CITY OF LONG BEACH

CAAP

CLIMATE ACTION + ADAPTATION PLAN

Executive Summary

November 2020

CLIMATE ACTION AND ADAPTATION PLAN VISION

Preparing Long Beach for climate change presents both daunting challenges and extraordinary opportunities. It will require changes to many things we take for granted—how we power our homes, how we get around, how businesses and industry are run, how and where buildings get built, what we consume, and what we throw away. But rather than just an inconvenient necessity, adapting Long Beach to climate change and reducing our contribution to its causes also presents an unprecedented opportunity to improve quality of life for all Long Beach residents and remedy long-standing inequities.

Through implementing a coordinated response to climate change, we can address public health disparities, foster economic opportunities, and realize a vision of Long Beach where everyone can live in thriving communities built on sustainability and resilience. Here we summarize the vision and actions for the Climate Action and Adaptation Plan (CAAP) that the City of Long Beach has developed through extensive stakeholder and community input.

VISION

The vision of the Long Beach CAAP is to create a more sustainable, resilient and equitable city by addressing climate change in a way that remedies existing environmental health disparities while also improving health,quality of life, and enhancing economic vitality throughout Long Beach.

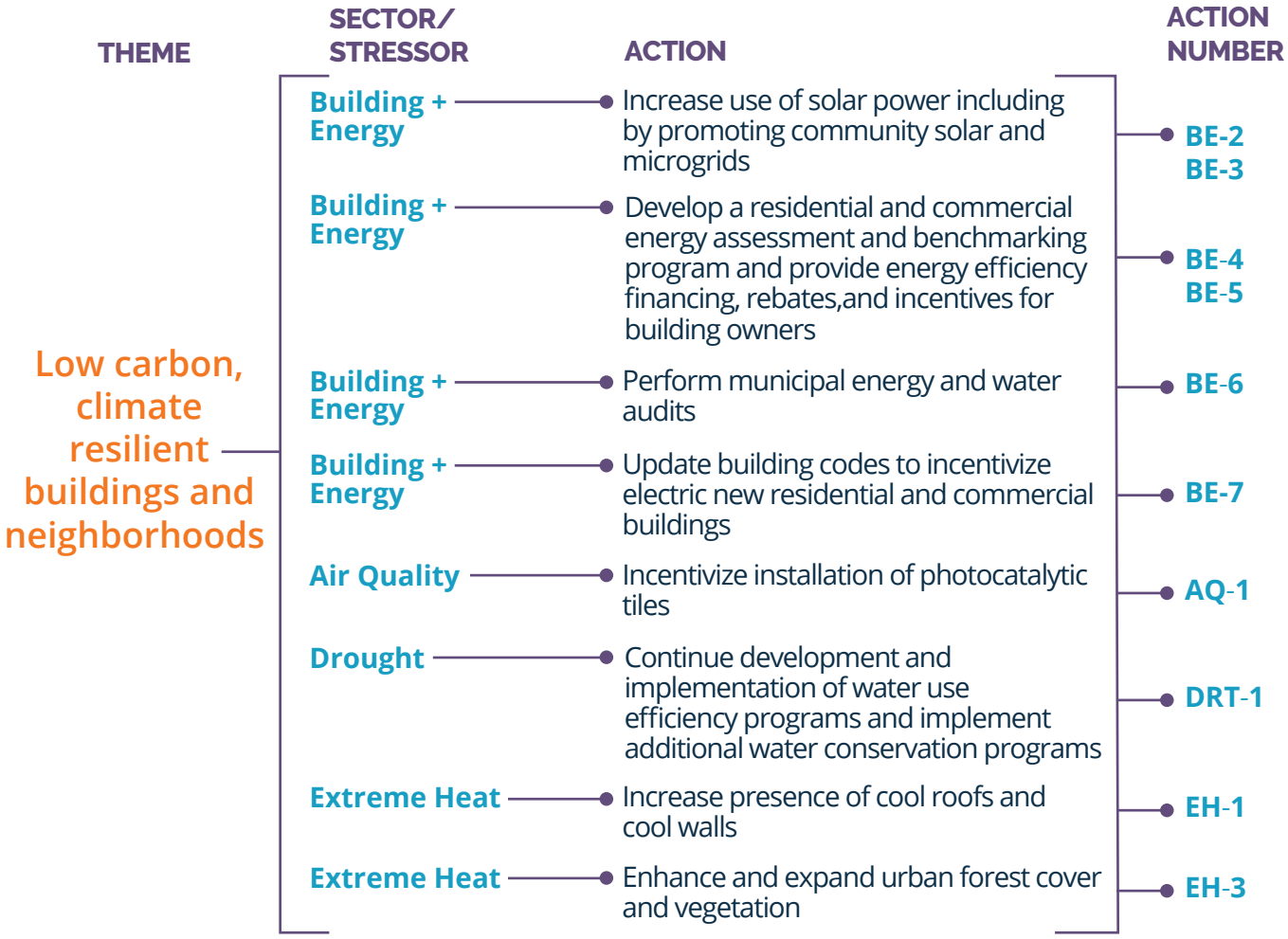
The implementation of the CAAP will help Long Beach realize:

