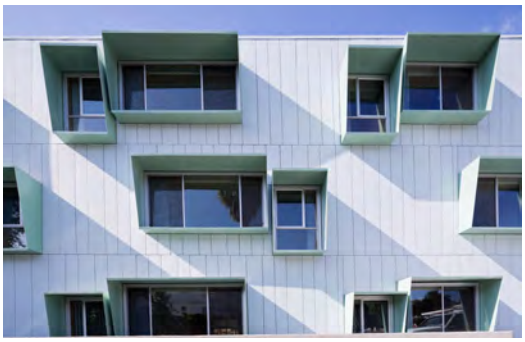
CITY OF SANTA MONICA

CLIMATE ACTION & ADAPTATION PLAN

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

FINAL DRAFT
ADOPTED MAY 2019


BE CLEAN
KEEP MOVING
NO POLLUTING




ECO
ACTION
CLUB


santa monica
BIKE
share

ACKNOWLEDGEMENTS

CITY COUNCIL

Gleam Davis , Mayor
Terry O'Day, Mayor Pro Tempore
Ana Maria Jara
Kevin McKeown
Greg Morena
Sue Himmelrich
Ted Winterer
Pam O'Connor (1994-2018)

TASK FORCE ON THE ENVIRONMENT

Mark Gold, Chair
Erik Neandross, Vice Chair
Garen Baghdasarian
Robert Lempert
Susan Mearns
David Pettit

PLANNING COMMISSION

Mario Fonda-Bonardi, Chair
Leslie Lambert, Vice Chair
Amy Nancy Anderson
Nina Fresco
Shawn Landres
Richard McKinnon
Jason Parry

URBAN FOREST TASK FORCE

Grace Sadye Phillips, Chair
Thomas Cleys, Vice Chair
Hans Baumann
Robin Carmichael
Gloria Garvin
Armando Martinez
Ellis Raskin

COMMISSION FOR THE SENIOR COMMUNITY

Barry Engelman, Chair
Kathryn G. Kietzman, Vice Chair
Leigh Alan Brumberg
Barbara Jane Browning
Elliot Goldberg
Paula Fern
Lynn Strother
Willa Faye Wells

DISABILITIES COMMISSION

Marielle Krisel, Chair
Nanci Linke-Ellis, Vice Chair
Glenda Berg
Dee Capelli
June Carol Hagan, PhD
Thomas John Hill
Christy Hobart
Kathryn Kosmeya-Dodge
Lauri Ringer
Kelly S. Siegel
Delbert A Whetter, JD, MBA

STEERING COMMITTEE & PARTNERS

Breeze BikeShare
Chamber of Commerce
Climate Action Santa Monica
ClimateResolve
Community Corporation of Santa Monica
County of Los Angeles
EcoMotion
Heal the Bay
Los Angeles Regional Collaborative for Climate Action & Sustainability
Mid-City Neighbors
Northeast Neighbors
North of Montana Association
Office of Representative Richard Bloom
Office of Senator Ben Allen
RAND
Southern California Association of Governments
Santa Monica College
Santa Monica-Malibu Unified School District
Santa Monica Travel & Tourism
Southern California Edison
Southern California Gas Company
Southern California Regional Energy Network
SustainableWorks
The Energy Coalition
UCLA Luskin Center for Policy Innovation
USC Sea Grant


Credit: Justin Han

ACKNOWLEDGEMENTS

PRIMARY AUTHOR

Garrett Wong, Sr. Sustainability Analyst

OFFICE OF SUSTAINABILITY & THE ENVIRONMENT

Dean Kubani, Chief Sustainability Officer
Shannon Parry, Sustainability Administrator
Ariana Vito
Drew Lowell-Johnstone
James Velez-Conway
Andrew Basmajian
Amanda Grossman
Karl Bruskotter
Thomas Fleming
Karina Sandique
Salvador Gonzalez
Neal Shapiro
Russell Ackerman
Angela Von Slomski
Jennifer Simmons
Jessica Hanna

CIVICSPARK FELLOWS

Mikhael Matossian (15/16)
Delia Tyrell (16/17)
Samantha Rosenbaum (16/17)
Michael Consunji (17/18)
Maansi Shah (17/18)
Yuval Pearl (18/19)

CONSULTANTS

DNV-GL
Global Green
Raimi & Associates
Fehr & Peers

PUBLIC WORKS DEPARTMENT

Susan Cline, Director
Delana Gbemekama, Communications & Marketing Coordinator
Sergio Ramirez, Principal Administrative Analyst
Chris Celsi, Resource Recovery & Recycling Manager
Chris Dishlip, Facilities Maintenance Manager, Acting City Architect
Alex Nazarchuk, Water Resources Manager
Matthew Wells, Public Landscape Manager
Rick Valte, City Engineer

PLANNING & COMMUNITY DEVELOPMENT DEPARTMENT

Francie Stefan, Mobility Manager
Colleen Stoll
Jing Yeo, Planning Manager
Liz Bar-El
Cary Fukui
Peter James
Rachel Kwok
Roxanne Tanemori

PHOTO CREDITS

Cover: City of Santa Monica. Pg. 2: Eric Staudenmaier, Stefan Corbel, Justin Han, Iwan Baan for Community Corporation of Santa Monica, City of Santa Monica. Pg 5: Downtown Santa Monica, Pg 6: William Short. Pg 10: William Short; Pg 12: Kristina Sado, Justin Han.; Pg 13: City of Santa Monica, Gabor Ekecs, WeWork. Pg 17: City of Santa Monica; Pg 20: Iwan Baan for Community Corporation of Santa Monica; Pg 25: Terra24. Pg 29: Kristina Sado; Pg 35: City of Santa Monica; Pg 41: Santa Monica Daily Press. Pg 42: Justin Han. Pg 46: City of Santa Monica; Pg. 50: Justin Han. Pg. 51: City of Santa Monica. Pg. 53: Kristina Sado; Pg. 54: Climate Cents. Pg 57: Justin Han. Pg. 58: Justin Han, Pg. 55: City of Santa Monica

Credit: William Short

TABLE OF CONTENTS

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.

Gleam A. Davis

GLEAM 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.

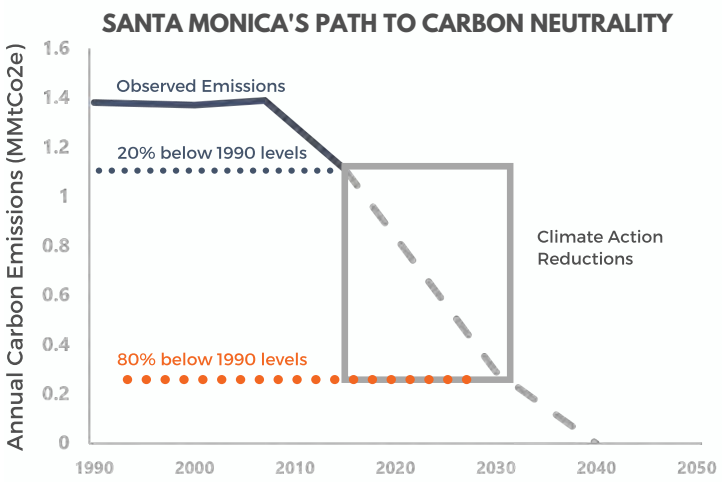
The Plan focuses on eight objectives in three sectors to reduce emissions: Zero Net Carbon Buildings, Zero Waste and Sustainable Mobility. Early action is required to avoid significant cost and social and environmental risks to our community. In addition to California's policies, like the Low Carbon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

STATE POLICIES 50% of total reductions
- Renewable Portfolio Standard
- Low Carbon Fuel Standard
- Building Energy Standards

ZERO NET CARBON BUILDINGS 21% 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

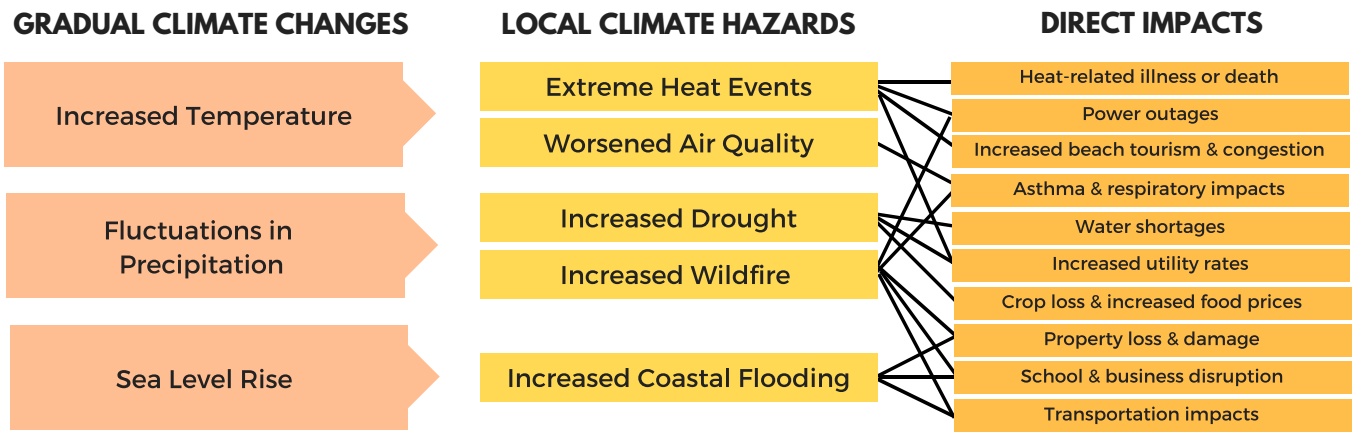
ZERO WASTE 3% of total reductions
- Divert 95% of materials from landfills

SUSTAINABLE MOBILITY 26% 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 (mtCO2e) 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 mtCO2e, 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.



