS**

**27,847 mtCO<sub>2</sub>e**

**ESTIMATED PERCENT OF TOTAL 2030 REDUCTIONS**

**3%**

# SUSTAINABLE MOBILITY



## 2030 OBJECTIVES

- Convert 50% of local trips to foot, bike, scooter or skateboard
- Convert 25% of commuter trips to transit
- Convert 50% of personal vehicles to electric or zero emission

**31%**  
**OF TOTAL**  
**REDUCTIONS**



# SUSTAINABLE MOBILITY



## A NEW MODEL OF MOBILITY

Vehicle transportation contributes over 60% of Santa Monica's total carbon emissions. According to field observations and resident surveys, driving alone accounts for almost two-thirds of all vehicle trips. Nearly one third of residential trips are one mile or shorter.

Increasing walking and biking can make meaningful progress toward reducing emissions and congestion in Santa Monica.

People are looking for new travel options with less time in the car, lower cost and more convenience. Now more than ever, people have many mobility choices for local trips, whether on train, foot, by bikeshare or even by electric scooters. Mobility services can offer a safe and convenient experience while reducing vehicle use and emissions.

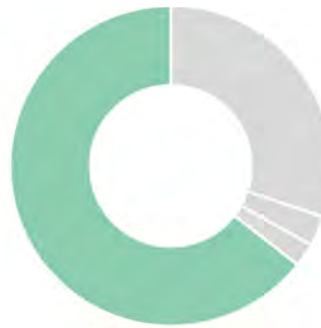
Local policies, infrastructure and incentives need to encourage safety, convenience and affordable options to all members of the community. This will help residents lead car-lite or even car-free lifestyles which help reduce vehicle trips and emissions. Having convenient transit options will shift away from historical subsidies to driving through reallocating roadway space, using pricing incentives, and emphasizing roadway space efficiencies.

Mobility options are increasingly diverse, and Santa Monica can lead in creating and encouraging options, whether privately or publicly operated.

## SAFE STREETS FOR ALL

Santa Monica has actively created new bike lanes, revised bus routes, and made streets more walkable. But many residents still cite a sense of vulnerability when walking and biking, frustration with vehicle speeds and yielding to pedestrians, and a desire for more short-distance on demand services to support transit use.

Creating safer streets through protected and connected pedestrian and biking facilities will be key to facilitating walking and biking as primary transportation options for people of all ages and abilities. In 2016, the City council adopted a Vision Zero target for roadway safety (see call out).



**VEHICLE  
TRANSPORTATION  
CONTRIBUTES  
OF COMMUNITY  
EMISSION SOURCES  
(2015)** **64%**

## DECARBONIZED TRANSPORTATION

In addition to shifting people out of vehicles, vehicles that remain on the road must transition to electric or zero-emission technologies in order to achieve significant emission reductions.

One major barrier is the lack of charging infrastructure available for those who live in apartment buildings and condos.

The City's Electric Vehicle Action Plan provides a strategic approach to supporting electric vehicles for residents and commuters. Expanding charging infrastructure will be key to providing low-carbon fuel to the masses.

In 2015, the Big Blue Bus (BBB) reduced its emissions from virgin natural gas to 100% landfill methane gas. By 2020, BBB will initiate a transition to electric buses to further reduce its carbon footprint.

## SAFETY IN NUMBERS: GETTING TO VISION ZERO

Santa Monica's 2016 Pedestrian Action Plan included the ambitious goal to reduce and ultimately eliminate fatal and severe injuries from roadway crashes known as "Vision Zero." Reaching this goal will require thoughtful design and actions that affect the design of the roadways, the behavior of roadway users, enforcement of safety rules, and outreach efforts..

Vision Zero will affect how we design, use, and manage roadways and prioritize the safety of pedestrians and other low-carbon emitting road users.

# SUSTAINABLE MOBILITY



## A CAR-FREE FUTURE

Living car-free is easier now than ever with a wide variety of shared mobility and transit options. Continuous focus on enabling car-free and care-lite households will continue to make sustainable transportation achievable for more types of needs and households. Simultaneously this supports wellbeing through increased physical activity and reduced household cost burdens.

The Land Use & Circulation Element (adopted 2010, updated 2015) sought to reduce vehicle trips and carbon emissions and proactive transportation measures. Over time, this will encourage reduced vehicle ownership.

Programs like the Transportation Demand Management Ordinance have increased trip-reduction requirements for medium and large employers, and there are resources to help businesses implement trip reduction plans.

Policies to increase the cost of driving and parking will deter solo-driving and encourage sustainable transportation. These policies must be implemented so as not to disproportionately impact lower-income populations. Additionally, the City must consider the financial impacts from historically reliable revenue sources like parking fees.

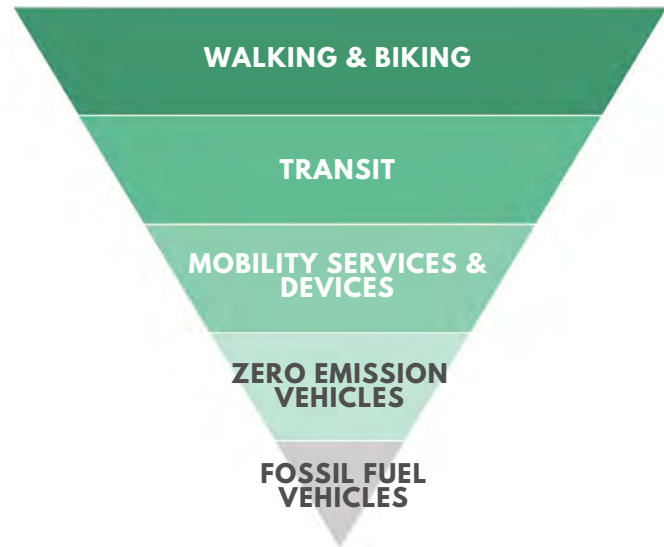
Autonomous vehicles could offer an electrified and shared option for some mobility needs, but needs to be guided by proactive sustainable policy and carefully managed to reduce vehicle congestion, reduce vehicle miles traveled, and keep roadways safe for all users.

## A CLEAN MOVING ECONOMY

Trucks used for the movement of goods across the region and state account for roughly 2-3% of average daily trips along the 10 freeway. The California Department of Transportation, estimates that truck traffic will increase by 50% by 2025, with no additional road capacity to accommodate them.

Additionally, short distance delivery vehicles for retail delivery increase local congestion as e-commerce and online shopping continues to grow.

Hierarchy of Preferred Mobility Options



In 2009, there was a single daily internet delivery for every 25 Americans. Today, there's one for every eight Americans. That traffic is anticipated to double again by 2023<sup>1</sup>.

Today's city streets and transportation networks simply were not designed to handle this additional flood of packages and freight trucks, especially with the added pressure of next-day or, in some cases, next-hour, delivery.

While the City has limited influence over internet retailers and delivery services, it does have an ability to allocate facilities and curb space to make delivery and pick-up systems more efficient for drivers and customers. Systems like pick up lockers can reduce idling for delivery trucks and package theft.

The City will need to explore systems and partnerships that will reduce vehicle congestion, encourage appropriate use of street and curb space and reduce emissions from delivery vehicles.

1. Professor José Holguín-Veras, director of the Center of Excellence for Sustainable Urban Freight Systems at New York's Rensselaer Polytechnic Institute.



# SUSTAINABLE MOBILITY



## MOBILITY DICTIONARY

The landscape of mobility-as-a-service is changing almost every month. With so many options, you don't even need to own a vehicle! Before you go, know the lingo!

### AUTONOMOUS VEHICLES



A vehicle that is capable of sensing its environment and moving with little or no human input. Vehicles can feature various levels of sophistication and independence in automation.

### CARSHARING



Provides members with access to a vehicle for short-term – usually by the hour – use. Carshare systems can be publicly operated, privately operated, or peer-to-peer, one-way, round-trip, or floating in nature.

### DOCKLESS MOBILITY DEVICES



Devices like bikes, electric bikes, electric motor scooters, and electric scooters are shared among users. They are typically enabled by technology or mobile app, and emerging services are frequently run by private companies.

### MOBILITY AS A SERVICE (MAAS)



Mobility solutions that are consumed as a service, a consumer-centric model of people transportation. Travelers are offered mobility solutions based on their travel needs and typically includes some sort of journey planning.

### MOBILITY ON DEMAND



An innovative transportation concept where all consumers can access mobility, goods, and services on demand by dispatching or using shared mobility, delivery services, and public transportation solutions through an integrated and connected multi-modal network. The most advanced forms of MOD passenger services incorporate trip planning and booking, real-time information, and fare payment into a single user interface.

### BIKESHARING



Provides member with access to a bike for short-term - usually by the minute - use. Bikeshare systems can be publicly operated, privately operated, peer-to-peer, docked, dock-light, or dockless.

### CARPPOOLING/ RIDE-SHARING/ VANPOOLING



Involves adding additional passengers to a trip that will already take place. Such an arrangement provides additional transportation options for riders while allowing drivers to fill otherwise empty seats in their vehicles.

### MICROTRANSIT



Technology-enabled private shuttle services, serve passengers using dynamically generated routes, usually between designated stop locations rather than door-to-door.

### MOBILITY HUB



Mobility hubs are strategically located transfer points that feature facilities for multiple transportation modes (such as bikesharing, carsharing, and transit) combined in one location.

### RIDE-SOURCING/ RIDE-HAILING



Connects passengers with drivers through online platforms who use personal, non-commercial vehicles.

# ACTIONS

## A NEW MODEL OF MOBILITY

### SM1: Adopt a New Mobility Strategy

Develop and adopt policies to govern local mobility services, designate underutilized street space, adapt to technology innovations, implement pricing strategies and foster regional integration.

Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
	\$		MD		Near Term

### SM2: Expand & Diversify Mobility Services & Devices

Diversify Breeze fleet to include electric bicycles and offer options for people with different access and functional needs. Partner with operators of dockless devices to expand mobility options that are safe, convenient and affordable, and provide options for people with different needs. Improve shared-mobility services through open marketplace opportunities, permitting systems, dedicated infrastructure and payment platforms that integrate multimodal planning.

	\$		MD	Business	Near Term
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### SM3: Expand Mobility Infrastructure

Develop strategies and projects to use curb space as mobility hubs that can serve mobility-service providers. Integrate smart-sensing and smart-charging technologies to monitor, inform and enable activities, like congestion pricing. Create tools to maximize street capacity and efficiency for people.

	\$\$\$		MD	Business	Near to Mid Term
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### SM4: Implement Parking Policies & Pricing

Continue to actively review and adjust parking prices citywide as market rates change, and revisit parking management and construction policies to encourage sharing existing resources. Analyze financial impacts and develop alternatives to decreased revenue from parking fees.