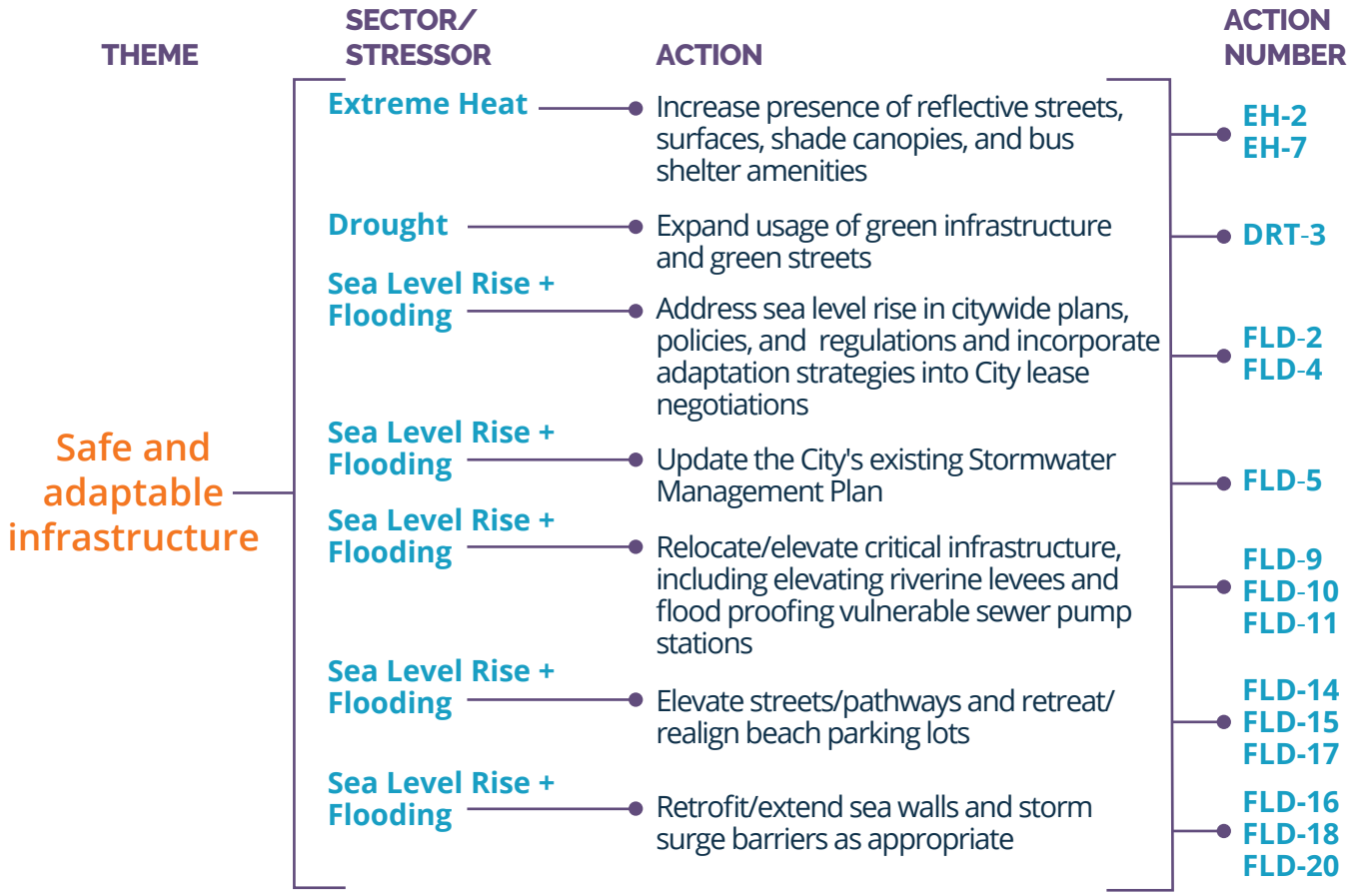
1. **Low carbon, climate resilient buildings and neighborhoods**
2. **Safe and adaptable infrastructure**
3. **Protected and enhanced natural systems**
4. **A healthy, resilient and ready population**
5. **Residents and businesses with minimized carbon footprints**

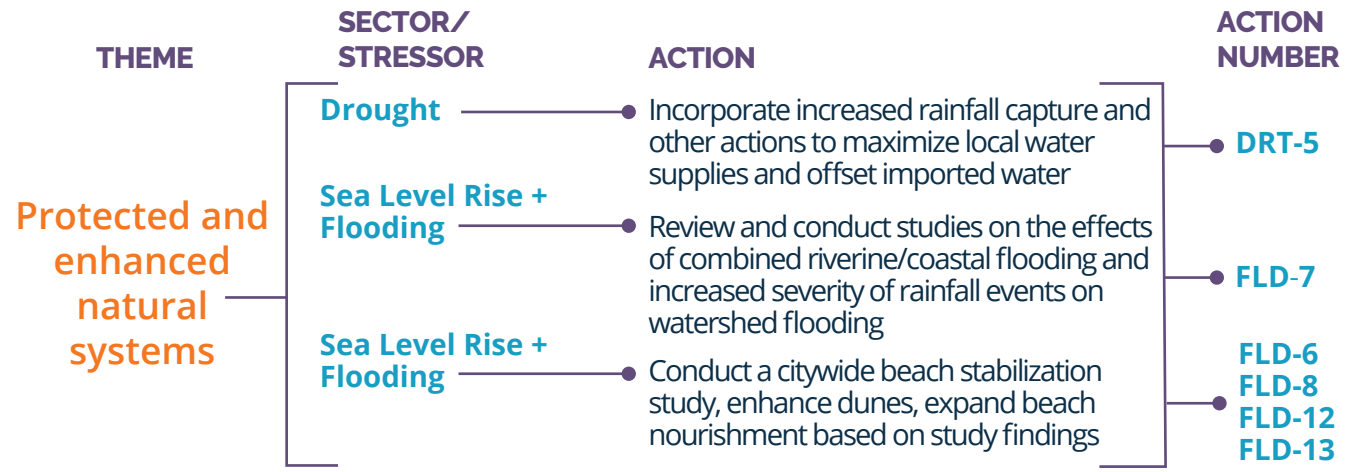
The City, in conjunction with relevant partners, will implement a range of actions to reduce greenhouse gas (GHG) emissions and adapt to climate change impacts. The actions the City will take are organized overleaf by desired outcomes that represent the underlying values of the CAAP.