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 $383M 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

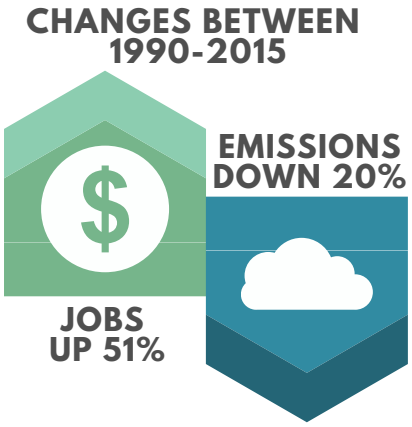
Cities are uniquely threatened by climate change and are uniquely positioned to do something about it.

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

PARIS2015 UN CLIMATE CHANGE CONFERENCE COP21·CMP11

COP23 FIJI

WE ARE STILL IN

Chicago Climate Charter

C40 CITIES CLIMATE LEADERSHIP GROUP

REPORT

GLOBAL COVENANT of MAYORS for CLIMATE & ENERGY

carbonn Climate Registry

The Climate Registry

CDP DRIVING SUSTAINABLE ECONOMIES

LEAD, ADVOCATE & COLLABORATE

CLIMATE MAYORS

GREEN CITIES CALIFORNIA

I·C·L·E·I Local Governments for Sustainability

LOCAL GOVERNMENT SUSTAINABLE ENERGY COALITION

USDN urban sustainability directors network

CNCA CARBON NEUTRAL CITIES ALLIANCE

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.

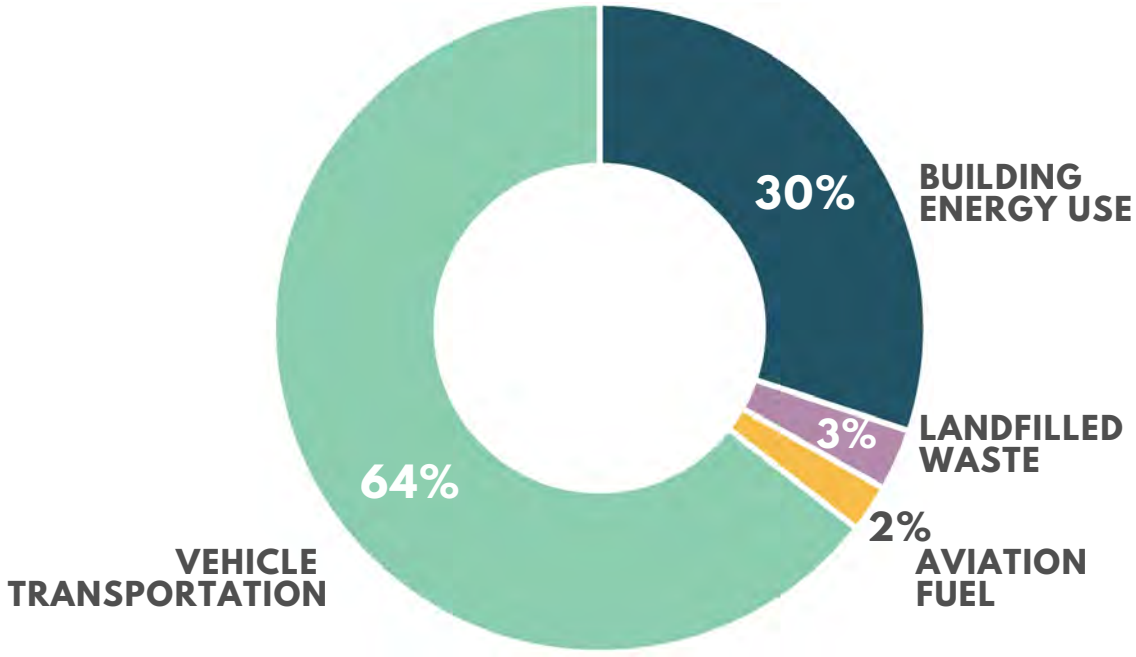
SMART CITY INNOVATION

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 greenhouse gas (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 mtCO2e (metric tons of carbon dioxide equivalent). If Santa Monica reduces its emissions to 80% below 1990 levels, per capita emissions would be 2.3 mtCO2e.

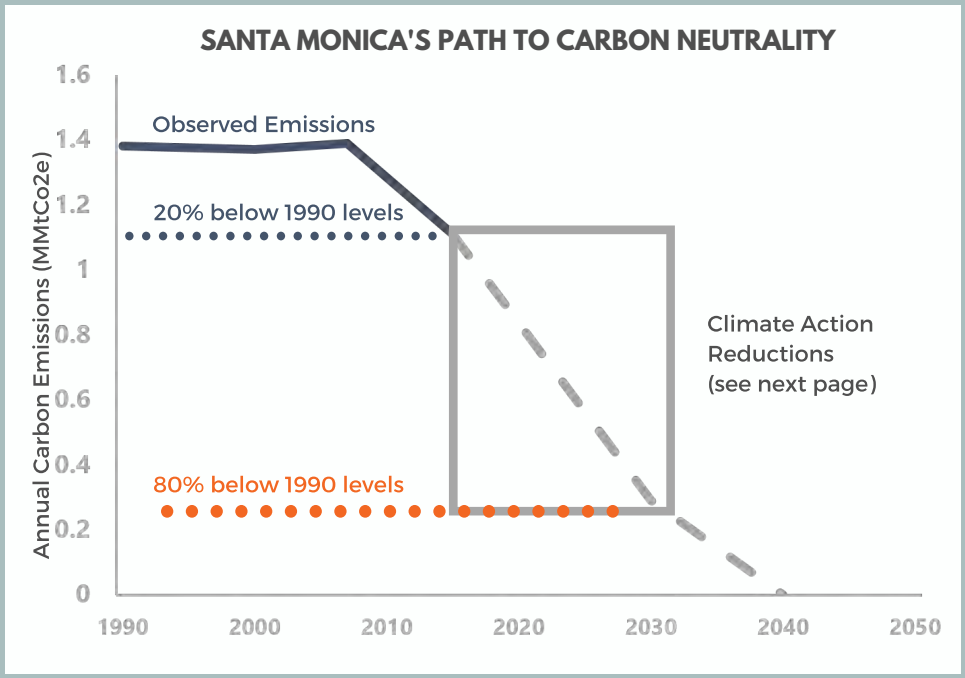
A dramatic transformation of our building energy and transportation systems will be necessary to achieve this significant reduction.

BENDING THE CARBON CURVE

Between 1990 and 2015, Santa Monica reduced its emissions by 276,324 mtCO2e 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 mtCO2e, 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.

50%

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

21%

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

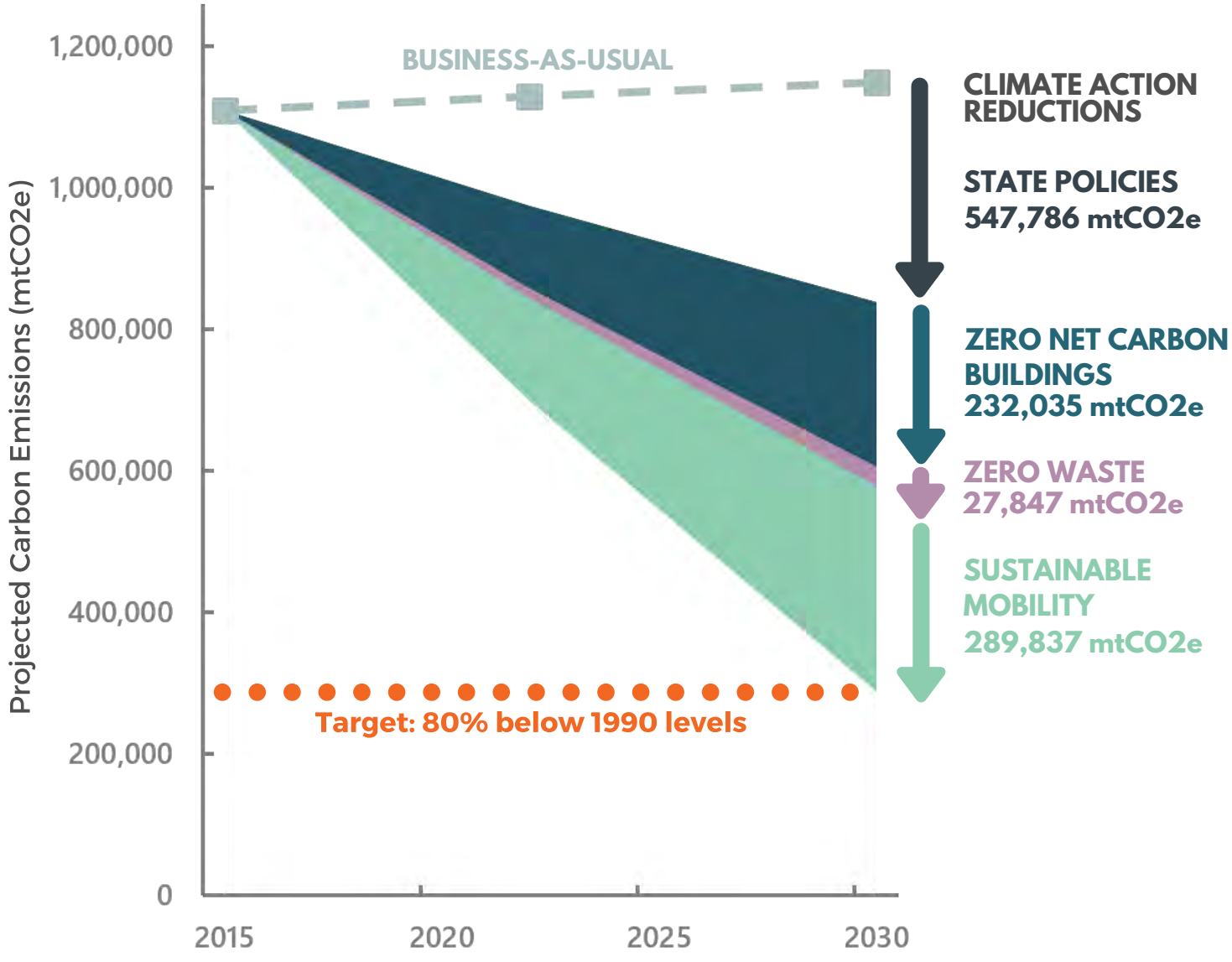
26%

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

(metric tons of carbon dioxide equivalent or mtCO2e)



PLAN AT A GLANCE

The CAAP is a guiding document that provides overarching policy direction to achieve the interim goal of an 80% reduction in emissions by 2030 and to increase Santa Monica's resilience to climate change hazards and impacts. This plan supports and enhances many existing plans and initiatives within the City. The CAAP also suggests new plans and actions to supplement ongoing efforts and create new initiatives.