	\$		MD		Near Term
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### SM5: Sustainable Goods Movement & Delivery Services

Assess the local impacts of long distance and urban delivery systems and vehicles on street capacity, congestion and carbon emissions. Facilitate partnership to explore ways to reduce delivery trips, idling while loading/unloading and emissions from delivery vehicles.

	\$		MD	Business	Mid to Long Term
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## SAFE STREETS FOR ALL

### SM6: Complete Streets Network

Increase the extent and quality of the complete street network and greenways to ensure residents and visitors alike have safe, convenient, and affordable transportation options. Create designated bike lanes that are protected to provide greater safety and assurance for all riders. Emphasize the movement of people to the capacity of public infrastructure with greater space dedicated to space efficient and low emission transportation. Expand publicly owned spaces and work with property owners to facilitate public access. Expand neighborhood greenways, like Michigan Avenue Greenway, linking parks, schools and neighborhoods.

	\$\$\$		MD	PCD, PWD	Ongoing
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### SM7: Expand Safe Routes Programs

Expand the Safe Routes to School program to reach more schools, including private schools, and continue to pursue a Safe Routes for Seniors program.

	\$		MD	Schools, Nonprofits	Ongoing
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Carbon Reduction Potential	\$ Low \$\$ Medium \$\$\$ High	Supports Paris Agreement	Potential for Cost Savings, Local investment and Jobs	Potential to Address Equity	Government Leadership
		Advances Smart City Concepts	Enhances Environmental Quality	Enhances Community Resilience	Improves Public Health & Safety



# ACTIONS

## SAFE STREETS FOR ALL

### SM8: Prioritize Mixed-Use and Transit-Oriented Affordable Housing

Prioritize expansion and investment in housing and mixed-use projects located near dense transit hubs with limited parking, through local zoning and incentives.

Carbon Reduction Potential



Cost to City

\$

Community Benefits



Lead

CPD, HD

Partners

Nonprofits, Business

Status or Timeframe

Ongoing

## CONNECTED TRANSIT

### SM9: Prioritize Mass Transit Services

Support public mass transit through infrastructure and service improvements. Prioritize the highest-capacity shared-ride services and lowest-emission modes with priority lanes and intersection crossing. Advocate for regional connectivity projects, like Subway to the Sea and Bus Rapid Transit. Work with regional partners to expand the development of Bus Rapid Transit facilities throughout the City.



\$



MD

BBB, Metro

Mid to Long Term

### SM10: Expand Citywide Transportation Management Organization

Increase the scope of offerings and resources available via the TMO to employees/employers, residents, and visitors in order to increase the reach and impact of existing transportation programs, facilities, and services.



\$



MD

SCAQMD

Ongoing

### SM11: Offer Incentives for Transit & Mobility Services

Increase ridership, mobility access and equity by subsidizing fares for sustainable modes of transportation like transit, vanpool and micro-transit services, for youth, students, seniors and other underserved groups.



\$



BBB

MD, SCAQMD

Near Term

## VEHICLE ELECTRIFICATION

### SM12: Increase Charging Infrastructure for Electric Vehicles and Electric Mobility Devices

Expand network of off- and on-street public charging stations to 1,000 ports by 2025. Provide charging stations that will accommodate a wide range of vehicle types including bicycles, scooters and other mobility devices. Provide outreach and additional incentives for lower-income individuals and non-profit property owners. Implement emerging best practices in EV technology, including mobile charging, wireless charging, energy storage, and web/smartphone applications.



\$\$\$



OSE

MD, SCE, CPA, SCAQMD

Ongoing

### SM13: Expand Use of EVs in Carshare and Rideshare Services

Develop public-private partnerships with carshare providers to provide access to electric vehicles, including neighborhood electric vehicles, to residents who may not be able to own an electric vehicle on their own.



\$



OSE

Business

Ongoing

### SM14: Pilot Autonomous Vehicle (AV) Technologies

Develop protocols and policies for AV safety performance, AV City fleet vehicles, and AV commercial activities that protect all roadway users and reduce vehicle trips and carbon emissions. Work with manufacturers to pilot technologies on fixed routes with limited services that provide shared-ride and zero emission mobility solutions.



\$\$



MD

OSE, ISD, Business

Mid Term

**ESTIMATED 2030 NET ZERO CARBON BUILDINGS REDUCTIONS**  
**ESTIMATED PERCENT OF TOTAL 2030 REDUCTIONS**

**289,837 mtCO<sub>2</sub>e**  
**31%**

# CLIMATE ADAPTATION

## CLIMATE READY COMMUNITY

- Increase community resilience to climate change
- Protect vulnerable groups from impacts
- Integrate climate change impacts into City planning, operations & infrastructure projects

## WATER SELF-SUFFICIENCY

- Achieve water self-sufficiency

## COASTAL FLOODING PREPAREDNESS

- Enhance natural systems to prevent damage from coastal flooding
- Increase resilience of public and private assets in coastal flood zone

## LOW-CARBON FOOD & ECOSYSTEMS

- Increase self-reliance through local food production
- Reduce or sequester carbon emissions from food production, consumption, waste and landscape management and natural processes





# CLIMATE CHANGE IMPACTS



## THE CLIMATE HAS CHANGED

Even if we halt all carbon emissions today, the carbon emissions currently in the atmosphere will continue to impact the climate. Sea-level rise and coastal flooding, extreme heat, drought, and declining air-quality will increasingly affect Santa Monica directly. Each of these hazards impacts the city's people, buildings, infrastructure, environment, and economy in different ways.

Santa Monica has implemented several measures to increase its resilience against such impacts. This section offers a comprehensive response plan to climate change. To start, a vulnerability assessment was conducted for all major asset categories in the city in conjunction with the top climate hazards.

The initiatives of this plan will increase the community's ability to thrive in the face of intensifying climate hazards, leading to stronger neighborhoods and improved quality of life for all residents.

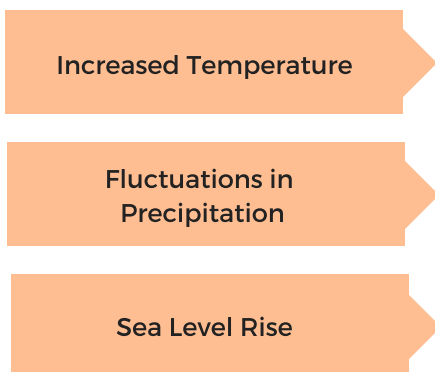
## WHAT IS RESILIENCE?

Resilience is the capacity of individuals, communities, institutions, businesses, and systems to survive, adapt, and grow, no matter what kinds of chronic stresses and acute shocks they experience.

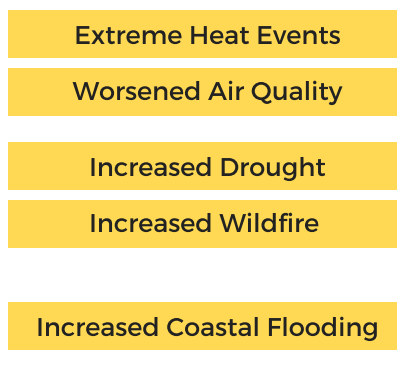
- Shocks are typically considered single-event disasters, such as fires, earthquakes, and floods.
- Stresses are factors that pressure a city on a daily or reoccurring basis, such as chronic food and water shortages, an overtaxed transportation system, or homelessness

Santa Monica will need dedicated public and private partners, as well as significant additional resources, to advance these initiatives and implement comprehensive climate adaptation.

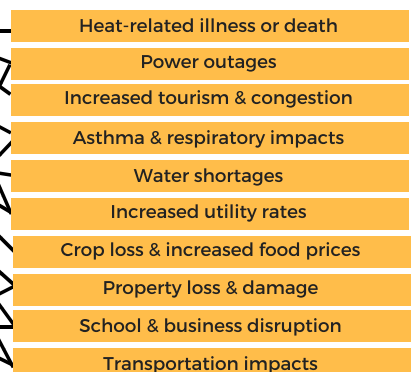
### GRADUAL CLIMATE CHANGES



### LOCAL CLIMATE HAZARDS



### DIRECT IMPACTS



## EXTREME HEAT

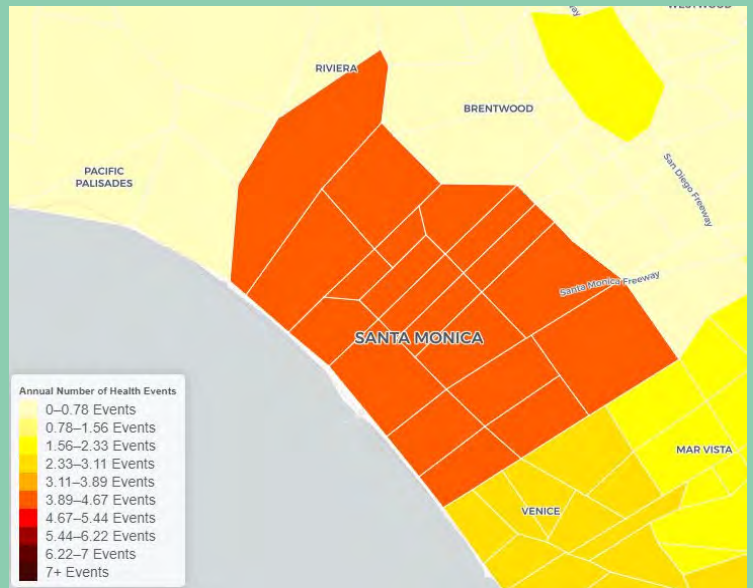
Santa Monica is expected to see increasing trends in extreme-heat days with an average of nine days above 87°F by mid-century and 22 days by the end of the century. At the 95°F threshold, Santa Monica is projected to see an increase from 0 to 3 extremely hot days per year by 2100<sub>2</sub>.

Extreme-heat events in California and the Los Angeles region are becoming more frequent, more intense, and are longer lasting—and the trend is expected to continue as climate change worsens.

Extreme heat can exacerbate heat-related illnesses and deaths, while also impacting communities indirectly through energy disruption, and spikes in energy prices, impacting affordability.

Certain populations such as the homeless, outdoor workers, older adults, young children and infants, pregnant women, and people with chronic illnesses are more susceptible to warmer temperatures and heat-related illnesses.

For example, older adults may be at higher risk due to reduced ability to acclimatize to changing temperatures, diminished thirst response, and a higher likelihood of chronic health conditions. Homeless populations may not have access to indoor spaces to get out of the sun and cool down.



Projected High Heat Events (Source Cal-ADAPT)

A High Heat Event (HHE) is any heat event that generates public health impacts. Each local area has a unique HHE specific to its climate and the historical sensitivity of people in that area to past heat events.

Long-term preventative strategies to decrease heat impacts may include improvements in the built environment, rebate and home cooling programs, and efforts to strengthen social capital and connectivity at the neighborhood level.