HOW LONG BEACH WILL ACHIEVE THE CAAP OUTCOMES

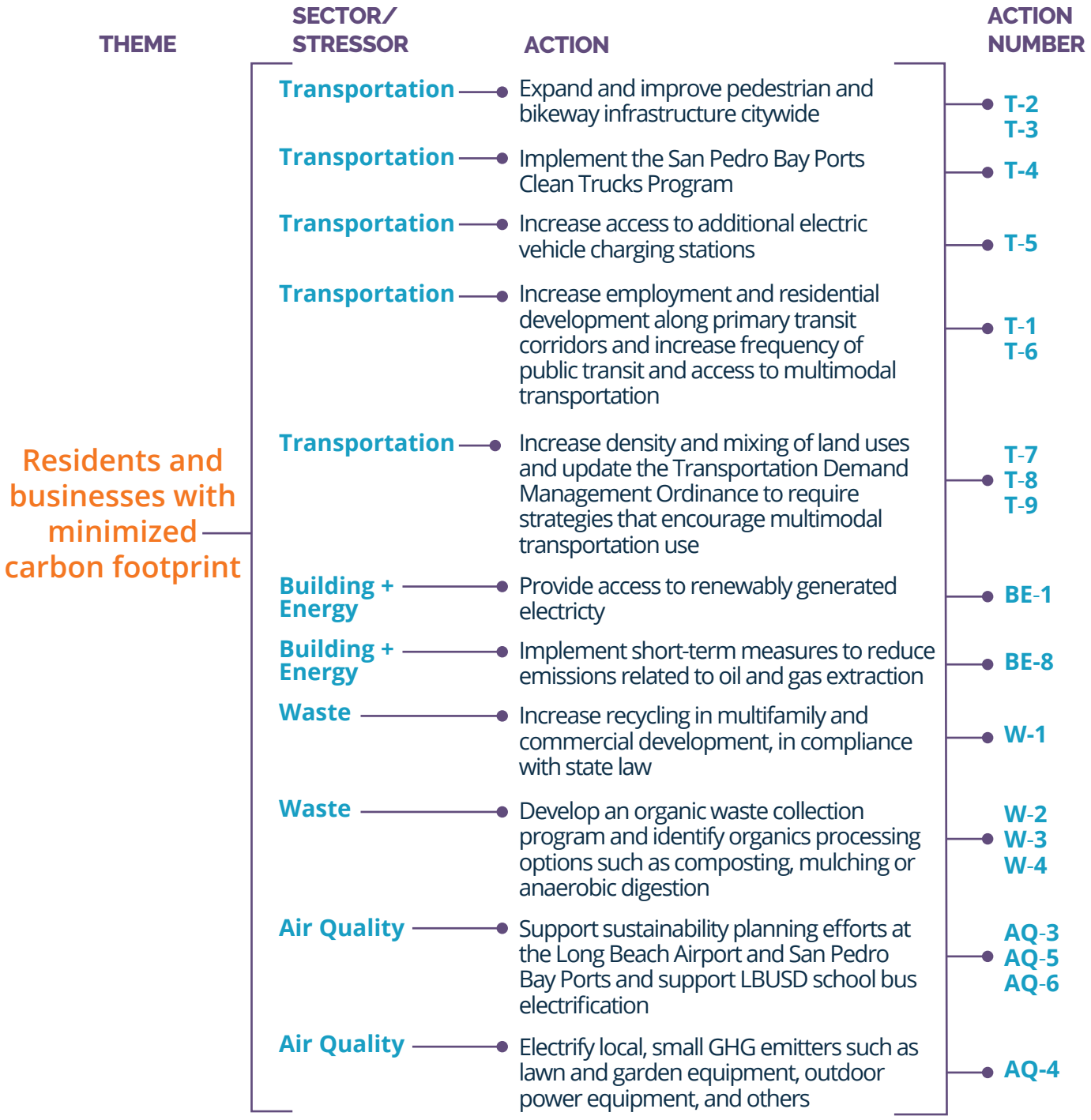
These themes are desired high level outcomes of the plan, and what will be done generally to achieve them. However, it is not an exhaustive list of all the actions, please see pages ES-13 through ES-16 for the full list.