CLIMATE ACTION

SECTOR	OBJECTIVES	SUPPORTING EFFORT
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	• Zero net energy for new residential construction (2017) • Mandatory solar for new commercial construction (2017)
ZERO WASTE 	• Divert 95% of materials from landfills	• Plastic Bag Ban (2011) • Zero Waste Strategic Operations Plan (2014) • Disposable Food Serviceware Ordinance (2018)
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	• Land Use & Circulation Element (2010) • Bike Action Plan (2011) • Pedestrian Action Plan (2016) • Electric Vehicle Action Plan (2017)

CLIMATE ADAPTATION

SECTOR	OBJECTIVES	SUPPORTING EFFORT
CLIMATE READY COMMUNITY 	• Increase community resilience to climate change • Protect vulnerable groups from impacts • Integrate climate change impacts into City planning, operations & infrastructure projects	• All Hazards Mitigation Plan (2015) • Santa Monica Organizations Active in Disaster (2018)
WATER SELF-SUFFICIENCY 	• Achieve water self-sufficiency by 2023	• Water Neutrality Ordinance (2017) • Sustainable Water Master Plan (2018)
COASTAL FLOODING PREPAREDNESS 	• Enhance natural systems to prevent damage from coastal flooding • Increase resilience of public and private assets in the coastal flood zone	• Local Coastal Program Land Use Plan (2018)
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	• Urban Forest Master Plan (2015)

The CAAP is not an element of the City's General Plan or a regulatory document for the purposes of streamlining the California Environmental Quality Act (CEQA) process. Any policy or ordinance described in the CAAP must be developed and adopted through a public review process.

HOW TO READ THE PLAN

1	2	3	4	5	6	7
SUSTAINABLE LOCAL ENERGY	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
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
HSD = Human Services 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, property owners
Caltrans = California Department of Transportation
CCC = California Coastal Commission
CEC = California Energy Commission
CPA = Clean Power Alliance of Southern California
CPUC = California Public Utilities Commission
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.

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

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.

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.

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

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

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.

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

Credit: William Short

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
- Discourage 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

21%
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 "decarbonize' our buildings over time, 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, 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.

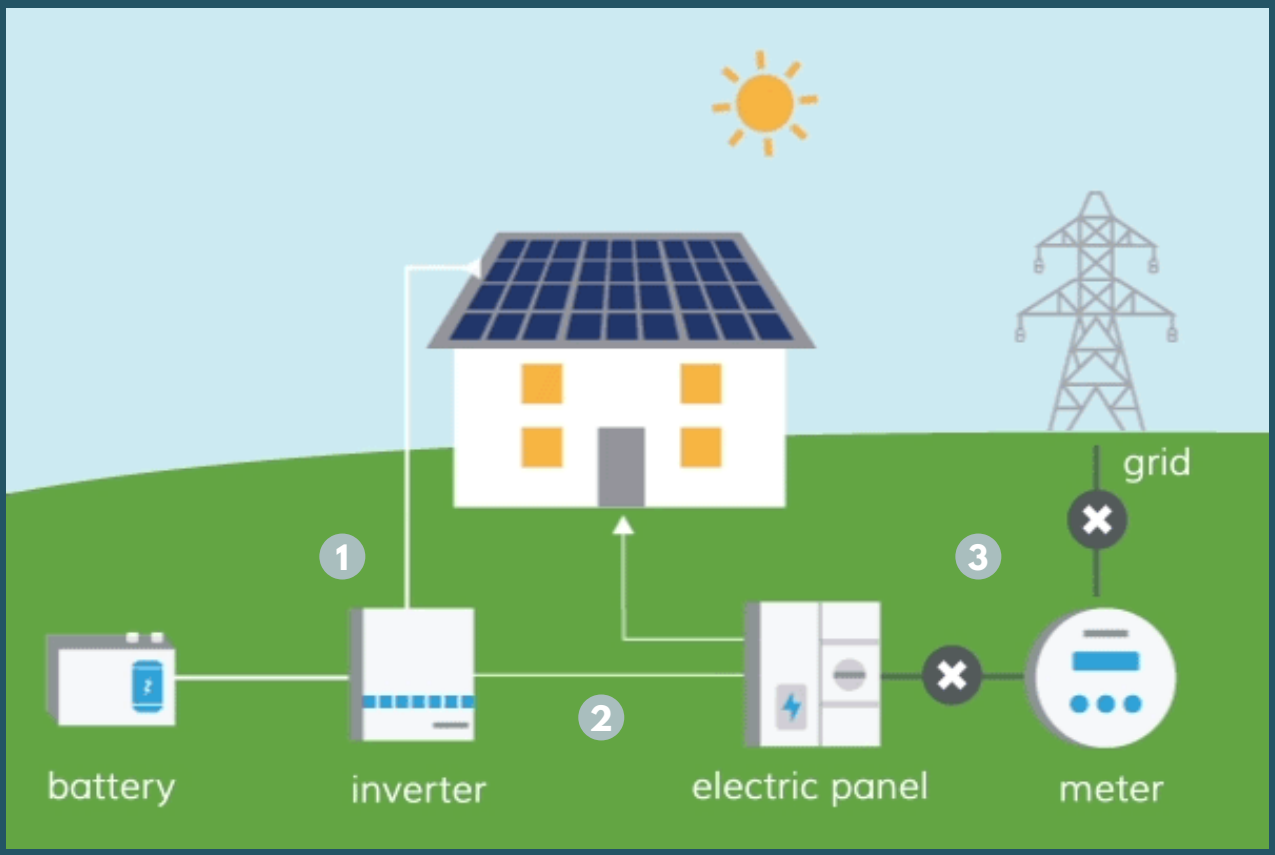
WHAT IS ENERGY RESILIENCE?

What does it mean to be "energy resilient"? Although there are many definitions of the concept, they all share the fundamental idea that energy supply should always meet energy demand and that energy supply needs to be constant – there can be no interruptions in the service.

Solar generates energy that can be used in buildings or fed back into the utility grid saving utility costs. But what happens during a power outage? To assume that a solar system would still work during a power outrage would be wrong. Solar systems also need to be equipped with battery storage and a disconnect switch, which would allow buildings to store energy generated by the solar system, and then safely disconnect from the utility grid during a power outage, in order to operate independently.

What about natural gas? Gas-fired furnaces, boilers and space heaters produce heat by burning fuel oil or natural gas. However, they too rely on electricity to distribute heated fluid or heated air. The control systems for these appliances may also require electricity. Some gas water heaters still rely on electricity and would only be able to supply the hot water remaining in the reservoir during a power outage.

Having the ability to generate, store and use energy independent of the utility grid, particularly during power outages that may be caused by extreme heat, wildfire or earthquakes, can help improve community resilience. If you already own a solar system, consider enhancing it with battery storage.



1. **Energy generated by solar panels is transmitted through the inverter into the battery for storage.**
2. Energy from the battery passes through the inverter to the electric panel, which then supplies the building.
3. During a power outage, a disconnect switch (not pictured here) would disconnect the building electric panel from the utility meter and the utility grid.

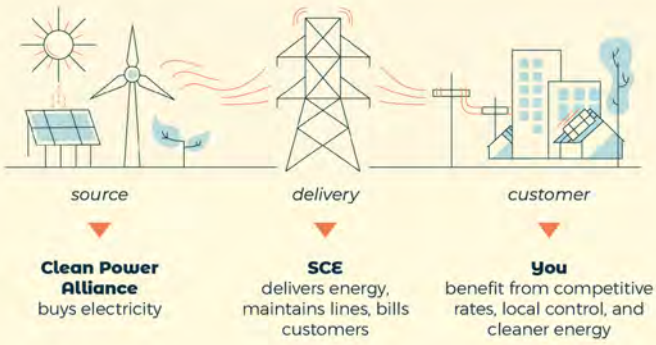
Diagram from EnergySage

CLEAN POWER COMES 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 residents, 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 (in May 2019) 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.