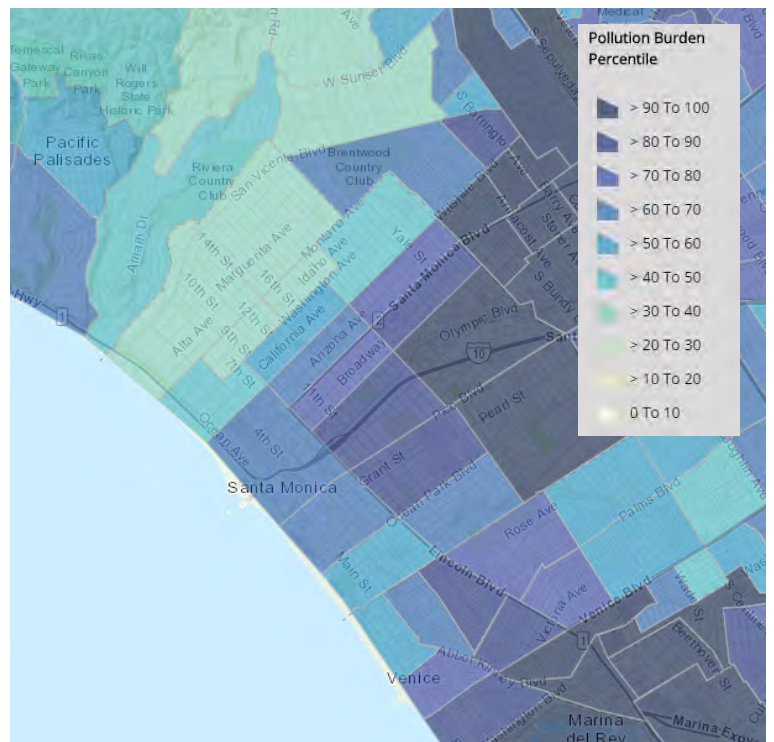
## AIR QUALITY

Air quality is strongly dependent on weather, and climate change is expected to impact air quality through warming temperatures and more frequent episodes of stagnant air. Warmer temperatures from climate change will increase the frequency of days with unhealthy levels of ground level ozone.

Ozone is the main ingredient of smog. Ground-level ozone is formed from the reaction of oxygen-containing compounds with other air pollutants in the presence of sunlight. The main sources of ozone are trucks, cars, planes, trains, factories, farms, construction, and dry cleaners.

Warming temperatures and lengthened growing seasons can also lead to increased wildfires and aero-allergen levels, such as pollen, which can also worsen air quality.

According to CalEnviroScreen (right), California's pollution and population vulnerability mapping tool, Santa Monica concentration of ozone is higher than 53% of all census tracts in California.



Pollution/Ozone Burden (Source CALENIROSCREEN)

2 California Energy Commission. 2017. Cal-Adapt. Available at <http://cal-adapt.org/>.



## DROUGHT

Climate change is likely to increase the duration and severity of droughts in California<sup>3</sup>. Increasing temperatures and changing precipitation patterns can create periods of abnormally dry weather that can result in water-supply shortages and other impacts.

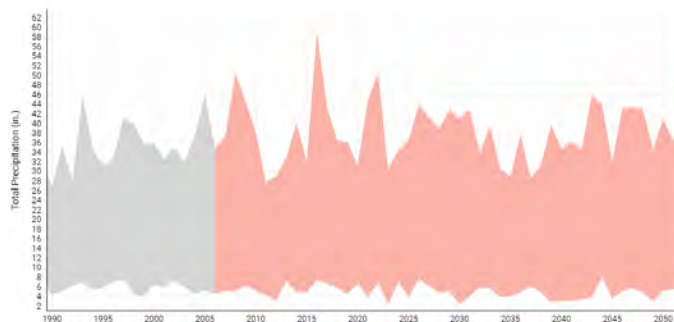
In the present day, California already experiences wide swings in precipitation from year to year, and this variability is expected to continue under climate change with fluctuations between wet years and dry years.



Due to anticipated warmer temperatures, more precipitation will fall as rain instead of snow, and Southern California will have smaller windows of time to capture stored water as snowpack.

Aside from directly impacting the availability of water, changes in the amount and frequency of precipitation may affect hydropower production. Likewise, changes in weather patterns may impact growing conditions and yields for crops.

These impacts may raise the price of basic goods and services, increasing stress on lower-income communities as they spend a greater proportion of their income on food and utilities.



Wide Fluctuations in Precipitation Predicted  
(Source: US Climate Resilience Toolkit)

## WILDFIRE

Wildfires can be a significant source of air pollution in Southern California, and climate change is expected to increase the number and extent of wildfires. Hot, dry summers followed by hot and dry Santa Ana wind conditions can create conditions suitable for wildfires.

Wildfires burning within 50 to 100 miles of Santa Monica routinely can cause air quality to be five to 15 times worse than normal, and often two to three times worse than the worst non-fire day of the year.

Although Santa Monica is not directly threatened by wildfire due to its surrounding urban buffer, the City is close to a number of mountain ranges where wildfire risks are projected to increase due to climate change. Wildfires stress fire and emergency management services across Los Angeles County, disrupt regional transportation and energy systems and worsen regional air quality.

While there is little Santa Monica can do to prevent wildfires directly, we support wildfire-stricken communities with firefighter assistance and emergency operations capacity, and implement protocols to protect affected workers, school students and vulnerable populations.

<sup>3</sup> Hewitt, Al. 2014. UCLA Researchers Project Southern California Rainfall Levels Through End of Century. UCLA Newsroom. Available at <http://newsroom.ucla.edu/releases/ucla-researchers-project-southern-california-rainfall-levels-through-end-of-century>.

Smoke clouds from the Woolsey Fire loom over Malibu.  
(Credit AP Photo)



## SEA LEVEL RISE & COASTAL FLOODING

Sea levels rise (SLR) due to increased water volume from higher water temperatures and the melting of glaciers and ice sheets.

Coastal flooding caused by storms and high tides is a temporary condition but can have damaging consequences. Over the longer-term, sea level rise (SLR) will compound the effects from coastal flooding as storms will occur on top of higher sea levels.

Southern California may see between 17 and 66 inches of sea level rise (SLR) by the end of this century .

*Sea level rise does not act alone!*

A combination of both sea level rise, a strong storm and high tides can put these beaches under water.



## LOCAL IMPACTS OF SEA LEVEL RISE

In an effort to prepare for the anticipated impacts of SLR and coastal hazards, the City, with assistance from the USC Sea Grant, the Ocean Protection Council, the California Coastal Commission (CCC), and the State Coastal Conservancy, commissioned technical reports that providing shoreline change projections, coastal hazard modeling, and vulnerability assessments.

Miles of transportation and public and private utilities infrastructure, beaches, homes, businesses and concessionaires bear some risk from SLR and coastal flooding. The map below shows projected SLR and coastal flooding by 2100 along the coast of Santa Monica. A significant number of public facilities and infrastructure, buildings, and other structures are likely to be affected by storm-induced flooding.

In addition, the Santa Monica Pier, a major tourist destination in the City, could also be impacted by increased wave height and water volume.

As the level of the Pacific Ocean continues to rise, areas that would have only been temporarily flooded or submerged during very high 'King' tides or El Niño conditions, may gradually begin to be permanently submerged or inundated.

Over the mid-term (i.e., SLR of 6 inches to 24 inches), the Santa Monica sandy beach area towards Pacific Coast Highway is expected to see moderate inundation levels. Some areas have been flooded in the past during severe storms or El Niño events, and research indicates that this will become an occurrence of increasing frequency.

Over the long-term (i.e., SLR of 16 inches to 66 inches, with a possibility of a 113 inch extreme scenario), the coastal inundation hazard area is expected to expand further inland, and the mean high tide line would move closer to its location at the turn of the 20th century.

### Sea Level Rise and Coastal Flood Models



4 Cayan, D. R., J. Kalansky, S. Iacobellis, D. Pierce, and R. Kopp Kopp. (2016). Creating Probabilistic Sea Level Rise Projections to support the 4th California Climate Assessment. Prepared for the California Energy Commission.



## CLIMATE CHANGE VULNERABILITY

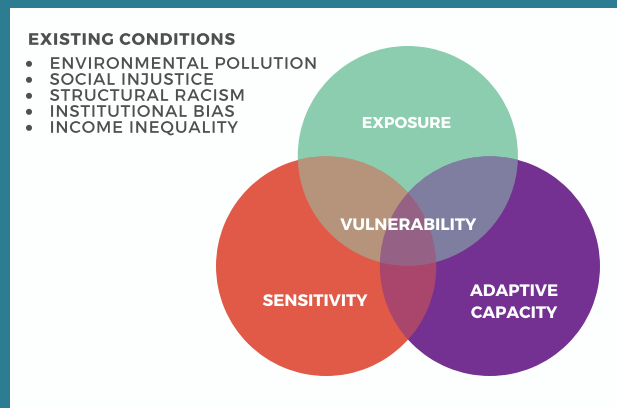
Climate change vulnerability is a measure of sensitivity to climate hazards and the ability to adapt to these hazards. Both gradual climate change and climate hazards can expose people and property to a wide range of stress-inducing and hazardous situations.

Older adults, young children, and people with chronic diseases and disabilities are more biologically sensitive to impacts from the effects of climate change, such as droughts, extreme heat, and air quality impacts. In addition, low-income populations, including homeless populations and communities of color, are generally more likely to be exposed to natural hazards and climate events, with greater sensitivity, yet have fewer resources to cope or adapt.

People for whom English is not a primary language are further disadvantaged when public information, community planning and resources are not made accessible in their native language.

Seniors are particularly vulnerable to climate change impacts as many may be isolated and living alone, threatened by hunger, and living in or near poverty. Over 20% of the population in Santa Monica is over 60. In 2016, Meals on Wheels served 342 Santa Monica-based seniors. Most of these seniors are home-bound, meaning they have difficulty leaving home due to frailty, age, chronic disease, recent hospitalization, and mental health issues. The aging population is more vulnerable to some climate change impacts, like rising temperatures and worsening air quality.

Environmental inequity is another important factor in determining population vulnerability. Communities of color and low-income people have historically borne the burden of polluting industries and roadways with fewer services available to them.