THEME
SECTOR/ STRESSOR
ACTION
ACTION NUMBER
Safe and adaptable infrastructure
Extreme Heat
Increase presence of reflective streets, surfaces, shade canopies, and bus shelter amenities
EH-2
EH-7
Drought
Expand usage of green infrastructure and green streets
DRT-3
Sea Level Rise + Flooding
Address sea level rise in citywide plans, policies, and regulations and incorporate adaptation strategies into City lease negotiations
FLD-2
FLD-4
Sea Level Rise + Flooding
Update the City's existing Stormwater Management Plan
FLD-5
Sea Level Rise + Flooding
Relocate/elevate critical infrastructure, including elevating riverine levees and flood proofing vulnerable sewer pump stations
FLD-9
FLD-10
FLD-11
Sea Level Rise + Flooding
Elevate streets/pathways and retreat/ realign beach parking lots
FLD-14
FLD-15
FLD-17
Sea Level Rise + Flooding
Retrofit/extend sea walls and storm surge barriers as appropriate
FLD-16
FLD-18
FLD-20

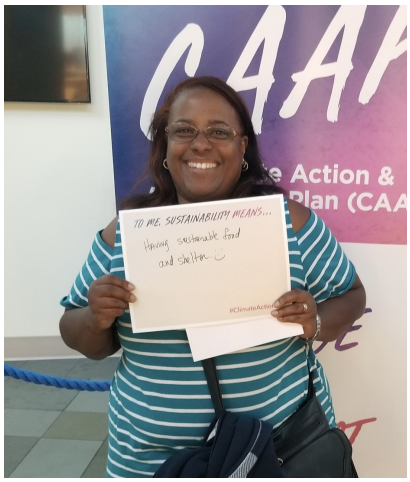

THEME
SECTOR/ STRESSOR
ACTION
ACTION NUMBER
Protected and enhanced natural systems
Drought
Incorporate increased rainfall capture and other actions to maximize local water supplies and offset imported water
DRT-5
Sea Level Rise + Flooding
Review and conduct studies on the effects of combined riverine/coastal flooding and increased severity of rainfall events on watershed flooding
FLD-7
Sea Level Rise + Flooding
Conduct a citywide beach stabilization study, enhance dunes, expand beach nourishment based on study findings
FLD-6
FLD-8
FLD-12
FLD-13

THEME	SECTOR/ STRESSOR	ACTION	ACTION NUMBER
A healthy, resilient and ready population	Extreme Heat	Install additional water fountains and undertake other actions to increase public access to water	EH-4
	Extreme Heat	Identify future vulnerability potential for power outages related to extreme heat and develop plans to prevent outages	EH-5
	Extreme Heat	Enhance and expand accessibility to cooling centers	EH-6
	Extreme Heat	Improve beach and coastal transit access during extreme heat events	EH-6
	Air Quality	Encourage urban agriculture practices that reduce air quality pollution	AQ-2
	Air Quality	Increase monitoring and regulation of the oil extraction and refining process	AQ-7
	Drought	Enhance outreach and education related to water conservation	DRT-2
	Drought	Expand use of recycling water and grey water for non-potable use	DRT-4
	Sea Level Rise + Flooding	Update the floodplain ordinance	FLD-1
	Sea Level Rise + Flooding	Establish a flood impacts monitoring program	FLD-3
	Sea Level Rise + Flooding	Investigate feasibility of managed retreat in the longer term	FLD-19


THEME
SECTOR/ STRESSOR
ACTION
ACTION NUMBER
Residents and businesses with minimized carbon footprint
Transportation
Expand and improve pedestrian and bikeway infrastructure citywide
T-2
T-3
Transportation
Implement the San Pedro Bay Ports Clean Trucks Program
T-4
Transportation
Increase access to additional electric vehicle charging stations
T-5
Transportation
Increase employment and residential development along primary transit corridors and increase frequency of public transit and access to multimodal transportation
T-1
T-6
Transportation
Increase density and mixing of land uses and update the Transportation Demand Management Ordinance to require strategies that encourage multimodal transportation use
T-7
T-8
T-9
Building + Energy
Provide access to renewably generated electricty
BE-1
Building + Energy
Implement short-term measures to reduce emissions related to oil and gas extraction
BE-8
Waste
Increase recycling in multifamily and commercial development, in compliance with state law
W-1
Waste
Develop an organic waste collection program and identify organics processing options such as composting, mulching or anaerobic digestion
W-2
W-3
W-4
Air Quality
Support sustainability planning efforts at the Long Beach Airport and San Pedro Bay Ports and support LBUSD school bus electrification
AQ-3
AQ-5
AQ-6
Air Quality
Electrify local, small GHG emitters such as lawn and garden equipment, outdoor power equipment, and others
AQ-4

HOW WE DEVELOPED THE PLAN – LISTENING TO YOU

Stakeholder engagement was key to the process and had two main components – first, working with a series of stakeholder working groups, and second, extensive public outreach. The City is grateful to all those who provided input. Input from the scientific community input is reflected in the climate science, vulnerability assessment, and other technical appendices. Community input is reflected in the plan's vision and goals, the policies and strategies that have been included and prioritized, and the way in which various actions are anticipated to be implemented.



Early in the engagement process, staff set out to create an inclusive, community-centered planning process to broadly engage the Long Beach community, but with particular attention to those most affected by climate change. The community engagement strategy for the CAAP was based on an equity assessment conducted in partnership with other City departments, including Long Beach Parks, Recreation, and Marine, and the Health and Human Services Department.

10,260
TOTAL estimated participants

1,395 sign-ins

67 events

#1 OPEN HOUSE

200 ESTIMATED PARTICIPANTS
98 sign-ins

- Validate the project methodology;
- Provide feedback and input on local data;
- Review results and early actions.

#2 OPEN HOUSE

200 ESTIMATED PARTICIPANTS
97 sign-ins

- Provide input on climate-related; their concerns
- Review existing actions;
- Recommend future opportunities.

#3 OPEN HOUSE
Long Beach ClimateFest

500 ESTIMATED PARTICIPANTS
107 sign-ins

- Input on the public engagement approach;
- Provide input on Climate-related concerns;
- Review proposed actions.

SCIENTIFIC WORKING GROUP

13 Independent Experts

3 meetings

California State University, Long Beach; Long Beach Community College; the University of California, Los Angeles; the Aquarium of the Pacific, the South Coast Air Quality Management District, and RAND Corporation.