How Community Choice Energy (CCE) Works



ACTIONS

SUSTAINABLE LOCAL ENERGY	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
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.	●●●●	$	$ G R	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.	●●●●	$	$ G R	OSE	CPD, ASD	Near Term
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.	●●●●	$$$	$ G R	OSE	ASD, CPA, SCE	Ongoing
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.	●●●●	$	$ R	OSE	CPA, SCE	Near Term
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.	●●●●	$	$ G R	OSE	CPD, EDD, Business, Utilities, CPA, CEC	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

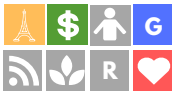
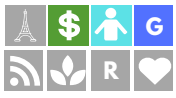
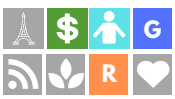
Potential to Address Equity

Enhances Community Resilience

Government Leadership

Improves Public Health & Safety

ACTIONS

EXISTING BUILDING EFFICIENCY	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
ZNC6: Implement a Resilient Building Retrofit Accelerator Program 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.		$$		OSE	CPD, EDD, Business, Utilities, CPA, CCC	Near Term
ZNC7: Implement a Green Leasing Program 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.		$		OSE	EDD, Business	Near Term
BUILDING ELECTRIFICATION						
ZNC8: Adopt Carbon Neutral Construction Codes 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.		$		OSE	CPD, BSD, CEC, CCC	Mid Term
ZNC9: Convert Existing Natural Gas Equipment & Appliances to Electric 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. Where electrification of appliances is infeasible, or not a customer choice, then a methane alternative such as renewable natural gas could be an option.		$		OSE	CPA, SCE, Business	Mid Term
EQUITY THROUGH ENERGY						
ZNC10: Provide Educational & Workforce Cleantech Opportunities Partner with Santa Monica College and Santa Monica-Malibu Unified School District to offer professional development opportunities in the clean energy economy.		$		OSE	SCG	Mid Term
ZNC11: Create Equitable Access to Clean Energy Programs 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.		$		OSE	SCG	Mid Term

ESTIMATED 2030 NET ZERO CARBON BUILDINGS REDUCTIONS **232,035 mtCO2e**

ESTIMATED PERCENT OF TOTAL 2030 REDUCTIONS **21%**

ZERO WASTE

2030 OBJECTIVE

- 95% of waste is diverted from the landfill

3%
OF TOTAL REDUCTIONS

ZERO WASTE

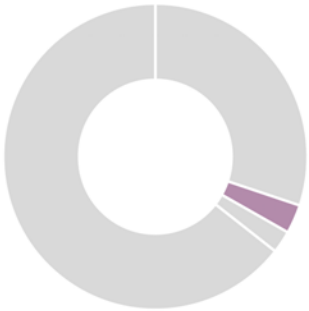
Becoming a zero waste community means rethinking the way we consume and manage materials and goods throughout their entire lifecycle.

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.



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.

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.

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

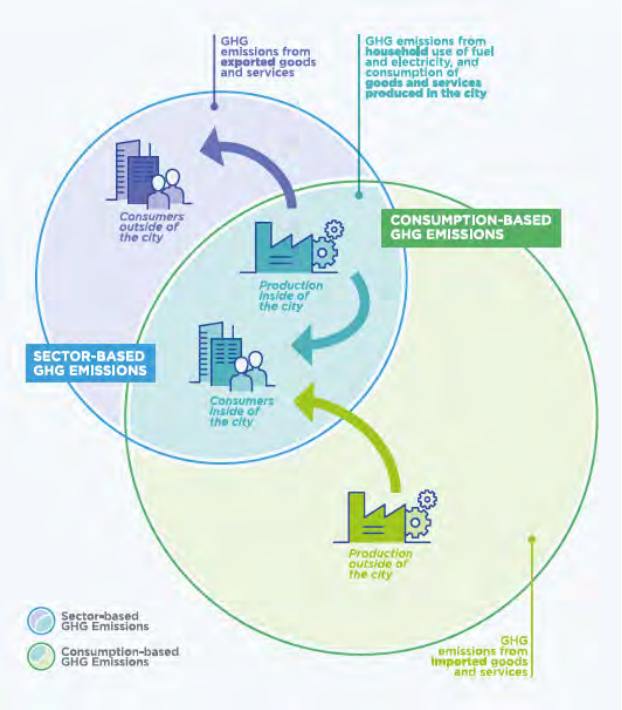
THE CARBON WE CONSUME

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.

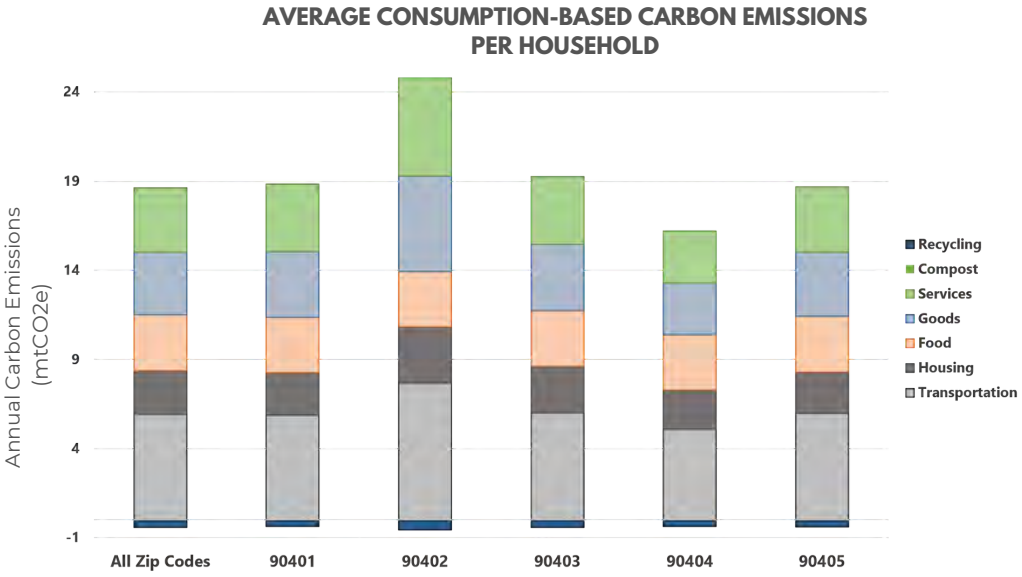
There are two lenses that cities can use to look at emissions:

- 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)



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	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
ZW1: Implement Citywide Organics Recycling Require waste diversion stations (trash, recycling, composting) in all businesses. Develop outreach and enforcement programs to ensure commercial and residential organics recycling citywide.	●●●●	$$	$ G R	RRR	OSE	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	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
ZW2: Zero Waste Outreach & Education increase material sorting compliance in multiunit dwellings and businesses through education, waste audits, and enforcement. Recommend ways to reduce consumption and increase composting and recycling.		$$		RRR	OSE, Nonprofits, Schools	Ongoing
ZW3: Institute Wet-Dry Sorting System for Businesses Implement a wet-dry program that collects wet organic waste separately from dry recyclable waste to more businesses in order to increase waste diversion.		$$		RRR	OSE	Mid Term
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
ZW5: Increase Construction and Demolition Debris Diversion Requirements Explore fees and fines to create more incentives for recycling, composting and salvage, while discouraging landfill waste. Provide educational resources to promote responsible demolition and deconstruction.		$		RRR		Mid Term
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
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
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 to connect gleaners and foragers.		$		OSE	RRR, FMD, Business, Nonprofits	Mid Term
ZW9: Incentivize Reusable Containers and Packaging Promote and require packaging materials that are compostable and recyclable. Incentivize grocery stores to sell bulk food to customers. Incentivize customers to bring their own reusable bags to the grocery store. Pilot standardized to-go reusable container system for takeout.		$		OSE	RRR	Mid Term
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
ZW11: Explore Waste-to-Energy Conversion Technologies Pilot decentralized systems that convert locally collected organic waste into usable energy or byproducts, like compost.		$		OSE	RRR	Mid Term

ESTIMATED 2030 ZERO WASTE REDUCTIONS **27,847 mtCO2e**

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

26%
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.

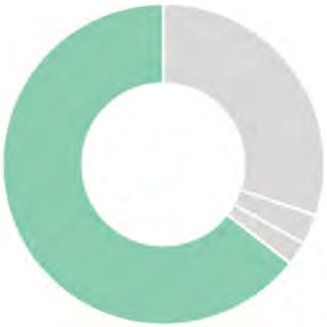
Local policies, infrastructure and incentives need to encourage safety, convenience and affordable options to all members of the community. This will help residents lead car-lite or even car-free lifestyles which help reduce vehicle trips and emissions. Having convenient transit options will shift away 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 64% OF COMMUNITY EMISSION SOURCES (2015)

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 petroleum-based 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.

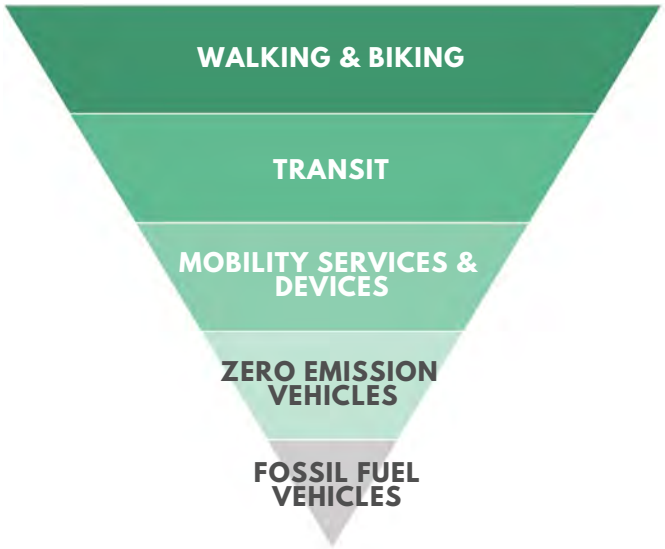
Autonomous vehicles could offer an electrified and shared option for some mobility needs, but needs to be guided by proactive sustainable policy and carefully managed to reduce vehicle congestion, reduce vehicle miles traveled, and keep roadways safe for all users.