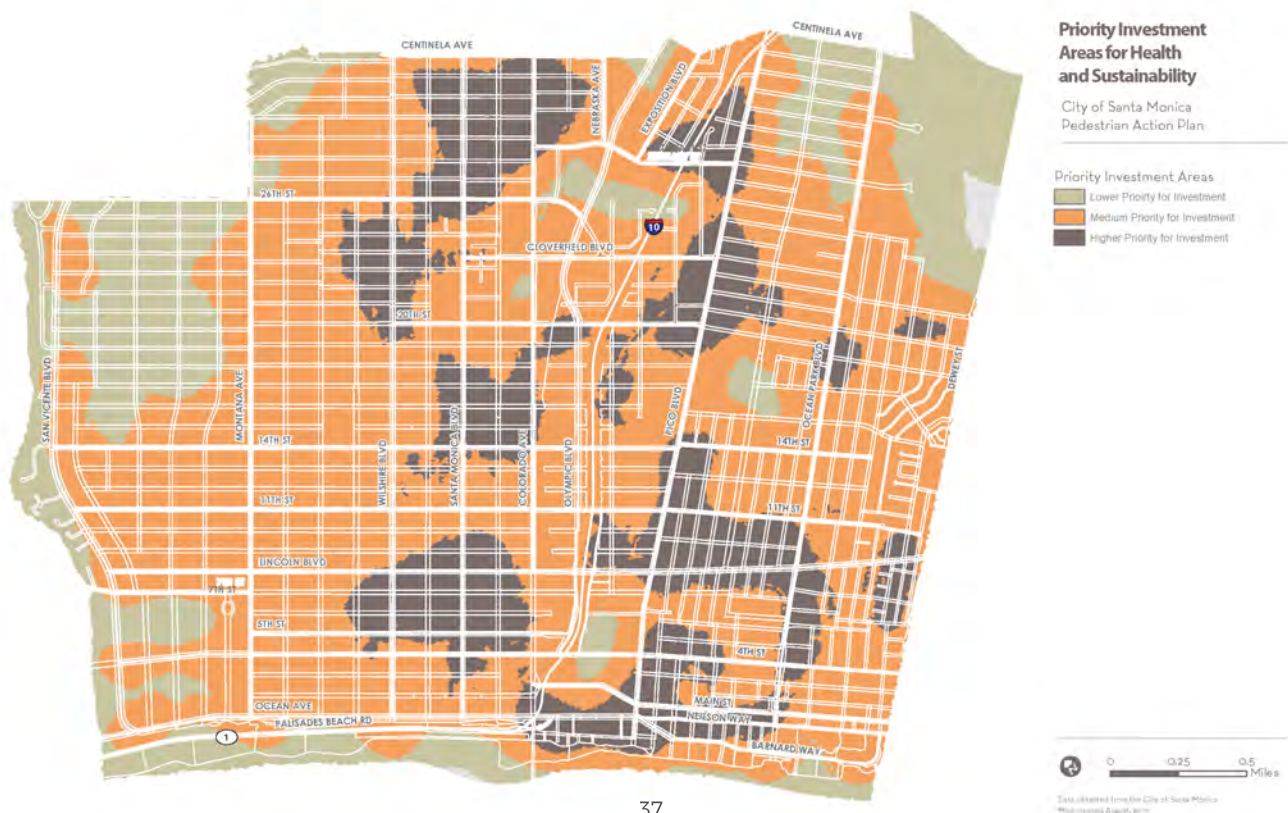
**Influencing Factors of Vulnerability**

According to analysis conducted by the Pedestrian Action Plan, the areas (shown below) in dark brown are locations where investments in pedestrian facilities would have the greatest health and sustainability benefits.

The highest percentage of Latinos living in Santa Monica (26%) live in the Pico neighborhood (90404).

According to the Wellbeing Index, Latino residents reported the least amount of physical activity and have lower than average fruit and vegetable consumption. Also, the lowest reported use of outdoor space for leisure activities was among the Latino population. Residents in the 90404 zip code experience the highest asthma rate among Santa Monica residents (12.1%).

Community health, environmental sustainability, and social equity are important values for the City of Santa Monica and the intent of this analysis is to reflect those values in the City's planning and decision-making process.



## VULNERABILITY ASSESSMENT

The City conducted a vulnerability assessment across various sectors of the community. The vulnerability assessment analyzes how people, buildings, infrastructure and the economy will be affected by climate change.

The assessment incorporated quantitative data such as exposure of physical assets and facilities along Santa Monica's coast likely be impacted by sea level rise and coastal flooding.

The assessment also utilized qualitative data concerning the sensitivity and ability to adapt to climate change of the key sectors, populations, or assets. This was gathered from City staff and key stakeholders. Based on the assessment, population groups and assets within each sector were ranked from highest to lowest vulnerability.



Vulnerability	Community Sector	Description
HIGH	<ul style="list-style-type: none"> <li>• Buildings in coastal flood zone</li> <li>• Roads and parking in coastal flood zone</li> <li>• Ocean habitat</li> <li>• Santa Monica Pier</li> </ul>	The City may have limited jurisdiction control over many of these assets. Partnerships with state and federal agencies, private businesses, and homeowners will be essential to adapt these assets to climate hazards. Adaptation measures to increase the climate resilience of these assets will take time to enact and may require a great deal of education and coordination with multiple stakeholders.
MEDIUM-HIGH	<ul style="list-style-type: none"> <li>• Parks</li> <li>• Water infrastructure</li> <li>• Energy supply and infrastructure</li> <li>• Urban forests</li> <li>• Beach habitat</li> </ul>	The City has a number of current plans and programs in place to address climate hazards for these highly sensitive assets.
MEDIUM	<ul style="list-style-type: none"> <li>• Schools</li> <li>• General and vulnerable populations</li> <li>• Water supply</li> <li>• Sanitary water and sewer infrastructure</li> <li>• Stormwater infrastructure</li> <li>• Beach tourism and recreation</li> <li>• Businesses</li> </ul>	Population groups particularly vulnerable to the effects of climate change, such as outdoor workers and the homeless population, are exposed to more climate hazards and/or have less capacity to adapt and may lack access to more protective indoor spaces. Outdoor workers, such as construction workers or landscapers, are more exposed to weather and the outdoors, and often lack control over their work conditions. Employers may also vary widely in their compliance with worker-protection standards.
LOW	<ul style="list-style-type: none"> <li>• City-operated buildings</li> <li>• Bicycle infrastructure</li> <li>• General buildings and properties,</li> <li>• Local energy generation</li> <li>• Telecommunications</li> </ul>	Although ranked lowest in vulnerability, there may be assets that are more sensitive and/or have lower ability to adapt to climate change. For example, older homes and private buildings may be much more sensitive to extreme heat and air pollution intrusion due to poor insulation and/or weatherproofing. Actions to increase adaptation to climate change may also be limited as building upgrades and energy-efficiency measures may be cost-prohibitive.



# CLIMATE READY COMMUNITY



## 2030 OBJECTIVES

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- Increase community resilience to climate change
- Protect vulnerable groups from impacts
- Integrate climate change impacts into City planning, operations & infrastructure projects

# CLIMATE READY COMMUNITY



Santa Monica is dedicated to protecting and promoting the health and safety of its residents through its adaptation actions. The City will implement actions that can both prepare residents for a changing climate and build community resilience of the community's populations at greatest risk of climate hazards.

Emergency management capacity can be enhanced by including climate hazard considerations in emergency and natural disaster response. Considerable attention must be paid to ensuring that such programs and warnings are accessible to vulnerable groups.

In order to improving the resilience of homes and buildings, the City will work to update building standards and provide financial and technical assistance to property owners to afford upgrades and retrofits.

The City itself will need to ensure that climate change is integrated into planning processes and project development. In order to enhance the City's own organizational capacity to plan for and adapt to climate change, Santa Monica must:

- Integrate climate change preparedness planning across City operations to enhance readiness and monitoring of climate impacts.
- Ensure that the community will be prepared for gradual changes and climate-related shocks, such as storms and coastal flooding, and that strategies will benefit population groups with the greatest climate risk.
- Utilize data to assess and monitor climate hazards and the implementation of adaptation projects.
- Design capital projects to reduce vulnerability to climate-related events and disasters.

## SMO Aid : Santa Monica Organizations Active in Disaster

By identifying and working closely with our local partners prior to an emergency, we are all better prepared to respond when events occur.

SMO Aid is coalition of businesses and service organizations committed to preparing for disasters and building a stronger, healthier, and more resilient city. From 2006 - 2016, SMO Aid led to improvements in Santa Monica's emergency communications, preparedness level and response potential.

In 2011, the Los Angeles Marathon, one of the most popular marathons in the nation, experienced rain, cold and very difficult conditions for runners and public safety personnel across Los Angeles.

Many participants needed immediate care from paramedics, volunteers, and hospital staff due to the cold and wet conditions. City staff was prepared to meet the demands of this emergency. The Big Blue Bus provided busses for transporting runners out of the rain and into climate controlled environments and with the help of community partners, the City was able to coordinate treatment centers at local hotels to assist the tired, cold, and wet participants.

The communication and coordination that occurred is exemplary of the SMO Aid model of emergency preparedness.

As the threat of disasters, both natural and man made, continues to increase, the City is relaunching SMO Aid to improve community resilience and preparedness.





# ACTIONS

## CAPACITY BUILDING FOR RESILIENCE

### CRC1: Incorporate Climate Preparedness into City Programs & Operations

Establish an interdepartmental preparedness working group and integrate climate preparedness in planning, maintenance, and capital improvements through the development of work plans, screening of capital improvements, and cross-sector collaboration. Update Community Emergency Response Training (CERT) curriculum to incorporate climate-change hazards, like wildfire and heatwaves. Establish protocols for mitigating public health impacts from heat and air quality, with regional agencies and partners. Define an information-dissemination network, including community-based organizations and neighborhood representatives. Establish culturally specific messages and templates, as well as provide early warning systems in multiple commonly spoken languages.

Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
	\$		OSE	OEM	Near Term

### CRC2: Expand SMOAID Community Resilience Network

Identify suitable locations for resilience hubs, cooling centers, disaster assistance and supplies. The locations will also need to develop backup power sources in the event of a power outage. Continue to assess the need for backup power sources during emergencies to integrate new technologies. Form partnerships with neighborhood-based organizations and businesses to develop Neighborhood Resilience Hub Programs and prepare residents and respond to climate change. Develop community outreach and engagement materials. Create a Climate Ambassador program and partner with Santa Monica Malibu Unified School District to develop a school curriculum on climate change.

	\$		OEM	OSE	Near Term
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### CRC3: Outdoor Safety Program

Work with community groups and residents to determine best methods of outreach and communication with outdoor workers. Educate employers and workers about existing worker rights and protections and ways to protect outdoor workers from the effects of extreme heat. Increase access to cooling centers and water throughout the city, especially for outdoor workers, seniors, and homeless populations. Adopt best practices and protocols within City operations and projects to accommodate City staff and City contractors during high temperature days and heat waves.

	\$		OEM	OSE	Near Term
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## RESILIENT INFRASTRUCTURE

### CRC4: Climate Resilient Building Design Standards

Develop building design guidelines for climate-resilient buildings. Conduct outreach and engagement with building industry and trades. Adopt and implement building-design guidelines for new and substantially renovated buildings.