BUSINESS WORKING GROUP

24 Businesses

2 meetings

Including architecture, engineering, utilities, sustainability consultants, business association leaders and the Chamber of Commerce.

COMMUNITY WORKING GROUP

20 Local Community Groups

2 meetings

Neighborhood associations, environmental justice organizations, church and religious organizations, clean energy advocates, community assets and open space organizations, and health and wellbeing organizations.

ENGAGED YOUTH LEADERS

13 Educational Institutes

multiple meetings

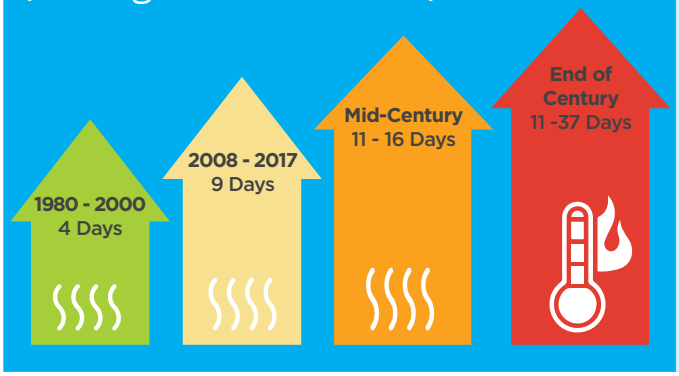
California State University, Long Beach; Long Beach City College; Long Beach Unified School District; St. Anthony's High School; Youth Leadership Long Beach; and Aquarium of the Pacific youth volunteers

HOW CLIMATE CHANGE WILL IMPACT LONG BEACH

As part of the CAAP process, the most up-to-date science and local climate projections for the main climate change impacts—extreme heat, sea level rise, and precipitation—and two secondary impacts relating to air quality and drought were reviewed. The City used this information to carry out a Climate Vulnerability Assessment, which explored how these climate stressors will impact different types of city assets (see the graphic below). As climate models and projections are improved and updated with new data and observations, they will be used to inform future updates of the CAAP.

Extreme Heat

Projected days of extreme heat
(95 degrees and above)

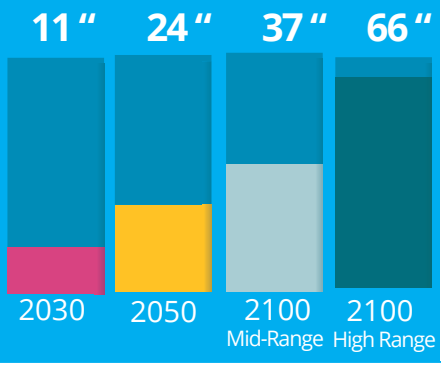


As extreme heat gets worse, the urban heat island effect could accelerate.The urban heat island effect impacts low-income areas and communitites of color in North, Central and West Long Beach the most.

Sea Level Rise and Increased Precipitation

Rising seas and heavier storms are expected to threaten our shoreline and lead to increased flooding inland.

Projected Sea Level Rise



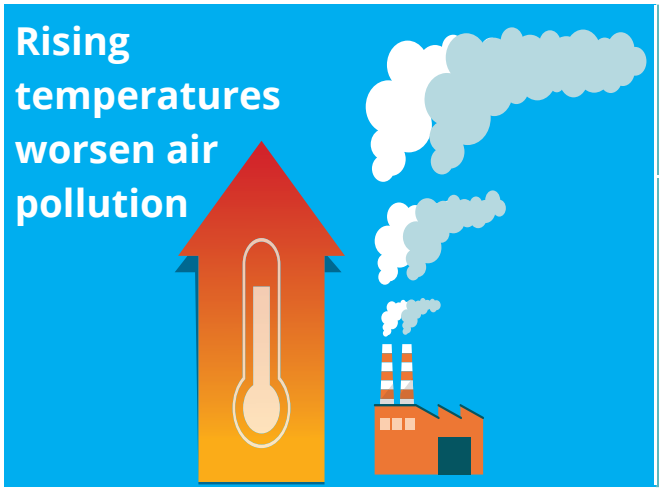
Certain low-lying areas are expected to be at greater risk due to sea level rise in combination with high tides, storm events, and more intense precipitation.

Although climate change is impacting the entire city, some communities within Long Beach already experience disproportionate environmental health burdens and have the highest social vulnerability to climate change. As Long Beach prepares for an uncertain climate future, the City will support these communities to make sure they can thrive.

Drought

Temperature and precipitation changes are expected to worsen droughts and reduce snowpack and access to imported water, all while increasing demand for water.

