

Appendix F

Additional Performance Metrics

This appendix details a range of potential performance metrics that may be considered in measuring the progress of CAAP mitigation and adaptation actions. The City is unlikely to track all of these metrics and, through the implementation process, will identify those metrics that best assist in measuring progress towards goals. Benefits associated with mitigation and adaptation actions typically can only be measured over the long term; the following metrics actions attempt to measure more near term, measurable effects. As it relates to mitigation, tracking of the core actions that will be quantified to achieve the City’s GHG reduction target is detailed in Appendix A. Mitigation and adaptation metrics will be revised based on data availability, streamlining with data already collected by City departments, and their utility in assessing programs, co-benefits, GHG reductions, etc.

ADAPTATION ACTIONS - POTENTIAL PERFORMANCE METRICS

CLIMATE STRESSOR	KEY PERFORMANCE METRICS
Extreme Heat	Number of hospitalizations for heat-related sickness during extreme heat events
Air Quality	Measure of local air pollutants
Drought	Number of gallons of water used per person per day
	Usage of recycled water and greywater
Flooding	Critical infrastructure retrofitted or relocated to protect from flooding

ACTION	POTENTIAL PERFORMANCE METRICS
EXTREME HEAT	
EH-01: Increase presence of cool roofs and cool walls	Regulatory change to require cool roofs and cool walls Updated City standards plant to use reflective materials for streets and surfaces
EH-02: Increase presence of reflective streets, surfaces, and shade canopies	# lane miles of pavement treated with “cool pavement” by the City
EH-03: Enhance and expand urban forest cover	# of trees existing and planted
	% tree canopy coverage
	# of trees existing/planted and % tree canopy cover age in neighborhoods vulnerable to extreme heat and lowest tree canopy coverage
EH-04: Install additional water fountains and other actions to increase public access to water	Number of drinking fountains and water refill stations existing and installed total and in extreme heat vulnerability zones
EH-05: Identify future vulnerability potential for power outages related to extreme heat and develop plans to prevent such outages	Assessment of grid vulnerabilities
	Actions developed to prevent future power outages related to extreme heat

EH-06: Enhance and expand accessibility of cooling centers	# of publicly accessible cooling centers in the City and within extreme heat vulnerability zones
	Accessibility measures including hours of operation and proximity to transit
	Visitor count to cooling centers during extreme heat events
EH-07: Provide bus shelter amenities	% of bus stops with shade structures
	% of bus stops with seating
	% of bus stops with real-time arrival information
EH-08: Improve beach and coastal transit access during extreme heat events	Number of new transit options (routes, services, passes, etc.) created to improve beach and coastal transit access during extreme heat events
	# riders or enrollees in new transit options
AIR QUALITY	
AQ-01: Incentivize installation of photocatalytic tiles	# pilot photo catalytic roofs projects and associated reduction in NOx and ozone
AQ-02: Encourage urban agriculture practices that reduce air quality	# measures adopted that encourage urban agriculture practices
	Electricity, natural gas, and water use
AQ-03: Support the development of the Long Beach Airport Sustainability Plan	% electric vehicles and ground support equipment electrified
	% diversion of waste from disposal
AQ-04: Electrify local, small emitters such as lawn and garden equipment, outdoor power equipment, and others	# of incentives utilized from SCAQMD Commercial Electric Lawn and Garden Incentive and Exchange Program
	City-owned small emitter equipment transitioned to electric
AQ-05: Work with LBUSD to support school bus electrification	# of diesel buses switched to electric power and associated reduction in air pollutants
AQ-06: Implement the San Pedro Bay Ports Clean Air Action Plan	# of zero emissions heavy-duty drayage trucks
	% of ships utilizing shore power
	% of zero or reduced emission cargo equipment
	% of ships participating in Vessel Speed Reduction Program
	Participation by ships that qualify for Green Ship Incentives
AQ-07: Increase monitoring and regulation of oil extraction and refining process	# air quality monitors installed

DROUGHT	
DRT-01: Continue development and implementation of water use efficiency programs and implement additional water conservation programs	Measure of water consumption against State water efficiency targets
	Participation in Certified Blue Restaurant program
DRT-02: Enhance outreach and education related to water conservation	Participation in Green Business program
	# of individuals and businesses reached
	# of education and outreach events
DRT-03: Expand usage of green infrastructure and green streets	Requirements and incentives developed for new development to expand the use of green infrastructure
	# City green infrastructure and streets projects
DRT-04: Expand usage of recycled water and grey water for non-potable use	Requirements and incentives developed for new development to expand the use of recycled water
	% use of recycled water and grey water in City facilities
DRT-05: Incorporate increased rainfall capture to offset imported water	Requirements and incentives developed for new development to integrate rainfall capture and harvest
	# of rainfall capture/storage installations
FLOODING	
FLD-01: Update the floodplain ordinance	Established ordinance
FLD-02: Incorporate sea level rise language into citywide plans, policies, and regulations	Strategies, policies, and regulations updated or developed to incorporate sea level rise language
FLD-03: Establish a flood impacts monitoring program	Established flood impacts monitoring program
	# of annual crowdsourced documentations
FLD-04: Incorporate adaptation into City lease negotiations	Updated leasing guidelines to incorporate adaptation
FLD-05: Update the City's existing Stormwater Management Plan	Updates to Stormwater Management Plan
FLD-06: Conduct citywide beach stabilization study	Completed study
FLD-07: Review and conduct studies of combined riverine/coastal flooding and increased precipitation impacts on watershed flooding	Completed studies