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 purchase delivery for every 25 Americans. Today, there's one for every eight Americans. That traffic is anticipated to double again by 2023[1].

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, 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 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.

CARPOOLING/ 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.

Sources: Shared Use Mobility Center; Susan Shaheen, PhD

ACTIONS

A NEW MODEL OF MOBILITY	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
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.	1	$		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.	2	$		MD	Business	Near Term
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.	3	$$$		MD	Business	Near to Mid Term
SM4: Implement Parking Policies & Pricing Continue to actively review and adjust parking prices citywide as market rates change, and revisit parking management and construction policies to encourage sharing existing resources. Analyze financial impacts and develop alternatives to decreased revenue from parking fees.	3	$		MD		Near Term
SM5: Sustainable Goods Movement & Delivery Services Assess the local impacts of long distance and urban delivery systems and vehicles on street capacity, congestion and carbon emissions. Facilitate partnerships to explore ways to reduce delivery trips, prioritize bicycle delivery and smaller vehicles, idling while loading/ unloading and emissions from delivery vehicles.	2	$		MD	Business	Mid to Long Term
SAFE STREETS FOR ALL						
SM6: Complete Streets Network Increase the extent and quality of the complete street network and greenways to ensure residents and visitors alike have safe, convenient, and affordable transportation options. Create designated bike lanes that are protected to provide greater safety and assurance for all riders. Emphasize the movement of people with greater space dedicated to space efficient and low emission modes of transportation. Lower speed limits to improve safety. Expand publicly owned spaces and work with property owners to facilitate public access.	3	$$$		MD	PCD, PWD	Ongoing
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.	1	$		MD	Schools, Nonprofits	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

SAFE STREETS FOR ALL	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
SM8: Prioritize Transit-Oriented Affordable Housing Increase the housing-to-jobs ratio by prioritizing the expansion and investment in affordable housing located near dense transit hubs with limited parking, through local zoning and incentives.		$		CPD, HD	Nonprofits, Business	Ongoing
CONNECTED TRANSIT						
SM9: Prioritize Mass Transit Services Support public mass transit through infrastructure and service improvements. Dedicate lanes during rush hour to Rapid Transit services. Advocate for regional connectivity projects, like the Purple Line Extension 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, carpool 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 renters, 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.		$$$		OSE	MD, SCE, CPA, SCAQMD	Ongoing
SM13: Expand Use of EVs in Carshare and Rideshare Services Develop public-private partnerships with carshare providers to provide access to electric vehicles, including neighborhood electric vehicles, to residents who may not be able to own an electric vehicle on their own.		$		OSE	Business	Ongoing
SM14: Pilot Autonomous Vehicle (AV) Technologies Develop protocols and policies for AV safety performance, AV City fleet vehicles, and AV commercial activities that protect all roadway users and reduce vehicle trips and carbon emissions. Work with manufacturers to pilot technologies on fixed routes with limited services that provide shared-ride and zero emission mobility solutions. Consider opportunities to pilot or deploy AV technology in the Airport to park conversion, post-2028.		$$		MD	OSE, ISD, Business	Mid Term

ESTIMATED 2030 SUSTAINABLE MOBILITY REDUCTIONS **289,837 mtCO2e**

ESTIMATED PERCENT OF TOTAL 2030 REDUCTIONS **26%**

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 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

CLIMATE CHANGE IN SANTA MONICA

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.

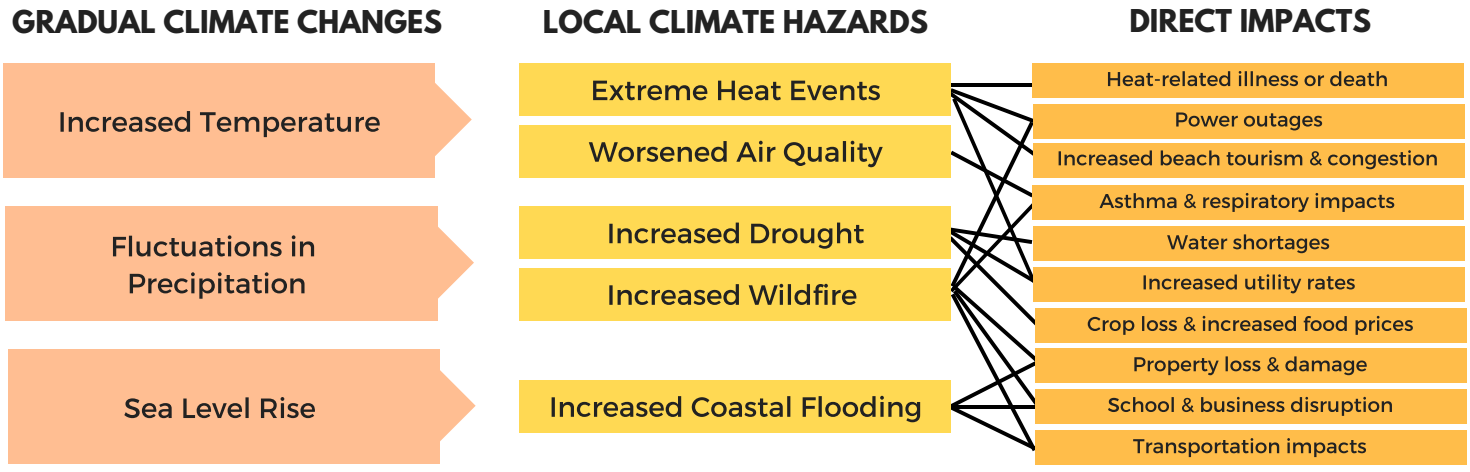
The initiatives of this plan will increase the community's ability to thrive in the face of intensifying climate hazards, leading to stronger neighborhoods and improved quality of life for all residents.

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.



EXTREME HEAT

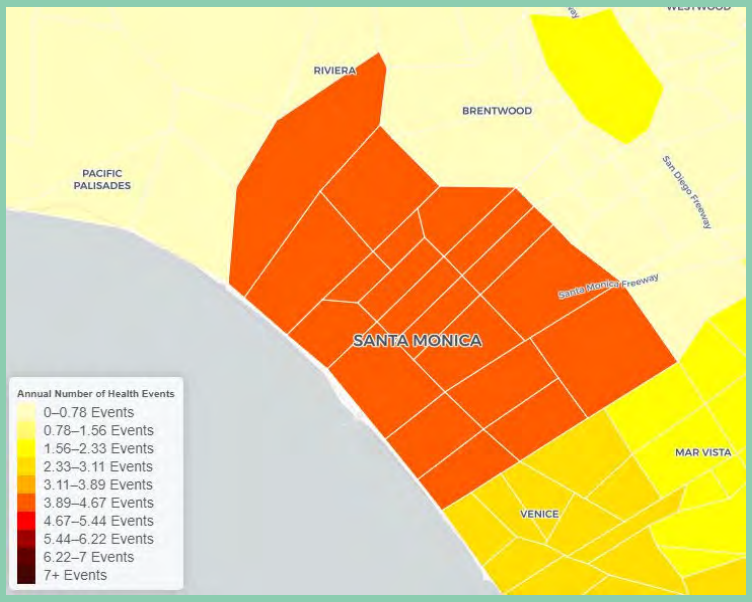
Santa Monica is expected to see increasing trends in extreme-heat days with an average of nine days above 87˚F by mid-century and 22 days by the end of the century. At the 95˚F threshold, Santa Monica is projected to see an increase from 0 to 3 extremely hot days per year by 2100[2].

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 planting trees, improvements in the built environment, rebate and home cooling programs, and efforts to strengthen social capital and connectivity at the neighborhood level.

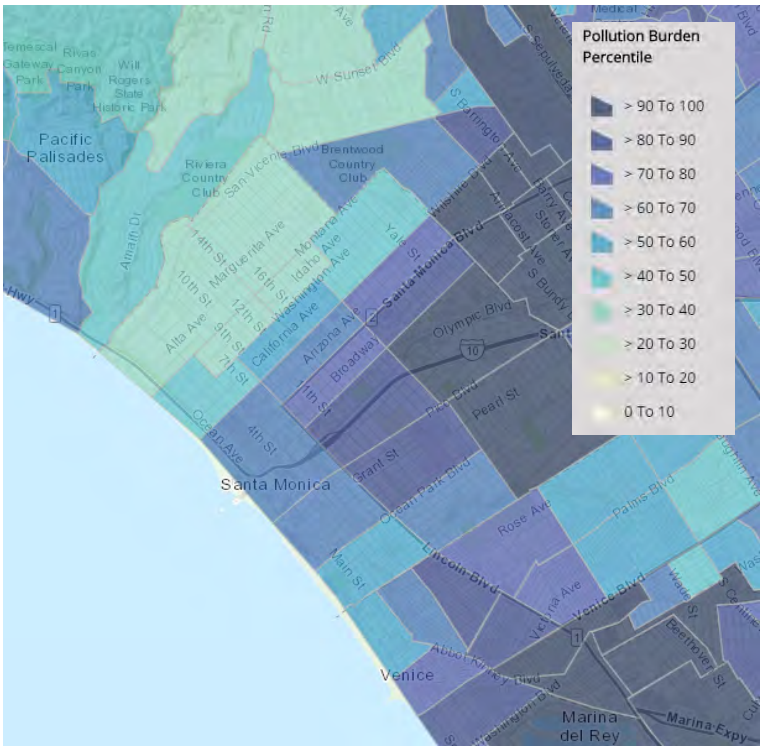
AIR QUALITY

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.