Air Quality



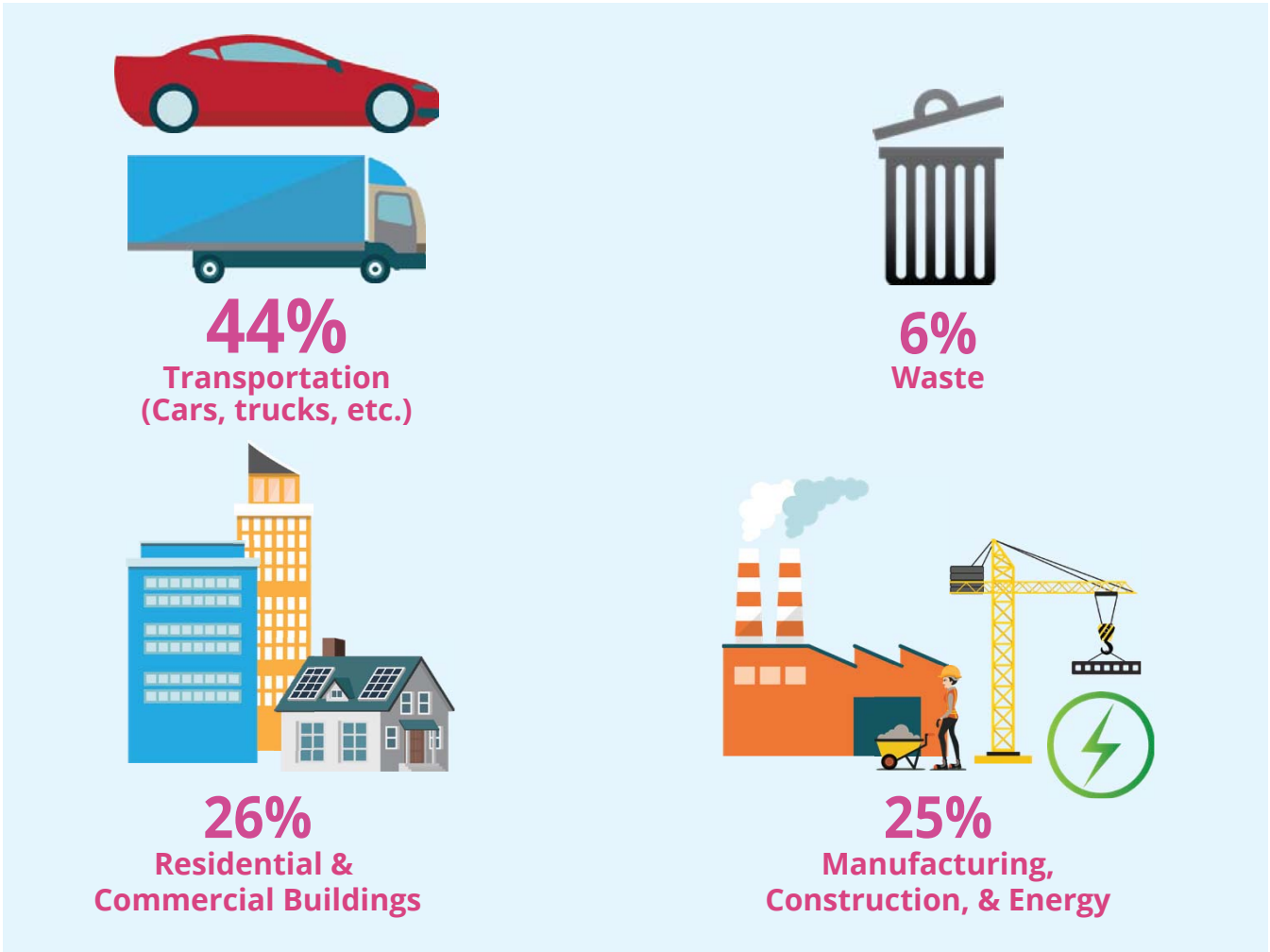
Air quality varies greatly in Long Beach. Impacts will be felt most by people sensitive to poor air quality and communities adjacent to emissions sources.

HOW LONG BEACH IMPACTS CLIMATE CHANGE

The reduction of GHG emissions is one of the primary objectives of the CAAP, and the goal is net zero emissions by 2045. An interim target for 2030 has been identified to help the City achieve this goal. Developing meaningful reduction strategies and evaluating their ability to meet a GHG target first requires an understanding of the community's baseline and projected future emissions levels.

The City developed a production inventory that analyzes emissions from local activities such as vehicle travel, building energy use, and waste disposal. Emissions occurring from vessel operations at the Port of Long Beach are, in part, regulated at the state level by the California Air Resources Board (CARB), and the City of Long Beach does not have the direct authority to dictate emissions reduction policies for private shipping companies that operate from the port. For this reason, port waterborne activity is not considered for GHG target-setting purposes.