FLD-08: Enhance dunes	# of Dunes enhanced
FLD-09: Inventory and flood-proof vulnerable sewer pump stations	Inventory of sewer pumpstations prioritized by highest vulnerability
	# of retrofitted sewer pump stations
FLD-10: Relocate/Elevate critical infrastructure	# of Facilities/infrastructure identified for retrofit/relocation
	# of Facilities/infrastructure retrofitted/relocated
	# of Facilities with continuity plan to maintain operations
FLD-11: Elevate riverine levees	Prioritized levees and adaptation strategies

MITIGATION ACTIONS - POTENTIAL PERFORMANCE METRICS

ACTION	POTENTIAL PERFORMANCE METRICS
BUILDING + ENERGY	
BE-1: Provide access to renewably generated electricity	% of residential customers that purchase 100% renewable electricity % of non-residential customers that purchase 100% renewable electricity
BE-2: Increase use of solar power	Regulatory change to increase the use of solar power
BE-3: Promote community solar and microgrids	# of identified local opportunity sites kWh per year generated by community solar facilities located within Long Beach # of critical facilities connected to islandable microgrid power (that can stand alone from the grid)
BE-4: Develop a residential and commercial energy assessment and benchmarking program	# housing units that received an energy audit # certified HERS raters in the community
BE-5: Provide access to energy efficiency financing, rebates, and incentives for building owners	Established energy resource center # of residents and businesses engaged by the City through the energy resource center Use of financial incentives, rebates, and other programs and associated financial/energy savings
BE-6: Perform municipal energy and water audits	# municipal building/facility audits completed Electricity and natural gas use
BE-7: Update building codes to incentivize electric new residential	Updated building code to incentivize electric new residential and commercial buildings
BE-8: Implement near-term measures to reduce emissions related to oil and gas extraction	# measures implemented to reduce oil and gas emissions
TRANSPORTATION	
T-1: Increase frequency, speed, connectivity, and safety of transit options	Increase in ridership on Long Beach Transit, Metro Blue Line, and regional transit routes Increase in operating hours # increase of rapid bus and regional connector routes Increase in safety perception from transit riders Decrease in crime on transit Free/reduced price transit passes for CSULB and LBCC students

T-2: Expand and improve pedestrian infrastructure citywide	% change in travel mode for short trips (e.g., less than 2 miles) made by walking or personal mobility device
	% change in vehicle-pedestrian accidents
	# of improved crosswalks (e.g., signalized, non-signalized, scrambles)
	# of installed traffic calming measures (e.g., medians, roundabouts, bulb-outs, curb extensions)
T-3: Increase bikeway infrastructure	% of city population that can walk to bikeshare stations within 5 minutes
	% change in usage of Long Beach Bike Share (# of rides and miles)
	% change in e-scooter ridership (# of rides and miles)
	# of new miles of bikeways delivered by class
T-4: Implement the San Pedro Bay Ports Clean Trucks Program	% of zero emissions heavy-duty drayage trucks
T-5: Develop an Electric Vehicle Infrastructure Master Plan	Number of publicly accessible EV charging stations
	Number of publicly accessible EV charging stations installed in disadvantaged communities (CalEnviroScreen)
	Number of building permits issued for private property EV charging stations
T-6: Increase employment and residential development along primary transit corridors	Quantification of additional capacity for development in TOD areas
	# of city permits issued for TOD development
	# of housing units permitted in transit areas
	# of affordable housing units permitted in transit areas
T-7: Update the Transportation Demand Management Ordinance	Increase in population and employment density in transit station areas and along transit corridors
	# of employees participating in the TDM program
	% or # of employers that participate in TDM programs
T-8: Increase density and mixing of land uses	# of TDM requirements leveraged through new development permits
	% increase in population and employment density within ½ mile of high-frequency transit routes
	Quantification of additional capacity for development in TOD areas
T-9: Integrate SB 743 planning with CAAP process	% change in travel mode for short trips (e.g., less than 2 miles) made by walking, biking, transit, or personal mobility device
	VMT reduction

WASTE

W-1: Ensure compliance with state law requirements for multi-family residential and commercial property recycling programs	Waste reduction and recycling outreach materials developed and distributed
	% compliance of multi-family and commercial properties
W-2: Develop a residential organic waste collection program for City-serviced accounts	Organic waste outreach materials developed and distributed
	% of organic waste diverted from landfills and SERRF
W-3: Partner with private waste haulers to expand organic waste collection community wide	% compliance of multi-family and commercial properties
	Tons of organic waste collected from multi-family and commercial properties
	Organic waste outreach materials developed and distributed
W-4: Identify organic waste management options	Tons of organic waste sent to different facility types
	Identified process for organic waste disposal