	\$		OSE	ASD, Business	Mid Term
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Carbon Reduction Potential	\$ Low \$\$ Medium \$\$\$ High	Supports Paris Agreement	Potential for Cost Savings, Local investment and Jobs	Potential to Address Equity	Government Leadership
		Advances Smart City Concepts	Enhances Environmental Quality	Enhances Community Resilience	Improves Public Health & Safety

## RESILIENT INFRASTRUCTURE

### CRC5: Promote Climate Smart Cooling

Develop and adopt standards for asphalt and roof surfaces that will reduce local heat island effect. Develop outreach and educational materials on passive cooling strategies like shade trees and insulation. Increase tree canopy in vulnerable neighborhoods. Promote fossil fuel free HVAC systems, like heat pump technologies, for buildings that install air conditioning.

Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
	\$\$		OSE	OSE	Near Term

### CRC6: Integrate Climate Change into Capital Improvement Program Projects

Incorporate climate impacts, risk, and uncertainty into capital improvement program projects design and evaluation. Review updated climate assessments and adjust infrastructure design standards to address asset-specific vulnerabilities.

	\$		OSE	PWD, ASD, CED	Near Term
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### CRC7: Increase Resilience of Local Energy Infrastructure

Partner with local utilities, regional agencies, and local jurisdictions to assess the vulnerability of energy infrastructure. Integrate local energy generation, energy storage and microgrid technologies into new projects and existing facilities to prepare for heat waves, wildfire and other disruptions.

	\$\$		OSE	OEM, ASD, Utilities	Near Term
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### CRC8: Ensure Regional Connectivity Resilience

Partner with Caltrans and neighboring jurisdictions on measures to protect critical entry and exit routes such as Pacific Coast Highway and Interstate 10. Santa Monica will work with local agencies to develop contingency plans for operations when Highway 1 and other roads are inoperable due to coastal flooding or wildfires.

	\$		OSE	CalTrans, OEM, TED, MD	Ongoing
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### HOW WILL CLIMATE CHANGE IMPACT SANTA MONICA?

Santa Monica works with state, regional and local partners to understand and prepare for the hazards and potential risks of climate change. The impacts of climate change, like increased heat and worsened air quality, will place a greater burden on populations that are socially and economically vulnerable.

**MORE EXTREME HOT DAYS OVER 95°F**

**31-42% LOSS OF AVERAGE ANNUAL SNOWFALL AND EARLIER SPRING MELT, IMPACTING LONG-TERM WATER SUPPLIES**

**MODERATE WARMING BY AN AVERAGE OF 3°F**

**LONGER AND MORE INTENSE WILDFIRE SEASON**

**INCREASE IN SEA LEVELS BETWEEN 5-24 INCHES**

**REDUCED AIR QUALITY**

**INCREASED ENERGY USE AND UTILITY BILLS**

### HOW CAN WE PREPARE AND ADAPT TO CLIMATE CHANGE?

Climate change may bring long-term stress and sudden shocks to our community. By building stronger connections between neighbors, government, business and institutions, we can build resilience while providing critical support and lifelines in the event of a disaster.

**CONNECT WITH YOUR NEIGHBORS AND INCREASE YOUR EMERGENCY PREPAREDNESS**

**CONSERVE ENERGY AND WATER AT HOME AND AT WORK**

**BIKE, WALK AND TAKE PUBLIC TRANSIT FOR LOCAL TRIPS**

**BUY GOODS THAT ARE DURABLE OR SECOND-HAND**

**RECYCLE AND COMPOST MORE OFTEN**

**EAT LOCALLY GROWN FRUITS AND VEGETABLES**

#smclimateaction • sustainability.org/climate

## TAKE ACTION: PREPARING FOR CLIMATE CHANGE

Climate change will affect communities and individuals differently. In order to be prepared for climate change, here are a few tips:

- Learn about the hazards and risks associated with climate change**  
 How do you and your family adapt to extreme heat days? What is your plan if the number of extreme heat days and high temperatures increase? Understanding climate change through real impacts and practical responses can be helpful to empower yourself against such a large subject.
- Develop an emergency plan and preparedness kit**  
 Everyone should be prepared for an emergency and have supplies and water for up to 7 days. Make a plan with your friends and family about communicating after a disaster and prepare kits that have the necessary supplies like food, water and first aid.
- Check on your elderly and vulnerable neighbors during extreme weather**  
 Spend time getting to know those that live around you and check on them during extreme weather and emergencies. Especially if they are elderly or vulnerable.



# WATER SELF-SUFFICIENCY



## 2030 OBJECTIVE

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- Achieve water self-sufficiency by 2023

# WATER SELF-SUFFICIENCY



Southern California imports almost 90% of its water needs from Northern California and the Colorado River. Santa Monica is bucking the trend by becoming locally self-sufficient through local water resources like groundwater, stormwater, brackish groundwater and even wastewater.

Santa Monica has set out to become independent from imported water by 2023. The City's current sources of potable water supply include 70 percent local groundwater, and 30 percent imported water from Northern California and the Colorado River.

Achieving self-sufficiency means using water produced only from local groundwater and other local sources and maintaining a resilient system to meet water demand. By doing this, Santa Monica will be able to withstand intermittent rain and prolonged periods of drought.

Achieving self-sufficiency requires both conservation and efficiency, coupled with increasing local water supply. Santa Monica offers resources for property owners to convert to drought tolerant landscaping and irrigation and install rainwater harvesting systems.

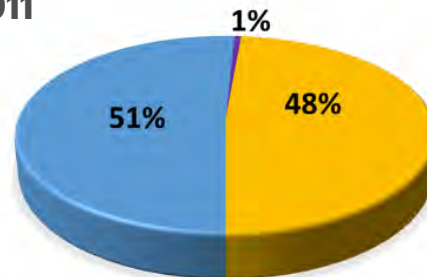
In 2017, the City implemented a water neutrality requirement on new construction projects, limiting new water demand from projects that use more water than previous ones. Fees paid in-lieu of reducing water demand onsite go into water efficiency projects elsewhere in the community.

Currently, the City is implementing various components of the Sustainable Water Infrastructure Project (left) to significantly expand the use of alternative sources of water, like stormwater, wastewater and brackish water from the beach.

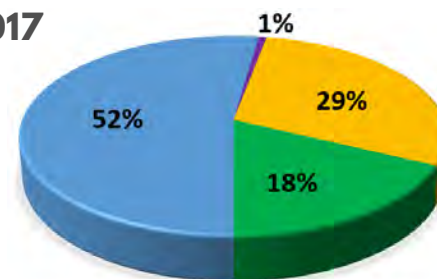
Santa Monica can soon utilize water that had been in the community all along but was previously discharged to the ocean and piped to sewage treatment plants. This "one water" approach protects our community from the anticipated fluctuations in precipitation due to climate change.

## SANTA MONICA'S WATER SOURCES

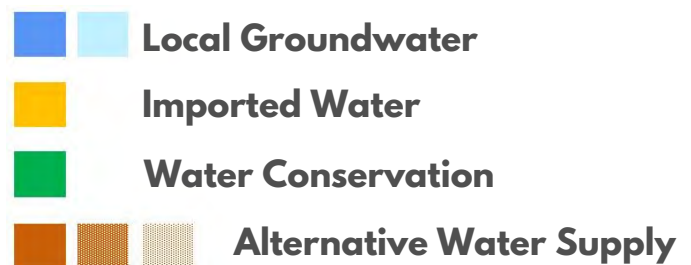
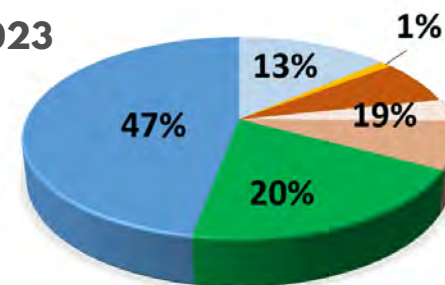
2011



2017



2023





# SUSTAINABLE WATER INFRASTRUCTURE PROJECT (SWIP)

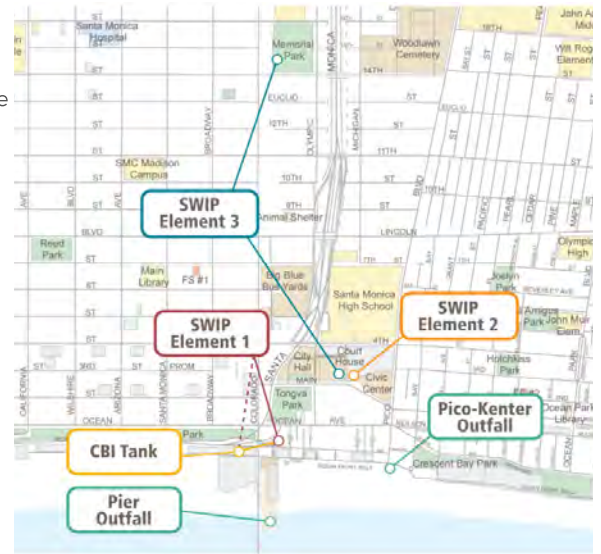
The SWIP is a critical component to Santa Monica's self-sufficiency goal and pushes the envelope of sustainable water management.

The SWIP comprises three technical elements designed to operate in concert to conserve groundwater, reduce wastewater, and improve beach water quality.

Element 1 provides for a modular reverse osmosis (RO) unit at the existing Santa Monica Urban Runoff Recycling Facility (SMURRF) located near the Santa Monica Pier. The RO upgraded SMURRF will also leverage the recently completed Clean Beaches Initiative Project by treating stormwater and brackish groundwater for reuse.

Element 2 provides for a new, underground Advanced Water Treatment Facility (AWTF) capable of treating up to one million gallons of wastewater per day, as well as stormwater for immediate non-potable reuse. The advanced treated water will be used for groundwater recharge.

Element 3 provides for the installation of a 4.5 MG underground stormwater harvest tank plumbed directly to the AWTF. The tank is being consolidated from two conceptual projects beneath Memorial Park and the other beneath the Civic Auditorium parking lot.



## ACTIONS

### WATER CONSERVATION

#### H2O1: Commercial Sector Retrofits

Develop incentives and direct install programs to retrofit inefficient water fixtures in commercial properties.

Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
	\$\$		OSE	MWD	Ongoing

#### H2O2: Coin Operated Laundry Program

Develop incentives targeted at multiunit dwelling property owners and laundry service vendors to replace inefficient laundry systems with new systems.

	\$\$		OSE	MWD	Near Term
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#### H2O3: Increase Direct Install Program

Expand annual replacement of inefficient toilets in multiunit dwellings and single-family homes.

	\$\$		OSE	MWD	Ongoing
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### ALTERNATIVE WATER SUPPLY

#### H2O4: Arcadia Water Treatment Plant Improvements

Increase in production efficiencies at the Arcadia Water Treatment Plant by recovering brine concentrate.

	\$\$\$		WRD	ED	Mid Term
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#### H2O5: Clean Beaches Initiative & SMURRF Repurposing

Upgrade the Santa Monica Urban Runoff Recycling Facility (SMURRF), that provides a drought resilient, local water supply, to increase the amount of recycled water production. Connect SMURRF to the newly constructed (2018) Clean Beaches Initiative 1.6 million gallon tank, to supply SMURRF with rain and brackish ground water when urban runoff is not available.