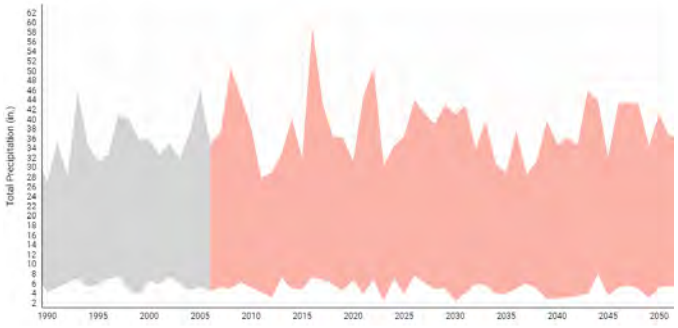
Pollution/Ozone Burden (Source CALENVIROSCREEN)

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[3]. 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.



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

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.

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.

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

3 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.

SEA LEVEL RISE & COASTAL FLOODING

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

Sea level rise can create multiple coastal hazards, such as beach erosion, increased frequency and intensity of coastal storms, permanent inundation and saltwater intrusion. 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.

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[4]), 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

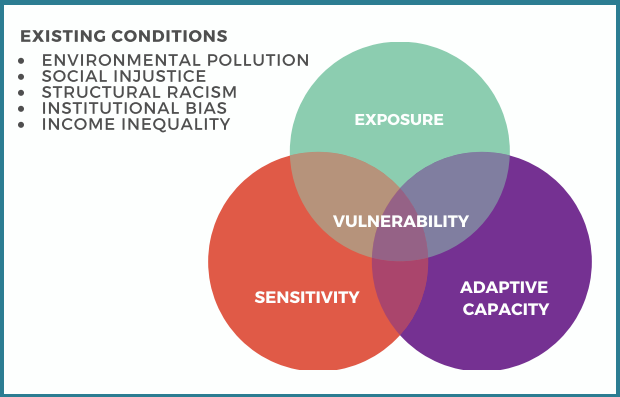
Climate change vulnerability is a measure of sensitivity to climate hazards and the ability to adapt to these hazards. Both gradual climate change and climate hazards can expose people and property to a wide range of stress-inducing and hazardous situations.

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 born the burden of polluting industries and roadways with fewer services available to them.

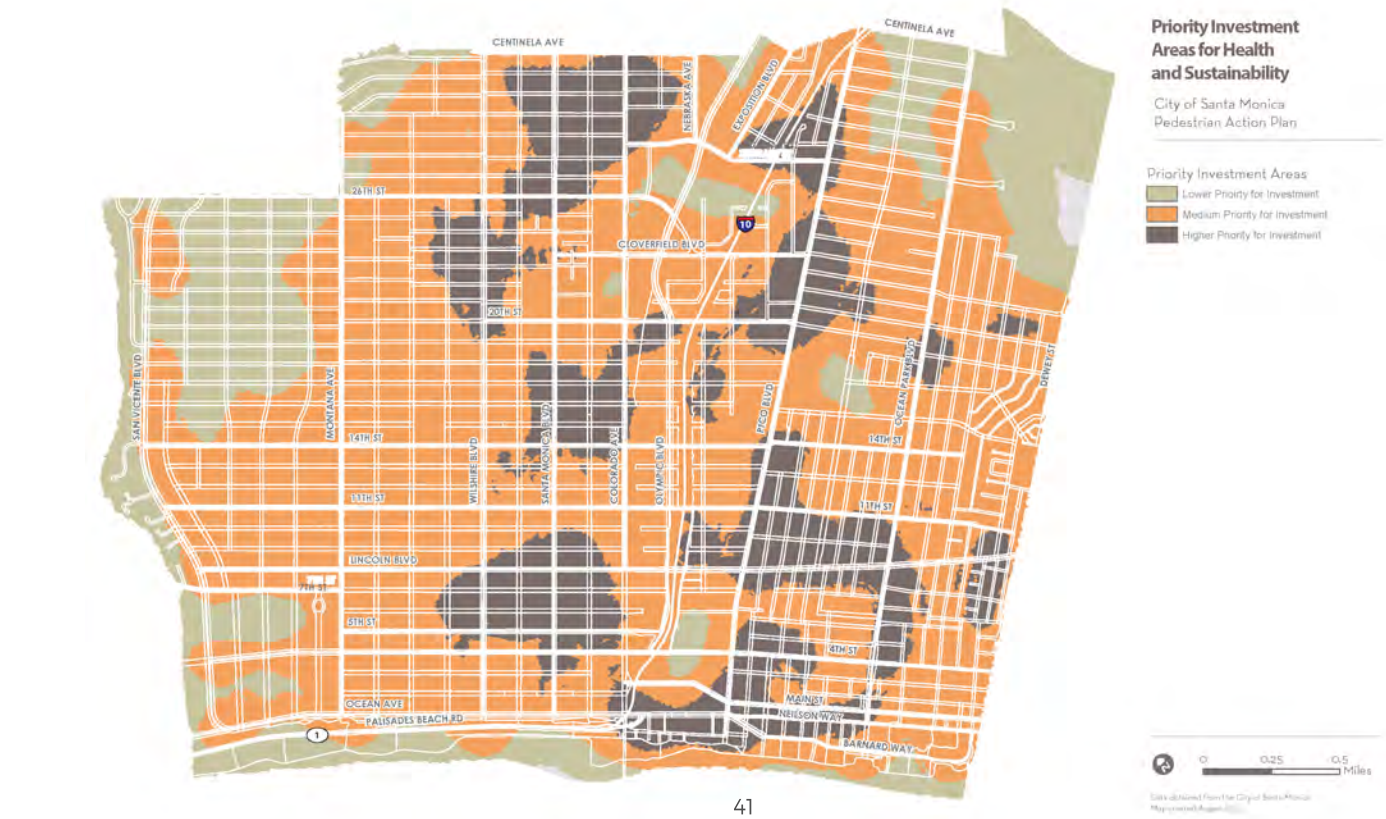


Influencing Factors of Vulnerability

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), a portion of which is also considered a Disadvantaged Community by CalEnviroScreen. 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	• Buildings in coastal flood zone • Roads and parking in coastal flood zone • Ocean habitat • Santa Monica Pier	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	• Parks • Water infrastructure • Energy supply and infrastructure • Urban forests • Beach habitat	The City has a number of current plans and programs in place to address climate hazards for these highly sensitive assets.
MEDIUM	• Schools • General and vulnerable populations • Water supply • Sanitary water and sewer infrastructure • Stormwater infrastructure • Beach tourism and recreation • Businesses	Population groups, 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. People who live close to sources of pollution, like the freeway, are also more vulnerable due to an increased likelihood to have respiratory issues. The City's water infrastructure may be vulnerable to extreme drought limiting local groundwater supply, or sea level rise resulting in saltwater intrusion or flooding of stormwater systems.
LOW	• City-operated buildings • Bicycle infrastructure • General buildings and properties, • Local energy generation • Telecommunications	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

- 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.

SMOAID : 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.

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

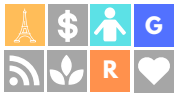
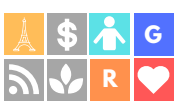
In 2011, the Los Angeles Marathon, one of the most popular marathons in the nation, experienced rain, cold and very difficult conditions for runners and public safety personnel across Los Angeles.

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 SMOAID model of emergency preparedness.

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

ACTIONS

CAPACITY BUILDING FOR RESILIENCE	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
CRC1: Incorporate Climate Preparedness into City Programs & Operations Establish an interdepartmental working group to integrate climate preparedness in planning, maintenance, and capital improvements though 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. Analyze vulnerability to vector and disease migration and work with public health stakeholders to develop strategies for outreach, engagement and prevention.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.		$		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. 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
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
CRC4: Prepare for Extreme Heat Explore developing community cooling centers at City and non-City sites. Ensure temporary shade structures are provided for community events. Ensure coastal access is maintained for those seeking relief from the heat. 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.		$$		OEM	OSE	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

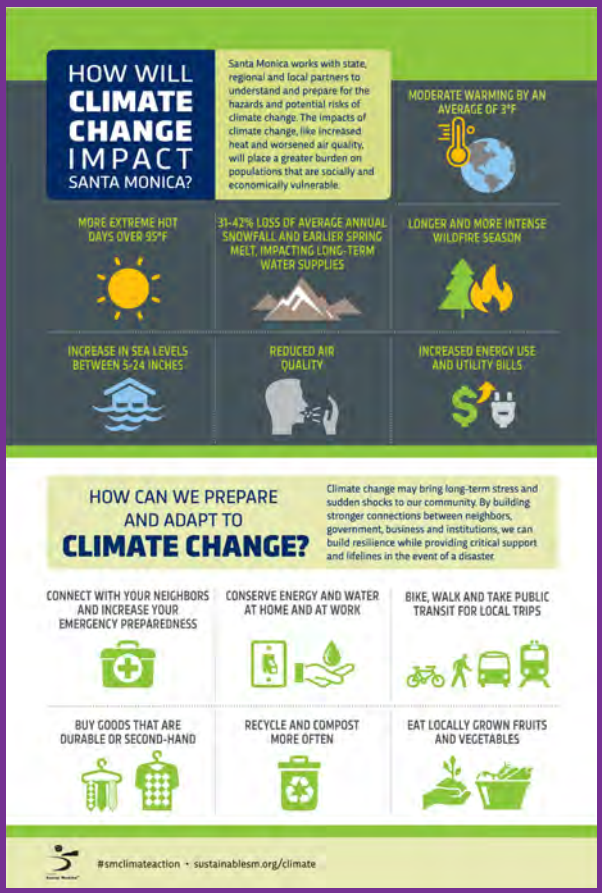

Enhances Community Resilience


Government Leadership


Improves Public Health & Safety

ACTIONS

RESILIENT INFRASTRUCTURE	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
CRC5: 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
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 and project locations to address asset- and site-specific vulnerabilities.		$		OSE	PWD, ASD, CED	Near Term
CRC7: Increase Resilience of Local Energy Infrastructure Partner with local utilities, regional agencies, and local jurisdictions to assess the vulnerability of energy infrastructure. Deploy local resilient energy systems such as solar, energy storage, combined heat and power, and fuel cells into new projects and existing facilities to prepare for heat waves, wildfire and other disruptions. Encourage residents and local businesses to install resilient energy systems as well.		$$		OSE	OEM, ASD, Utilities	Near Term
CRC8: Enhance Regional Transportation 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, CCC	Ongoing



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

- 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.