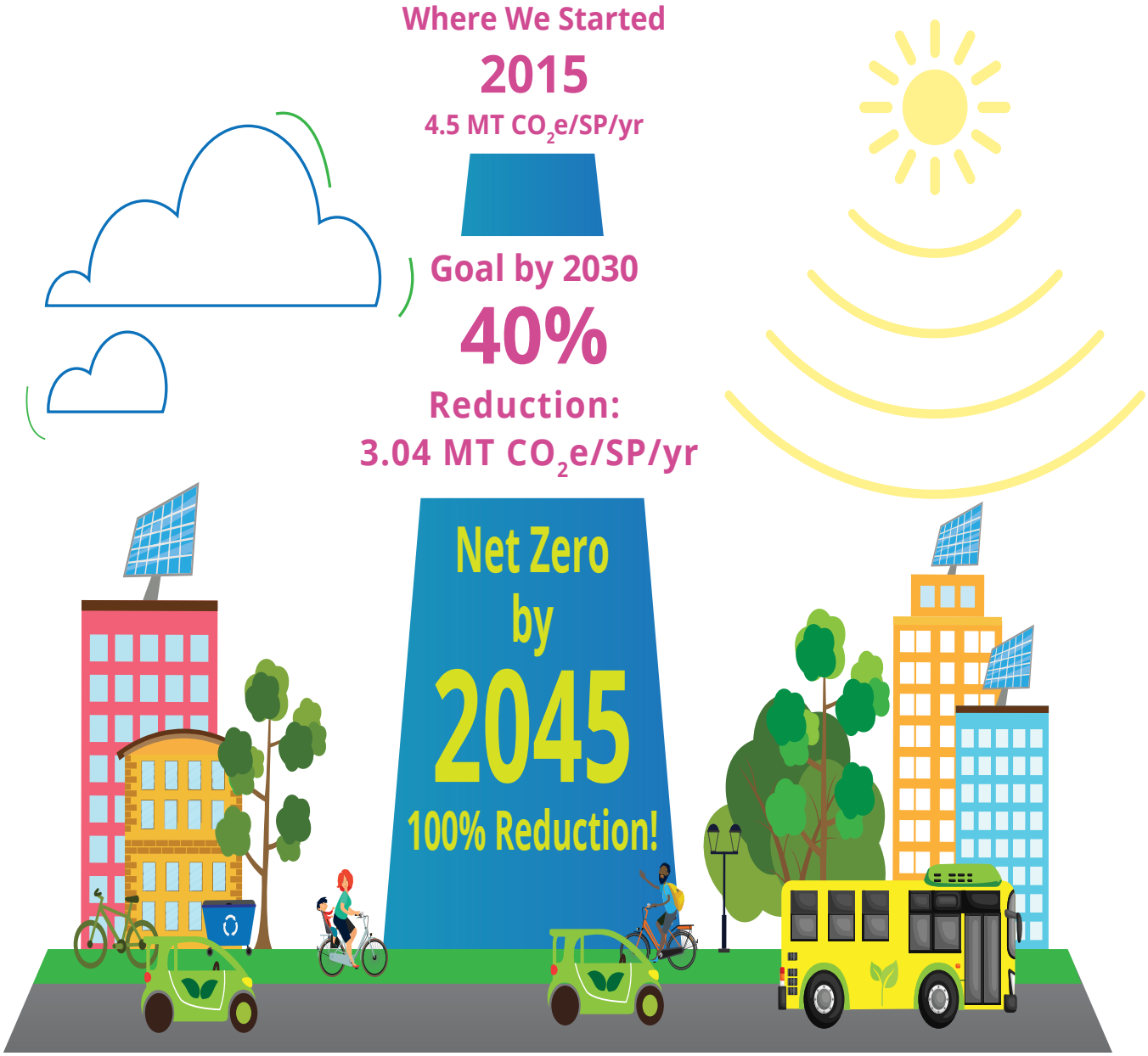
Where do Our Emissions Come From?



Notes: Residential & commercial buildings and manufacturing, construction and energy are consolidated as "stationary energy" in the Production Inventory. The Total Production Inventory also includes port waterborne activity emissions. (chapter 5)

The City developed a high-level consumption-based inventory to understand emissions resulting from the consumption of goods and services by city residents (for information purposes only). The City also analyzed the life cycle emissions associated with oil and gas extraction activities in Long Beach to present a holistic view of the City's total contribution to global emissions and to help identify possible reductions in the long term. The City can most directly influence emissions related to the production-based inventory, and CAAP actions will aim at reducing emissions from this inventory.

Our Carbon Challenge



MT CO_2e/SP/yr = Metric tons of carbon dioxide equivalent per service population (population + employment)

HOW WE ARE GOING TO REDUCE OUR VULNERABILITY TO CLIMATE IMPACTS

EH Extreme Heat

Goal: Long Beach buildings, neighborhoods, and infrastructure are climate resilient, reduce the urban heat island effect, and are set up to ensure and improve public health and safety in the face of extreme heat events

OBJECTIVES	NO.	ACTIONS
New and existing buildings, streets, and public spaces reduce extreme heat through incorporation of cool surfaces and green infrastructure	EH-1	Increase presence of cool roofs and cool walls
	EH-2	Increase the presence of reflective streets, cool surfaces, and shade canopies
	EH-3	Enhance and expand urban forest cover and vegetation
All residents have access to services and programs to withstand extreme heat events	EH-4	Install additional water fountains and other actions to increase public access to water
	EH-5	Identify future vulnerability potential for power outages related to extreme heat and develop plans to prevent such outages
	EH-6	Enhance and expand the accessibility of cooling centers
Public transit is a comfortable and viable mobility option during extreme heat events, especially for transit-dependent populations	EH-7	Provide bus shelter amenities
	EH-8	Improve beach and coastal transit access during extreme heat events

AQ Air Quality

Goal: All Long Beach communities have clean air and improved public health

OBJECTIVES	NO.	ACTIONS
Buildings and facilities actively reduce air pollution as a component of a broader energy reduction strategy.	AQ-1	Incentivize installation of photocatalytic tiles
	AQ-2	Encourage urban agriculture practices that reduce air quality pollution
Emissions are reduced by shifting to cleaner equipment and vehicles.	AQ-3	Support the development of the Long Beach Airport Sustainability Plan
	AQ-4	Electrify small local emitters, such as lawn and garden equipment, outdoor power equipment, and others
	AQ-5	Work with Long Beach Unified School District (LBUSD) to support school bus electrification
	AQ-6	Implement the Port of Long Beach Clean Air Action Plan
Air quality impacts from local oil and gas operations are minimized.	AQ-7	Increase monitoring and regulation of oil extraction and refining process

DRT Drought

Goal: Long Beach has a more sustainable and diverse water supply that reduces dependence on imported water and improves long-term water security

OBJECTIVES	NO.	ACTIONS
Maximize water efficiency and conservation.	DRT-1	Continue development and implementation of water use efficiency programs and implement additional water conservation programs
	DRT-2	Enhance outreach and education related to water conservation
Maximize water that is captured and reused locally.	DRT-3	Expand usage of green infrastructure and green streets
	DRT-4	Expand usage of recycled water and greywater for non-potable use
	DRT-5	Incorporate increased rainfall capture and other actions to maximize local water supplies and offset imported water