	\$\$\$		WRD	ED	Mid Term
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### LOCAL GROUND WATER PRODUCTION

#### H2O6: Expand Local Water Resources

Expand capacity at Arcadia Water Treatment Plant to accommodate more water. Restore the Olympic wellfield and develop a new well to enhance drought resilience.

	\$\$\$		WRD	ED	Long Term
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Carbon Reduction Potential	Cost to City \$ Low \$\$ Medium \$\$\$ High	Supports Paris Agreement	Potential for Cost Savings, Local investment and Jobs	Potential to Address Equity	Government Leadership
		Advances Smart City Concepts	Enhances Environmental Quality	Enhances Community Resilience	Improves Public Health & Safety

# COASTAL FLOODING PREPAREDNESS



## 2030 OBJECTIVES

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- Enhance natural systems to prevent damage from coastal flooding
- Increase resilience of public and private assets in the coastal flood zone



# COASTAL FLOODING PREPAREDNESS



## PLANNING FOR THE FUTURE

Santa Monica's expansive beaches provide not only an economic boon and regional recreation, but also protection from sea level rise.

In addition to iconic recreation and landscape, beaches are ecosystems unto themselves. They are molded by wind patterns, fed by natural sediment flow and washed upon by the ocean, changing over time.

As sea levels increase, there will be a gradual landward movement of water up the beach and the beach will likely narrow. Current beach management practices may have to change in order to adapt to these changes in order to preserve as much of the natural barrier.

No one knows exactly how much sea level rise will occur and by when. However, it is certain that Santa Monica, like other jurisdictions along the California coast, will face new threats from sea level rise and coastal hazards that could damage or destroy coastal infrastructure such as road and utility lines, public amenities, and private developments within the next few decades.

Santa Monica's recently adopted Local Coastal Program Land Use Plan establishes policies and adaptation strategies to be implemented once a certain amount of sea level rise has occurred. As changes to shoreline conditions occur, new policy phases would be activated, based on observed impacts.

## VISUALIZING SEA LEVEL RISE

In 2016, the City installed two telescopic viewers on the Santa Monica Pier, in partnership with USC Sea Grant, the US Geological Survey (USGS), and Owlized, Inc. "The Owls on the Pier" offered passersby an augmented reality experience into potential future scenarios of sea level rise impacts on Santa Monica's beach. The Owls surveyed participants on their views and concerns about climate change and sea level rise and their preference for climate adaptation approaches.

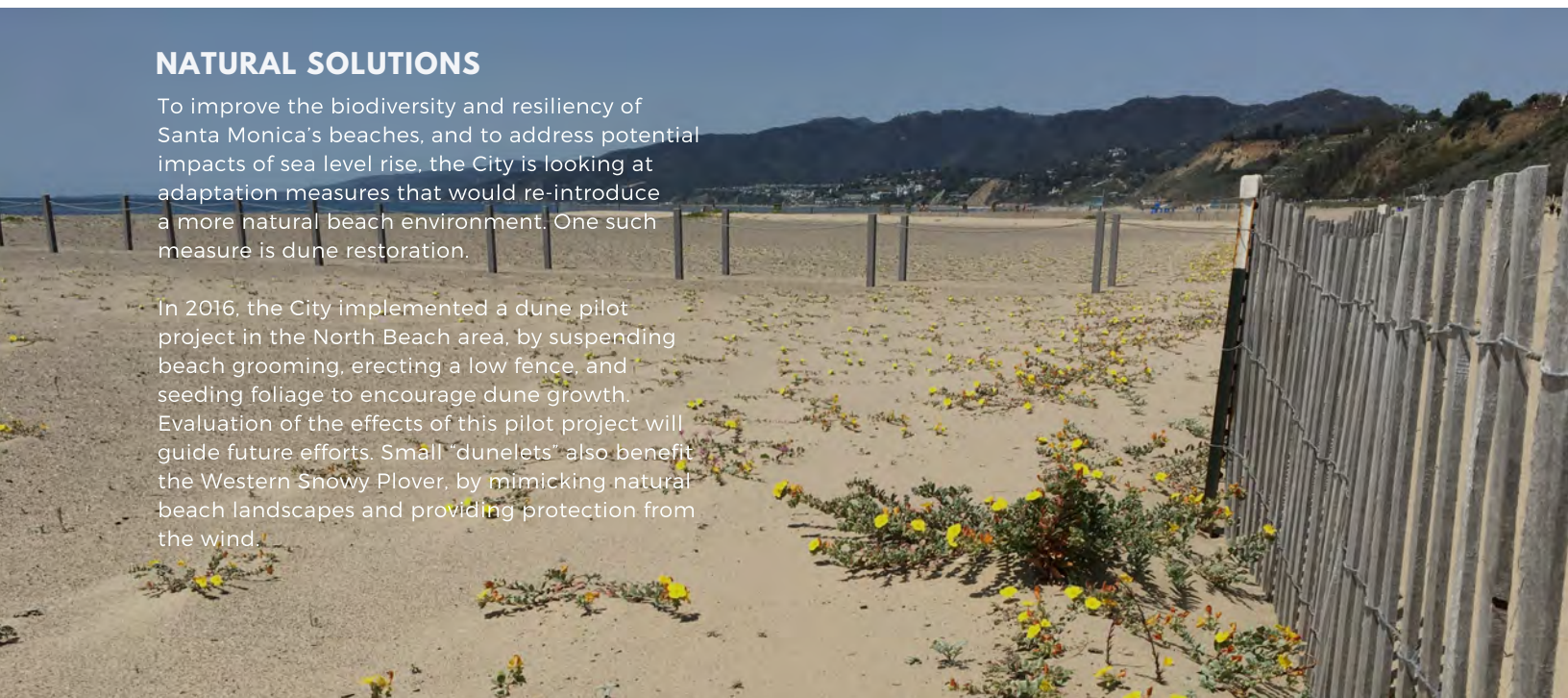
Over 10,000 people visited the Owls, and more than 2,500 of those participated in all or part of the Owl's survey. In addition about 1,000 people viewed the mobile version of the Owl and answered all or part of the survey.



## NATURAL SOLUTIONS

To improve the biodiversity and resiliency of Santa Monica's beaches, and to address potential impacts of sea level rise, the City is looking at adaptation measures that would re-introduce a more natural beach environment. One such measure is dune restoration.

In 2016, the City implemented a dune pilot project in the North Beach area, by suspending beach grooming, erecting a low fence, and seeding foliage to encourage dune growth. Evaluation of the effects of this pilot project will guide future efforts. Small "dunelets" also benefit the Western Snowy Plover, by mimicking natural beach landscapes and providing protection from the wind.



# ACTIONS

## ADAPTIVE MANAGEMENT

### CF1: Resilient Buildings & Infrastructure in the Coastal Zone

Estimate the financial costs of sea-level rise, including replacement or repair costs of resources and facilities that could be impacted by sea level rise and coastal flooding, non-market values, like recreation and ecosystem services. Conduct site-specific vulnerability assessments of City-owned buildings and facilities in the coastal zone. Develop guidelines and standards for infrastructure and buildings to be flood-proofed, or be capable of accommodating temporary flooding.

Carbon Reduction Potential

Cost to City

Community Benefits

Lead

Partners

Status or Timeframe



\$\$



OSE

CCS

Mid Term

### CF2: Coastal Hazard Real Estate Disclosure

Establish a process requiring the disclosure during any real estate transaction within the City's Coastal Zone of a property's location in a hazard zone identified in the Local Coastal Program Land Use Plan (LUP) and of the results of any site-specific hazard analyses related to the hazards mapped in the LUP. Collaborate with the Coastal Commission and local real estate agents to develop specific guidance and language regarding point-of-sale disclosures. Adopt and implement a local ordinance specifying point-of-sale disclosures.



\$



OSE

CPD

Mid Term

### CF3: Harden Santa Monica Pier

Integrate the latest sea level rise projections in Pier structural assessments and design improvements. Implement capital improvements to withstand increased wave height and on-shore flooding.



\$\$\$



CED

Pier

Long Term

### CF4: Adopt a Shoreline Management Plan

Develop a shoreline management plan for specific high priority areas that are most vulnerable to sea level rise hazards. Include adaptation strategies to address sea level rise and coastal hazards and adapt to changes in wave, flooding, and erosion hazards in the short and long term for the specified area; prioritizing "soft" adaptation strategies such as managed retreat, beach nourishment, living shorelines, and dune restoration over "hard" adaptation strategies such as seawalls.



\$\$\$



CPD

OSE, CED, BM, Pier, Nonprofits

Mid to Long Term

### CF5: Beach Nourishment & Dune Restoration

Dune restoration shall be allowed to occur within the City's beach areas, provided consideration is given to any impacts on the Western Snowy Plover Special Protection Zone (SPZ) and other SPZs that may be established in the future where dune restoration occurs. Design and implement additional pilot projects, utilizing green infrastructure or eco-engineering.



\$\$



BM

OSE, Nonprofits

Mid to Long Term

### CF6: Local Coastal Plan Monitoring & Implementation

Monitor sea level rise and coastal flooding impacts over time utilizing tidal gage data, pier scour analysis, seasonal beach width and storm flooding damage. Phase in policies and projects identified by the Local Coastal Plan as climate change impacts increase. Update coastal hazard maps at least every 10 years.



\$\$



CPD

Nonprofits

Mid to Long Term

Carbon Reduction Potential

Cost to City  
 \$ Low  
 \$\$ Medium  
 \$\$\$ High

Supports Paris Agreement  
 Advances Smart City Concepts

Potential for Cost Savings, Local investment and Jobs  
 Enhances Environmental Quality

Potential to Address Equity  
 Enhances Community Resilience

Government Leadership  
 Improves Public Health & Safety



# LOW CARBON FOOD & ECOSYSTEMS



## 2030 OBJECTIVES

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- Increase self-reliance through local food production
- Reduce carbon emissions from food production, consumption, waste and landscape management and natural processes



# LOW CARBON FOOD & ECOSYSTEMS



## GOING LOCAL WITH FOOD

Conventional food production is one of the nation's largest sources of environmental degradation. The industrialized food system is unsustainable due to its reliance on fossil fuels for fertilizers, pesticides, herbicides, industrial equipment, refrigeration, and interstate transportation. Globally, one-third of greenhouse gas emissions result from the food system when accounting for transportation, soil degradation and deforestation.

Fortunately, local and chemical-free food is on the rebound as more people recognize its value and health benefits. Meat-less or meat-free meals are becoming more popular and accessible in restaurants and home kitchens.