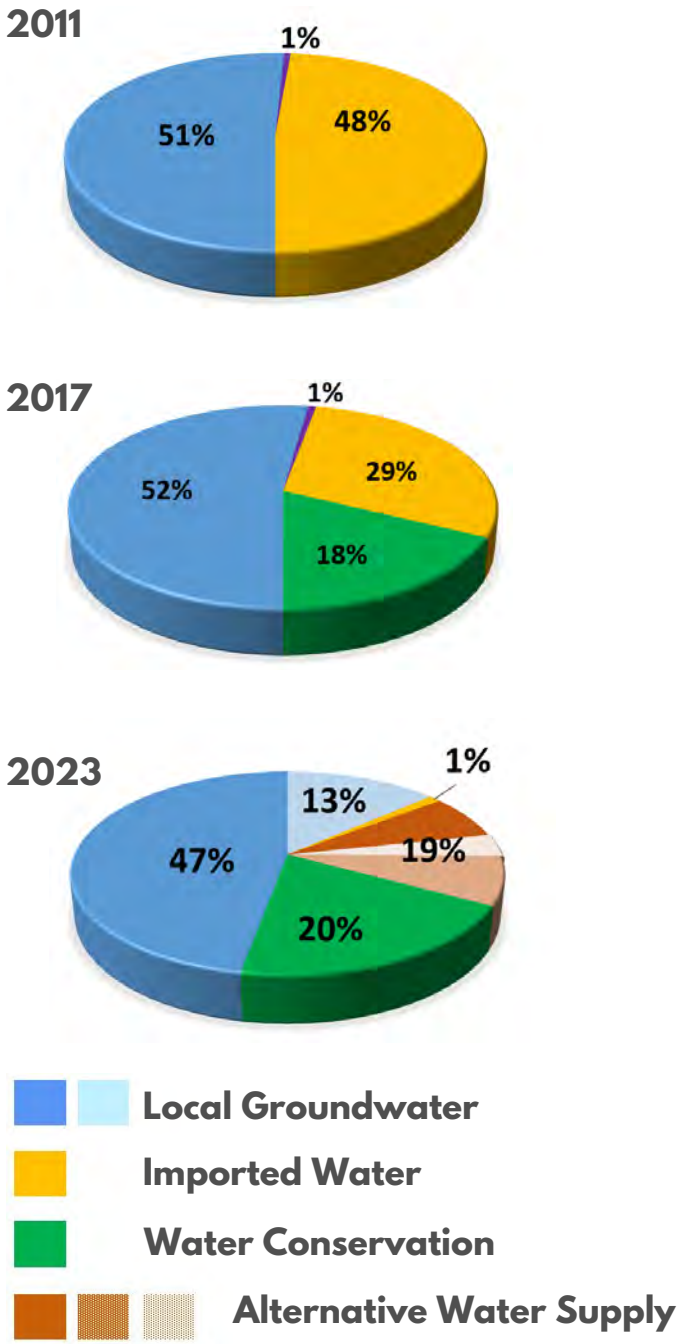
Achieving self-sufficiency requires both conservation and efficiency, coupled with increasing local water supply. Santa Monica offers resources for property owners to convert to drought tolerant landscaping and irrigation and install rainwater harvesting systems.

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 (next page) 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



SUSTAINABLE WATER INFRASTRUCTURE PROJECT

The Sustainable Water Infrastructure Project (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.

Increasing recycled water production through the SWIP, upgrading the existing Santa Monica Urban Runoff Recycling Facility (SMURRF) and constructing a new Advanced Water Treatment Facility (AWTF) provides a drought resilient, local water supply. The increase in recycled water production from SMURRF would offset imported water purchases from Northern California by approximately 4% (approximately 560 AFY).

Recharging local groundwater aquifers in the Olympic Sub-basin to maintain sustainable yield pumping levels with purified water from the SWIP's AWPF would offset imported water by approximately an additional 7% (approximately 1,100 AFY).

ACTIONS

WATER CONSERVATION	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
H201: Commercial Sector Retrofits Develop incentives and direct install programs to retrofit inefficient water fixtures in commercial properties.		$$		OSE	MWD	Ongoing
H202: Coin Operated Laundry Program Develop incentives targeted at multiunit dwelling property owners and laundry service vendors to replace inefficient laundry systems with new systems.		$$		OSE	MWD	Near Term
H203: Increase Direct Install Program Expand annual replacement of inefficient toilets in multiunit dwellings and single-family homes.		$$		OSE	MWD	Ongoing
ALTERNATIVE WATER SUPPLY						
H204: Arcadia Water Treatment Plant Improvements Increase in production efficiencies at the Arcadia Water Treatment Plant by recovering brine concentrate.		$$$		WRD	ED	Mid Term
H205: 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.		$$$		WRD	ED	Mid Term
LOCAL GROUND WATER PRODUCTION						
H206: Expand Local Water Resources Expand capacity at Arcadia Water Treatment Plant to accommodate more water. Restore the Olympic wellfield and develop a new well to enhance drought resilience.		$$$		WRD	ED	Long Term

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

G Government Leadership

Improves Public Health & Safety

COASTAL FLOODING PREPAREDNESS

2030 OBJECTIVES

- 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, providing vital habitat for local species. 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 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 resources, like beaches, and 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 creation.

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	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
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.		$$		OSE	CCS	Mid Term
CF2: Coastal Hazard Real Estate Disclosure Establish a process requiring the disclosure during any real estate transaction within the City's Coastal Zone of a property's location in a hazard zone identified in the Local Coastal Program Land Use Plan (LUP) and of the results of any site-specific hazard analyses related to the hazards mapped in the LUP. Collaborate with the Coastal Commission and local real estate agents to develop specific guidance and language regarding point-of-sale disclosures. Adopt and implement a local ordinance specifying point-of-sale disclosures.		$		OSE	CPD	Mid Term
CF3: Climate Ready Santa Monica Pier Integrate the latest sea level rise projections in Pier structural assessments and design improvements. Implement capital improvements to withstand increased wave height and on-shore flooding.		$$$		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.		$$$		CPD	OSE, CCS, CED, BM, Pier, Nonprofits	Mid to Long Term
CF5: Beach Nourishment & Dune Creation Dune creation shall be allowed to occur within the City's beach areas, provided consideration is given to any impacts on the Western Snowy Plover Special Protection Zone (SPZ) and other SPZs that may be established in the future where dune restoration occurs. Design and implement additional pilot projects, utilizing green infrastructure or eco-engineering.		$$		BM	OSE, CCS, Nonprofits	Mid to Long Term
CF6: Local Coastal Program 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 5 years or sooner based on the best available science.		$$		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

- 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.