FLD Sea Level Rise + Flooding

Goal: Long Beach understands and is prepared for its future flood risk

OBJECTIVES	NO.	ACTIONS
Short-Term Actions (to 2030)		
City plans and policies are forward-looking and ensure projects and investments account for projected sea level and flooding impacts	FLD-1	Update and augment floodplain regulations as necessary
	FLD-2	Incorporate sea level rise language into citywide plans, policies, and regulations
	FLD-3	Establish a flood impacts monitoring program
	FLD-4	Incorporate adaptation into City lease negotiations
	FLD-5	Update the City's existing Stormwater Management Plan
Clear and sufficient information is on hand to identify and prioritize near-term adaptation needs and best practices	FLD-6	Conduct citywide beach stabilization study
	FLD-7	Review and conduct studies of combined riverine/coastal flooding and increased severity of rainfall events on watershed flooding
Adaptation strategies are implemented to protect vulnerable shoreline areas and wastewater infrastructure	FLD-8	Enhance dunes
	FLD-9	Inventory and flood-proof vulnerable sewer pump stations

For Medium and Long Term Actions - see main plan document.

HOW WE ARE GOING TO ACHIEVE OUR GREENHOUSE GAS REDUCTION TARGETS

BE Building + Energy

Goal: Long Beach buildings are energy-efficient and our communities run on affordable, renewable electricity

GHG Reductions 247,700 MT CO_2e

OBJECTIVES	NO.	ACTIONS
Transition to a carbon-free, more resilient electricity system	BE-1	Provide access to renewably generated electricity
	BE-2	Increase use of solar power
	BE-3	Promote community solar and microgrids
Increase the energy efficiencyof existing buildings/facilities	BE-4	Develop a residential and commercial energy assessment and benchmarking program
	BE-5	Provide access to energy efficiency financing, rebates, and incentives for building owners
	BE-6	Perform municipal energy and water audits
Ensure new buildings are low-carbon or carbon-neutral	BE-7	Update building codes to incentivize electric new residential and commercial buildings
Reduce emissions from local oil and gas extraction	BE-8	Implement short-term measures to reduce emissions related to oil and gas extraction

T Transportation

Goal: Affordable, safe, carbon-free transportation choices connect all Long Beach communities to opportunity, clean air, and improved health

GHG Reductions 30,480 MT CO_2e

OBJECTIVES	NO.	ACTIONS
Decrease reliance on personal motor vehicles and increase transit, biking, andwalking trips	T-1	Increase the frequency, speed, connectivity, and safety of transit options
	T-2	Expand and improve pedestrian infrastructure citywide
	T-3	Increase bikeway infrastructure citywide
Shift to low- and zero-emissions vehicles to move people and freight	T-4	Implement the Port of Long Beach Clean Trucks Program
	T-5	Develop an Electric Vehicle Infrastructure Master Plan
Prioritize the development of transit-oriented neighborhoodswith a mix of jobs, services, and housing	T-6	Increase employment and residential development along primary transit corridors
	T-7	Update the Transportation Demand Management Ordinance
	T-8	Increase the density and mixing of land uses
	T-9	Integrate SB 743 planning with the CAAP process

W Waste

Goal: Long Beach is a zero-waste city

GHG Reductions 85,070 MT CO_2e

OBJECTIVES	NO.	ACTIONS
Materials that can be recycled are recycled	W-1	Ensure compliance with state law requirements for multifamily and commercial property recycling programs
	W-2	Develop an organic waste collection program for City-serviced accounts
Collect all organic waste for composting or clean energy generation	W-3	Partner with private waste haulers to expand organic waste collection community-wide
	W-4	Identify organic waste management options

WHAT CAN YOU DO?

- Upgrade to energy-efficient lighting and appliances and improve building insulation. Seek programs and rebates for conducting energy assessments, installing solar panels, etc.
- Take public transit, bicycle, and walk instead of driving when possible.
- Conserve water by installing water-saving fixtures and adopting behavioral changes, such as reducing shower length, reducing flush frequency, and reusing greywater (e.g., sink to garden).
- Reduce the use of single-use disposables and compost food scraps at home to reduce the waste sent to landfills.
- Replace lawns with native and drought-tolerant gardens and landscaping.
- Use blackout curtains to keep your home cool and be aware of local air-conditioned locations such as cooling centers.
- Prepare your home for flooding by storing sandbags and elevating equipment off the ground or floor. Sign up for Alert Long Beach for flood alert notifications.
- Shop locally at farmers markets, local businesses, and thrift stores to reduce transportation emissions and support the local economy.
- Learn a nutritious, plant-based recipe. Commit to more meatless meals to help reduce the contribution of meat and dairy production to climate change.
- Create an emergency plan with your household. Get to know your neighbors so that all can be better connected in case of an emergency.
- Keep a journal recording your observations of plants and animals near your home. Cultivate a practice of observing the effects of climate change impacts and witness how nature is responding.[1]
- Join an environmental organization that participates in advocacy, community service such as local tree plantings and cleanups, environmental education, and other activities.

[1]Hineline, Mark L. Ground Truth: A Guide to Tracking Climate Change at Home. University of Chicago Press, 2018.

CITY OF
LONG BEACH

Long Beach Development Services
411 W. Ocean Blvd., 3rd Floor
Long Beach, CA 90802

Visit us at longbeach.gov/lbds
Email us at lbds@longbeach.gov

@LongBeachBuilds

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