In Santa Monica, many residents are already embracing local and low-carbon food choices. Santa Monica offers Farmers Markets at various locations three days a week to provide residents with locally produced, fresh, and healthy food. All of the Farmers Markets in Santa Monica accept CalFresh, Farmers Market WIC and Senior Farmers Market Nutrition Program checks, making healthy and low-carbon food choices available to low-income residents.

Community gardening provides an opportunity for residents to connect to their food, the land, and their neighbors while reducing the environmental impact of the conventional food system.

## CARBON SEQUESTRATION

Carbon sequestration is the process of removing carbon from the atmosphere (CO<sub>2</sub>) and converting it into organic carbon (C) in biological materials. Some examples of natural sequestration include trees, soil, wetlands, marshes, geologic formations or biochar.

Sequestration offers an opportunity to invest in and restore natural ecosystems to capture and offset Santa Monica's remaining emissions.

Despite Santa Monica's urbanized setting, the City has several opportunities for sequestering, or storing, atmospheric carbon dioxide through natural processes. The potential to expand forested areas within the city and the proximity to the ocean offer unique possibilities for innovation and generation of co-benefits.

The most viable carbon sequestration strategies that are local to Santa Monica are urban forest management and kelp forest restoration.

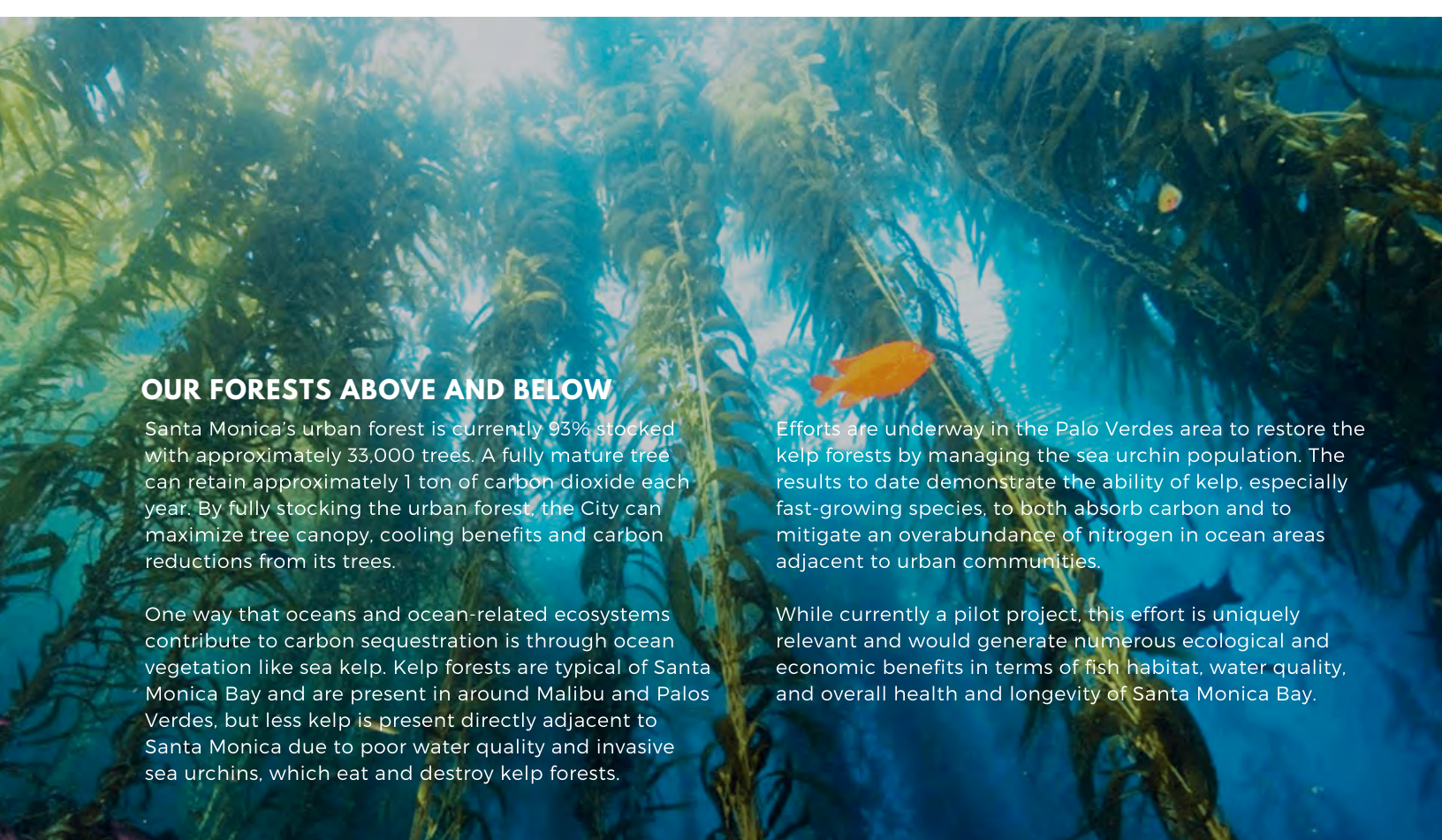
## OUR FORESTS ABOVE AND BELOW

Santa Monica's urban forest is currently 93% stocked with approximately 33,000 trees. A fully mature tree can retain approximately 1 ton of carbon dioxide each year. By fully stocking the urban forest, the City can maximize tree canopy, cooling benefits and carbon reductions from its trees.

One way that oceans and ocean-related ecosystems contribute to carbon sequestration is through ocean vegetation like sea kelp. Kelp forests are typical of Santa Monica Bay and are present in around Malibu and Palos Verdes, but less kelp is present directly adjacent to Santa Monica due to poor water quality and invasive sea urchins, which eat and destroy kelp forests.

Efforts are underway in the Palo Verdes area to restore the kelp forests by managing the sea urchin population. The results to date demonstrate the ability of kelp, especially fast-growing species, to both absorb carbon and to mitigate an overabundance of nitrogen in ocean areas adjacent to urban communities.

While currently a pilot project, this effort is uniquely relevant and would generate numerous ecological and economic benefits in terms of fish habitat, water quality, and overall health and longevity of Santa Monica Bay.





# COMMUNITY IN ACTION

## SANTA MONICA COLLEGE: ADDRESSING FOOD SECURITY AND FOOD WASTE

Santa Monica College (SMC) has been hosting a free farmer's market for students once a week during fall and spring semesters since February 2017. The market provides approximately 1,500 lbs of fresh produce feeding 150 students every week, and to date, over 50,000 lbs of fresh produce has been distributed to over 5,300 students.

Student volunteers collect produce from vendors at the Santa Monica Wednesday Farmer's Market, in partnership with Food Forward. The students then deliver the produce and staff the market two hours per week. SMC also supplements the program by purchasing produce from the Westside Food Bank.

Students are only required to show a valid student ID and bring their own bag. Creative recipes and nutrition consultations are offered to help students figure out how to prepare healthy meals.

SMC also purchases over 10,000 lbs of non-perishable food products from West Side Food Bank each week to stock food in six "food pantry's" around campus to help with the problem of food insecurity.

To minimize organic waste from food preparation, SMC uses 400,000 worms to eat through about 300 lbs of food scraps per week from cafeteria vendors. Over the past 17 years, SMC has been diverted 6.25 tons of organic waste from the landfill.



Credit: Justin Han

# ACTIONS

## RESILIENCE THROUGH LOCAL FOOD

### LCFE1: Promote Plant Based Diets for Carbon & Health

Promote more sustainable food options through campaigns, outreach events and community resources. Include all five pillars of the City's Sustainable Food Commitment: 1) reduce meat and dairy, 2) avoid processed foods, 3) eat organic, 4) eat local, and 5) reduce waste. Develop incentives and rewards programs to support the local food system and low carbon foods.

Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
	\$\$		OSE	FMD, EDD, OWB	Ongoing

### LCFE2: Increase Productivity of Public & Private Lands

Increase food access by planting fruit and nut trees in parks and private sites through education, incentives, and rebates. Develop partnerships between public and private interests to utilize open land and rooftops for growing food. Conduct a feasibility study for repurposing vacant and abandoned properties for urban farming. Target affordable housing developments, homeless-service providers - in order to empower communities to become self-sustaining. Support residents to start their own gardens by providing educational and training opportunities. Model programs from the Ishihara Park's demonstration and learning garden.

	\$		CCS	PLD, OSE, OWB, CRD	Mid Term
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### LCFE3: Develop a Sustainable Food Master Plan

Develop a community plan that advances the City's Sustainable Food Commitment, and addresses food security through strategies such as local food cultivation, resident vending or donations of local produce at markets, food banks and shelters, and land use strategies.

	\$\$		OSE	FMD, OWB, Nonprofits	Mid to Long Term
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### LCFE4: Increase Farmers Market Low Income Patronage

Enroll all eligible residents in CalFresh and support the Farmer's Market Match program that enhances EBT dollar value at farmers markets.

	\$		FMD	OWB, Nonprofits	Mid to Long Term
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## CARBON SEQUESTRATION & HEALTHY ECOSYSTEMS

### LCFE5: Climate Resilient Forest & Landscape Management

The updated Urban Forest Master Plan already addresses the effects of climate change and other potential threats to the urban forest. Assess pruning practices to preserve biomass and increase carbon sequestration potential. Encourage proper tree watering, fertilizer, maintenance and protection during construction. Establish a baseline of the energy used to build and maintain the City's urban forest and landscapes and develop a plan to reduce carbon emissions through maintenance and mulching.

	\$\$		PLD	OSE	Near Term
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### LCFE6: Private Tree Preservation

Explore policies, incentives and funding mechanisms to encourage preservation of private trees.

	\$		PLD	CPD	Near to Mid Term
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### LCFE7: Sea Kelp Forest Restoration

Restore local kelp forest to sequester approximately 10,000 metric tons of CO2e, similar to the amount of carbon to currently retained in the urban forest.

	\$\$		OSE	Nonprofits	Near to Mid Term
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Carbon Reduction Potential	Cost to City \$ Low \$\$ Medium \$\$\$ High	Supports Paris Agreement Advances Smart City Concepts	Potential for Cost Savings, Local investment and Jobs Enhances Environmental Quality	Potential to Address Equity Enhances Community Resilience	Government Leadership Improves Public Health & Safety
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# IMPLEMENTING THE PLAN



## 2030 OBJECTIVES

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- Achieve carbon neutrality in municipal operations
- Foster a climate-literate community
- Develop financing resources for climate action & adaptation projects

# IMPLEMENTING THE PLAN



## COMMUNITY ENGAGEMENT

Climate change affects the whole community without regard for political affiliation, jurisdictional boundary or background. Most people understand that humans may be responsible, but few feel empowered to take action let alone know what to do.

This plan cannot be successful without the participation and leadership of the community. Santa Monica residents and businesses have long demonstrated their willingness to invest their time and resources to making Santa Monica more prosperous and sustainable.

The challenge will be to continue to scale lifestyle changes and adoption of clean technologies for uninitiated individuals and under-served communities.