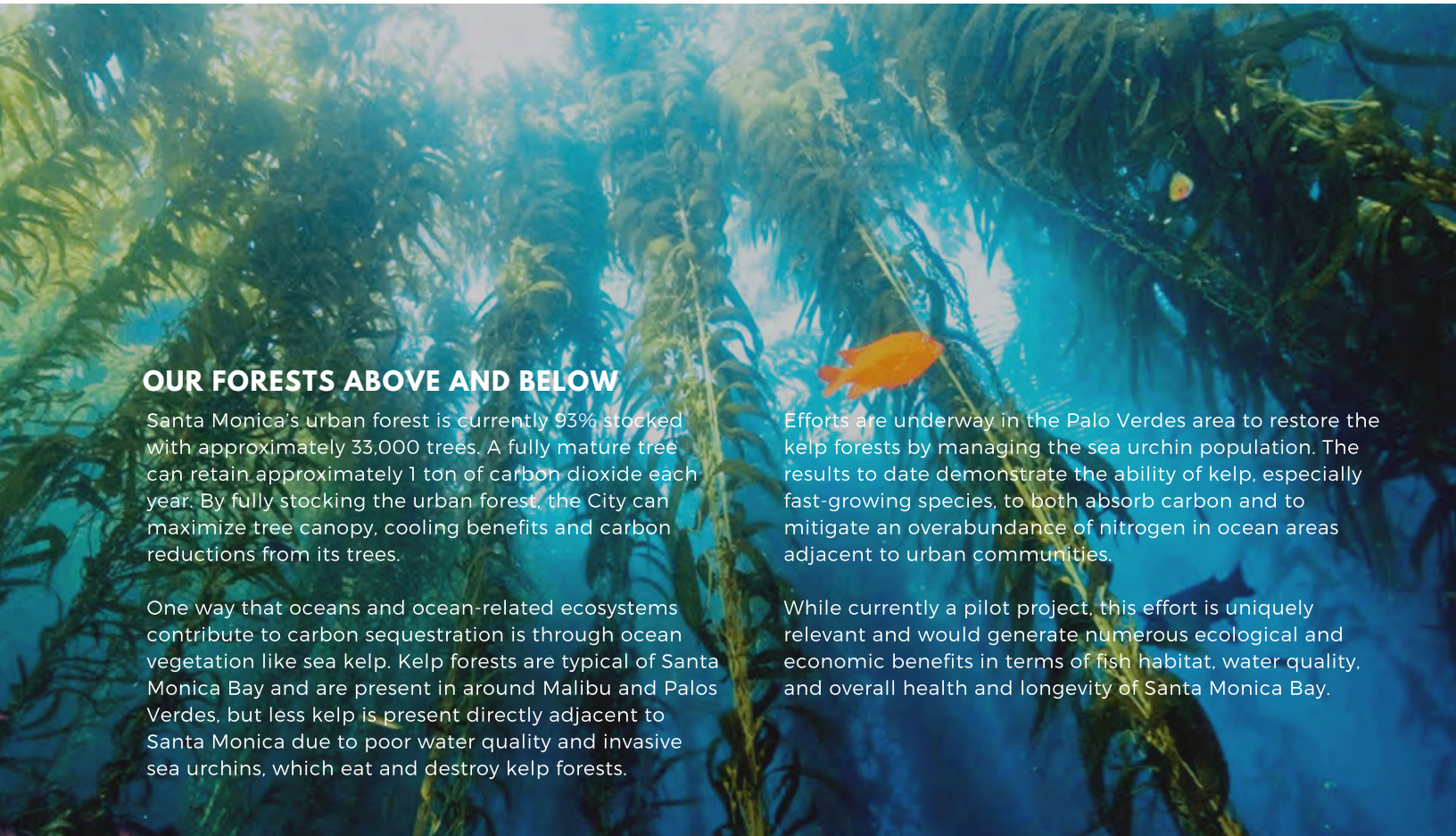
CARBON SEQUESTRATION

Carbon sequestration is the process of removing carbon from the atmosphere (CO2) 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.

CARBON SEQUESTRATION POTENTIAL AT THE AIRPORT

Parks and recreation activities are central to quality of life in Santa Monica. Natural settings can provide valuable, regenerative, passive recreation opportunities. In addition to the documented mental health benefits, greening in parks and public spaces would contribute to improved human health through relief from heat-island effects and improved air quality.

Park vegetation and trees provide shade and oxygen, which cool the streets as well as nearby homes and buildings. A full and healthy urban forest canopy can be an effective and efficient means of sequestering carbon, while reducing pollution, the heat island effect and the need for air-conditioning.

In surveys and interviews conducted during the Parks & Recreation Master Plan update process, respondents emphasized that they want the park system to be greener and include more natural spaces and green infrastructure. The community also suggested expanding the urban forest by planting more trees in the City's parks.

While Santa Monica has many beloved parks and green spaces, it is below the average for Los Angeles County when it comes to green space per capita.

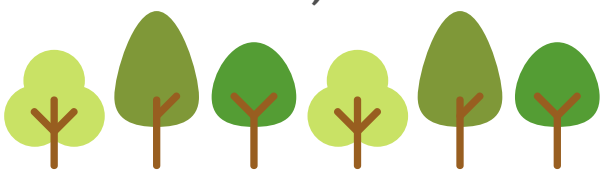
In 2017, the City of Santa Monica and the Federal Aviation Administration (FAA), reached a historic agreement, which will lead to the eventual closure of Santa Monica Airport (SMO) in 2028. Earlier in 2014, Santa Monica voters supported Measure Local Control (Measure LC) that affirms the authority of City Council to manage airport land and amends the City Charter to require voter approval for any new development on airport land except parks, public open space, and public recreational facilities.

Potential Airport Acreage to be Converted Post-2028 Closure
***Existing buildings and non-aviation functions will likely remain**

At 227 acres, SMO has the potential of becoming one of the largest parks in Los Angeles. With so much land, a park at SMO could provide a unique opportunity to transform a carbon source into a carbon sink, sequestering carbon from the atmosphere, by expanding Santa Monica's urban forest and fostering healthy soils. If the City were to plan 1,000 trees within this area it could sequester 688,000 lbs of carbon dioxide, which would be enough to offset driving over 763,000 miles in a fossil-fuel vehicle.

Ultimately, the path from Airport to park will involve a complex process to design, fund, and construct, which will be informed by community input.

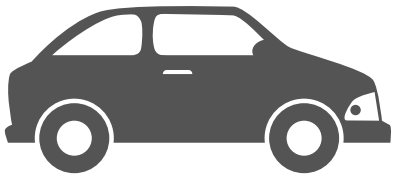
PLANTING 1,000 TREES



COULD SEQUESTER

688,000 LBS CO_2

ENOUGH TO OFFSET



763,011 MI

IN A FOSSIL-FUEL VEHICLE

Assumes Oak tree (quercus spp) annual sequestration rate of 688 lbs (Source: Urban Forest Master Plan). Vehicle emissions equivalent estimated using the EPA Greenhouse Gas Equivalencies Calculator.

ACTIONS

RESILIENCE THROUGH LOCAL FOOD	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
LCFE1: Promote Low Carbon, Low Waste Lifestyles Promote more sustainable food and drink 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. Promote sustainable pet food through outreach and education.		$$		OSE	FMD, EDD, OWB	Ongoing
LCFE2: Increase Productivity of Public & Private Lands Increase food access by planting fruit and nut trees in parks and private sites through education, incentives, and rebates. Facilitate micro-agriculture operations that utilize open land and rooftops or space-efficient operations, like aquaponics. Conduct a feasibility study for repurposing underutilized parkways, vacant or abandoned properties, or the Airport to park conversion for urban farming. Target affordable housing developments, homeless-service providers – in order to empower communities to become self-sustaining. Support residents to start their own gardens by providing educational and training opportunities. Model programs from the Ishihara Park's demonstration and learning garden.		$		OSE, PLD, CCS	CRD, HSD, OWB, Business, Nonprofits	Mid Term
LCFE3: Develop a Sustainable Food Master Plan Develop a community plan that advances the City's Sustainable Food Commitment, and addresses food security through strategies such as local food cultivation, resident vending or donations of local produce at markets, food banks and shelters, and land use strategies.		$$		OSE	FMD, OWB, Nonprofits	Mid to Long Term
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	HSD, OWB, Nonprofits	Mid to Long Term
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.		$$		PLD	OSE	Near Term
LCFE6: Private Tree Preservation Explore policies, incentives and funding mechanisms to ensure the preservation of private trees, including the City's hedge ordinance.		$		CPD	PLD	Near to Mid Term
LCFE7: Local Carbon Sequestration Explore opportunities to sequester carbon on all City properties, including Woodlawn Cemetery and Airport to park conversion and local habitat systems, like sea kelp.		$$		OSE	Nonprofits	Near to Mid 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

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

IMPLEMENTING THE PLAN

2030 OBJECTIVES

- 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 are 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 up lifestyle changes and adoption of clean technologies for uninitiated individuals and under-served populations across the entire community.

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 $383M 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 $383M 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
	TOTAL	**$135,160,294**	**$248,163,434**	**$383,323,728**

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 could cost roughly over $832 million over the next 10-12 years. Additionally, not all projects and programs have been fully conceived or are planned at the moment. Staff will need to leverage external funding mechanisms like grants, low-interest loans or project financing models to supplement City funds.

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	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
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.		$		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
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.		$$		OSE	Nonprofits	Ongoing
CE4: Increase Climate & Eco-Literacy Increase local awareness about the need to protect the region's ecosystems from a changing climate. Develop educational curriculum, outreach materials and information for use by educators and community based organizations. Develop program resources in multiple languages to reflect the diversity in Santa Monica. Support citizen science initiatives, like local air quality monitoring.		$		OSE	Schools, Nonprofits	Ongoing
CITY LEADERSHIP						
CL1: Adopt a Smart City Strategy Adopt a Smart City Strategy to advance technologies in City infrastructure and leverage public-private partnerships that support energy and water efficiency, mobility planning and services, public safety and communications.		$		ISD	OSE, MD, OEM, TED	Near Term
CL2: Implement Deep Carbon Reduction Retrofits in City Facilities Implement an energy portfolio manager system to monitor real-time energy consumption and costs. Audit facilities for energy efficiency potential and implement large-scale retrofit program across the City's portfolio. Pilot and implement conversions of natural gas building systems to electric-based systems, like heat pump water heaters and HVAC systems. Pilot retrofit and financing mechanisms like performance contracting and sustainability/energy-as-a-service. Track refrigerants in buildings and vehicles, reduce refrigerants with high global warming potential and reduce leakage rates from air conditioning systems.		$$$		OSE	FacMD, ASD, TED	Ongoing

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	Carbon Reduction Potential	Cost to City	Community Benefits	Lead	Partners	Status or Timeframe
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).		$$$		OSE	FacMD, ASD, TED	Ongoing
CL4: Convert City Fleet Vehicles to Electric or Zero Emission Pilot electric and zero emission vehicles for medium and heavy duty vehicles. Replace vehicles as technology becomes available. Downsize and consolidate fleet vehicles to promote vehicle sharing. Convert Big Blue Bus fleet to all-electric by 2030.		$$$		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
CL6: Reduce Consumption Based Emissions Identify goods, services and suppliers that contribute to the City's carbon footprint. Develop a system to track, analyze and report the impacts of employee air travel to conferences, meetings and workshops, etc. Establish a goal to reduce carbon emissions associated with consumption and employee air travel and then develop strategies to be implemented.		$		OSE	Business	Near Term
CL7: 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 State and regional policies that support local targets and large-scale change. Continue to share progress through reporting platforms.		$		OSE		Ongoing
CL8: Implementing Plans, Policies & Ordinances Consider and approve new plans, policies & ordinances and amendments to existing plans, policies and ordinances in a public review process to implement this plan.		$		OSE	PCD, RRR	Ongoing
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
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

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 Emissions Inventories

5-Year Consumption Based Emissions Inventory

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 so that we can 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.


CITY OF SANTA MONICA
A Sustainable Community
sustainablesm.org


BROUGHT TO YOU BY
CITY OF SANTA MONICA