The City will partner with traditional and non-traditional stakeholders to develop resources and activate the entire community in culturally appropriate conversations, individual actions and community activism. Non-profits and community-based organizations, like Climate Action Santa Monica, will be key to broadening the community base for change.



## CITY LEADERSHIP

Santa Monica has a long history of demonstrating leadership by adopting advanced technologies and innovating practices to be more sustainable.

The City will seek to achieve carbon neutrality in municipal operations by 2030 offering an example to other local governments, organizations and businesses to follow. This will be achieved primarily through the electrification of Big Blue Bus, building electrification and renewable energy.

An interdepartmental team of City staff in collaboration with civic leaders must be assembled to maintain momentum and ensure accountability. This group will work to ensure all policies, projects and programs are designed and implemented with equity as a core principle.

Santa Monica must continue to work beyond its borders to support and lead coalition groups of cities and local jurisdictions mobilizing and advocating for climate action at regional, state, national and international levels.



## CLIMATE FINANCE

Deep emissions reductions will need to be achieved at a scale and pace unlike the City has seen before. The success of the plan depends on committing resources to implementation, and then augmenting those resources with alternative sources of funding.

The City has dedicated significant resources to meet its sustainability and climate goals. Between the adopted 16/18 and 18/20 fiscal year (FY) Capital Improvement Program (CIP) budgets, the City has already committed over \$380M to climate action and adaptation projects over the next 5 years. The projects span municipal energy efficiency and renewable energy projects, electric vehicles, and pedestrian and biking improvements. This is in addition to the City's operating budgets which cover staff time and program expenses dedicated to advancing low-carbon living and technologies.

**OVER THE NEXT 5 YEARS, SANTA MONICA WILL SPEND OVER \$380M ON CLIMATE ACTION & ADAPTATION.**

**TO MEET OUR GOALS, WE WILL NEED TO AT LEAST DOUBLE THAT BY 2030.**

### APPROVED 5-YEAR CAPITAL IMPROVEMENT PROGRAM BUDGETS

CLIMATE ACTION & ADAPTATION SECTOR	SUB-SECTOR	FY 16/18	FY 18/20	TOTAL
Zero Net Carbon Buildings	Municipal Energy	\$11,033,075	\$108,663,560	\$119,696,635
Sustainable Mobility	Bike & Pedestrian Improvements	\$15,541,828	\$31,131,412	\$47,583,240
	Roadway & Transit Improvements	\$1,552,247	-	\$1,552,247
	Affordable Housing	\$10,507,954	-	\$10,507,954
	Low Emission Buses	\$21,116,000	\$432,837,726	\$53,953,726
	Electric Vehicles	\$186,690	\$3,127,300	\$3,313,990
Low Carbon Food & Ecosystems	Urban Forest	\$2,330,000	\$2,250,000	\$4,580,000
Water Self-Sufficiency	Local Water Production	\$70,858,500	\$65,318,436	\$136,176,936
Coastal Flooding Preparedness	Pier Hardening	\$2,124,000	\$3,835,000	\$5,959,000
<b>TOTAL</b>		<b>\$135,160,294</b>	<b>\$248,163,434</b>	<b>\$383,323,728</b>

New costs associated with this plan include dedicated lanes for bikes and personal mobility devices, electric buses, adaptation projects and programs and more. Staff estimate that implementation of the plan will cost an additional \$800M over the next 10-12 years, with some projects and programs still not fully conceived.

The investment by the community to support the Plan will be many times greater than the City's own costs. The City will need to provide support to residents and businesses in need of funding to decarbonize their buildings, vehicles and lifestyles. At the same time, it should discourage carbon-emitting activities through fee-based systems or carbon taxes to shift community investment away from fossil fuels to clean technologies.

This Plan proposes the creation of a Community Climate Action Grant program, funded by a Carbon Development Impact Fee. The impact fee, to be assessed on new commercial construction and major renovation projects, would encourage low-carbon design and sustainable modes of transit, while at the same time providing a continuous funding mechanism for carbon reduction projects.

The City will need to focus on addressing environmental injustices and equity issues through any funding mechanism that redistributes wealth. Examples include the Pico Neighborhood Wellbeing Microgrant Program.

# ACTIONS

## COMMUNITY ENGAGEMENT

### CE1: Create a Community Climate Action Network

Work with the community partners to create a community network that facilitates communication and coordination between community members, as well as between the City and the community. The network will identify actions for individuals, neighborhoods and institutions to implement and measure the impact of grassroots activity. The network will engage the neighborhoods and people with messages that are relevant to them is necessary to reach people from all backgrounds and walks of life.

Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
	\$		OSE	OWB, Nonprofits	Near Term

### CE2: Pilot Block-Level & Business Sustainability Plans

Provide a framework and tools for businesses and communities to set goals, identify projects and gain support for taking climate action in their neighborhoods.

	\$		OSE	OWB, Nonprofits	Ongoing
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### CE3: Launch a Community Climate Action Grant

Establish an annual micro-grant program to support local citizen-led projects and programs that will reduce emissions, adapt to climate change and enhance equity.

	\$\$		OSE	Nonprofits	Ongoing
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### CE4: Increase Climate & Eco-Literacy

Increase local awareness about the need to protect the region's ecosystems from a changing climate. Develop educational curriculum, outreach materials and information for use by educators and community based organizations. Develop program resources in multiple languages to reflect the diversity in Santa Monica.

	\$		OSE	Schools, Nonprofits	Ongoing
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## CITY LEADERSHIP

### CL1: Adopt a Smart City Strategy

Adopt a Smart City Strategy to advance technologies in City infrastructure and leverage public-private partnerships that foster community goals.

	\$		ISD	OSE, MD, OEM, TED	Near Term
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### CL2: Implement Deep Carbon Reduction Retrofits in City Facilities

Audit facilities for energy efficiency potential and implement large-scale retrofit program across the City's portfolio. Pilot and implement conversions of natural gas building systems to electric-based systems, like heat pump water heaters and HVAC systems. Assess and pilot project delivery models like sustainability- or energy-as-a-service. Track refrigerants in buildings and vehicles, reduce refrigerants with high global warming potential and reduce leakage rates from air conditioning systems.

	\$\$\$		OSE	FacMD, ASD, TED	Ongoing
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### CL3: Expand the Use of Distributed Energy Resources

Finalize and implement the City's Resilient Energy Action Plans for critical facilities and community facilities in need of emergency backup power. Maximize all viable rooftop and parking facility areas for onsite solar systems, battery storage and microgrids where possible. Potential projects may include: Civic Center Microgrid, Main Library-Fire Station 1 Microgrid, distributed waste-to-energy systems, community solar at Airport (post-2028 closure).

	\$\$\$		OSE	FacMD, ASD, TED	Ongoing
--	--------	--	-----	-----------------	---------



Carbon Reduction Potential

Cost to City  
\$ Low

\$\$ Medium

\$\$\$ High



Supports Paris Agreement



Advances Smart City Concepts



Potential for Cost Savings, Local investment and Jobs



Enhances Environmental Quality



Potential to Address Equity



Enhances Community Resilience



Government Leadership



Improves Public Health & Safety



# ACTIONS

## CITY LEADERSHIP

### CL4: Convert City Fleet Vehicles to Electric or Zero Emission

Pilot electric and zero emission vehicles for medium and heavy duty vehicles. Replace vehicles as technology becomes available. Downsize and consolidate fleet vehicles to promote vehicle sharing. Convert Big Blue Bus fleet to all-electric by 2030.

Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
	\$\$\$		OSE	FD, RRR, BBB	Mid to Long Term

### CL5: Clean Tech Innovation Program

Partner with Los Angeles Cleantech Incubator and develop program to pilot emerging technologies on City facilities and with willing private properties.

	\$		OSE	Business	Near Term
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### CL6: City Leadership & Collaboration

Integrate social and racial equity into citywide planning processes and community programs. Engage with other local governments and stakeholders at the regional, state, federal and international levels. Advocate for policies that support ambitious targets and large-scale change. Continue to share progress through reporting platforms.

	\$		OSE		Ongoing
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## CLIMATE FINANCE

### CF1: Adopt a Carbon Impact Fee

Adopt an ordinance to impose a carbon impact fee on new commercial development. The fee would be based on the construction and operation of commercial properties with the exception of all-electric buildings and eligible affordable housing projects. The funds generated could support the Community Climate Action Grant program.

	\$		OSE	BSD	Mid Term
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### CF2: Explore Alternative Community Climate Financing Options

Study and pilot alternative financing mechanisms to increase community investment and streamline funding toward climate-related projects. Such ideas include carbon tax, green banks or revolving funds, crowdfunding, energy performance contracts, and sustainability-as-a-service.

	\$		OSE	FIN	Ongoing
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## THE GREENEST BUILDING

The new Santa Monica City Services Building (CSB) will be one of the greenest buildings in the world when it opens on the 50th anniversary of Earth Day in 2020.

It will be the first building in California permitted to drink the rainwater that falls on its roof. The first municipal project in the country to operate with composting toilets will have no need for the municipal sewer system.

In between the new CSB and the existing historic City Hall will be a lush courtyard of edible plants like citrus trees, rosemary, pomegranate and echinacea, which will be irrigated with treated greywater. This courtyard will be an outdoor room where the public can wait for an appointment at the one-stop permit center and staff can enjoy working in nature.

Aside from generating as much electricity as it consumes in a year through rooftop solar energy, the CSB will be fossil fuel free, using electric-based systems for water and space heating.

# CONCLUSION



Credit: Kristina Sado

## MEASURING SUCCESS

This plan will serve as a living document, to be updated as technologies and policies progress.

The City will maintain a reporting platform to easily track and monitor greenhouse gases and climate action progress. Staff will provide annual progress reports and conduct biennial greenhouse gas inventories to evaluate plan effectiveness.

After five years, the City will update the plan based on the results to ensure the goals can be met by 2030 and beyond.

## TRACKING OUR PROGRESS

Regular Monitoring

Annual Progress Reports

Biennial Greenhouse Gas Inventories

5-Year Plan Update

## CLIMATE PROTECTION FOR ALL

The challenge of climate change is unprecedented in its scale and potential disruption to our way of living. Recent climate disasters have given us a preview of what may become the 'new abnormal.'

We must act now. No longer can we avoid hard decisions and changes for the sake of convenience or politics. A climate changed-future will not wait.

However, in the face of daunting headlines, we remain hopeful and resolved. We know what to do. We have the solutions to reduce emissions, increase efficiency, promote economic vitality, and improve our quality of life.

This plan provides a pathway to accelerate our historical success to eventually make climate change history. It is also a call to action to residents, community institutions and businesses to take an active part in our transition to a low carbon future and clean economy.

In this process, we will foster a vibrant economy, increase our resiliency and support Santa Monica's vision for a livable and sustainable community for generations to come.



# ACKNOWLEDGEMENTS

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