LOS ANGELES

CLIMATE-SMART CITIES

Methods and Data Sources Analysis Results

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Los Angeles Climate-Smart Cities

Cool Analysis Results - Cool analysis layers identify areas where there are significant urban heat island issues

Daytime LST (F) Hotspots (Landsat)

Data Interpretation: Average land surface temperature (LST) in F° is classified using a natural breaks classification from 3 to 5 increasing in LST intensity.

Moderate (3) = 99.94 to 102.71 (Fº)
High (4) = 102.72 to 106.14 (Fº)
Very High (5) = 106.15 to 123.65 (Fº)

Methodology: This model identifies urban heat island hotspots within the Los Angeles planning area with elevated daytime LST averaging at least 1.25 degrees Fahrenheit above the mean daily temperature during August. The model results were derived from Landsat satellite data, which provides a 30m downscaled average land surface temperature over 16 day period. The model used an average of 2 Landsat scenes from August 12, 2017 and August 28, 2017. The LST was derived using a methodology developed by ESRI that converts the thermal bands of the imagery into degrees Fahrenheit using the raster function template editor. A more detailed description of the methodology can be found here - https://blogs.esri.com/esri/arcgis/2014/01/06/ deriving-temperature-from-landsat-8-thermalbands-tirs/

Data/Data Sources: Landsat data scenes were acquired using the Reverb NASA platform (http://reverb.echo.nasa.gov).

Nighttime LST (F) Hotspots (MODIS)

Data Interpretation: Average land surface temperature (LST) in F° is classified using a natural breaks classification from 3 to 5 increasing in LST intensity.

Moderate (3) = 67.60 to 67.70 (Fº)
High (4) = 67.71 to 67.89 (Fº)
Very High (5) = 67.90 to 69.74 (Fº)

Methodology: This model identifies nighttime urban heat island hotspots within the Los Angeles planning area with elevated nighttime LST averaging at least 1.25 degrees Fahrenheit above the mean daily temperature during August. The model results were derived from MODIS satellite data, which provides a 1km downscaled average land surface daily temperatures averaged over an eight day period using a split-window algorithm. The model used an average of 8 MODIS/Aqua MYDA2 scenes from August and September, 2017.

Data/Data Sources: MODIS data scenes were acquired using the Reverb NASA platform (http://reverb.echo.nasa.gov).

Daytime LST (F) Hotspots (MODIS)

Data Interpretation: Average land surface temperature (LST) in F° is classified using a natural breaks classification from 3 to 5 increasing in LST intensity.

Moderate (3) = 108.92 to 112.52 (Fº)
High (4) = 112.53 to 116.12 (Fº)
Very High (5) = 116.13 to 122.47 (Fº)

Methodology: This model identifies urban heat island hotspots within the Los Angeles planning area with elevated daytime LST averaging at least 1.25 degrees Fahrenheit above the mean daily temperature during August. The model results were derived from MODIS satellite data, which provides a 1km downscaled average land surface daily temperatures averaged over an eight day period using a split-window algorithm. The model used an average of 8 MODIS/Aqua MYDA2 scenes from August and September, 2017.

Data/Data Sources: MODIS data scenes were acquired using the Reverb NASA platform (http://reverb.echo.nasa.gov).

Overall Cool Priorities

Data Interpretation: This layer identifies areas where urban heat island exposure is highest.

Moderate (3) = Moderate Cool Priority
High (4) = High Cool Priority
Very High (5) = Very High Cool Priority

Methodology: This model identifies areas where urban heat island exposure is highest. Overall Cool Priorities were derived using a weighted overlay tool with the following weights: Daytime LST Hotspots - Landsat (80%); Nighttime LST Hotspots - MODIS (10%); and Daytime LST Hotspots - MODIS (10%).

Connect Analysis Results – Connect analysis layers identify areas there is significant potential for active transportation demand projects

Connect Low-income Communities to Job Rich Districts

Data Interpretation: Routes providing the most cost effective path from a low income community to a job rich area.

Very High (5) = all routes identified in the least cost path analysis.

Methodology: This model identifies the most cost effective potential routes for walking and biking between low income communities and job rich areas. Low income communities were identified as those block groups where more than 50% of the population was living below twice the federal poverty level. Job rich districts were identified using an employees per mile density layer derived from ESRI business analyst data. A least cost path analysis was completed to derive all possible routes between low income communities as the source and job rich districts as the destinations. The identified routes were buffered by 200 ft. to identify the corridors with high potential for active transportation projects.

Data/Data Sources:
Source/Destinations:
Low Income Communities: Percent of the population living below two times the Federal poverty level (5-year estimate, 2008-2012)
Business Locations: ESRI business analyst
Least Cost Path Cost Grid: Potential Bike Baths, Existing Bike Paths, NAVTEQ Streets 2015 Q3

Connect Low-income Communities to Medical Facilities and Shopping Centers

Data Interpretation: Routes providing the most cost effective path from a low income community to a medical facility or grocery store.

Very High (5) = all routes identified in the least cost path analysis.

Methodology: This model identifies the most cost effective potential routes for walking and biking between low income communities and medical facilities and grocery stores. Low income communities were identified as those block groups where more than 50% of the population was living below twice the federal poverty level. Medical facilities and grocery stores were identified from ESRI business analyst data. A least cost path analysis was completed to derive all possible routes between low income communities as the source and medical facilities and grocery stores as the destinations. The identified routes were buffered by 200 ft. to identify the corridors with high potential for active transportation projects.

Data/Data Sources:

Source/Destinations:
Low Income Communities: Percent of the population living below two times the Federal poverty level (5-year estimate, 2008-2012)
Medical facilities and grocery stores: ESRI business analyst
Least Cost Path Cost Grid: Potential Bike Baths, Existing Bike Paths, NAVTEQ Streets 2015 Q3

Connect Low-income Communities to High Quality Transit

Data Interpretation: Areas that are within High Quality Transit Corridors and low-income communities

High (4) = Area within a 20min walk of a low-income community AND within 1/2 mile of major bus stop AND within a High Quality Transit Corridor (2040)

Moderate (3) = Area within a 20min walk of a low-income community AND within a High Quality Transit Corridor (2040)

Methodology: This model prioritizes areas that have been mapped as High Quality Transit Areas and where these areas overlap areas with a mile of low income communities. High quality transit areas (HQTA) were identified and defined by SCAG as: generally a walkable transit village, consistent with the adopted SCS that has a minimum density of 20 dwelling units per acre and is within a ½ mile of a well-serviced transit stop, and includes transit corridors with minimum 15-minute or less service frequency

during peak commute hours and are spatially represented by Major Transit Stops and High Quality Transit Corridors. Low income communities were identified as those block groups where more than 50% of the population was living below twice the federal poverty level. The model merges Major Transits Stops, 2012 High Quality Transit Corridors, 2040 High Quality Transit Corridors, and areas within a 20 minute (1-mile) walk of a low-income community using and equal weighted sum model.

Data/Data Sources:
Low Income Communities: Block groups where the percent of the population living below two times the federal poverty level (5-year estimate, 2008-2012).
High Quality Transit Corridors: draft High Quality Transit Areas (HQTA) in the SCAG Region for current year 2012 and planned year 2040, updated as of September 28, 2015.
Major Transit Stops in the SCAG Region, updated as of September 28, 2015.

Connect High Bike/Walk Communities to Job Rich Districts

Data Interpretation: Routes providing the most cost effective path from a high bike/walk community to a job rich area.

Very High (5) = all routes identified in the least cost path analysis.

Methodology: This model identifies the most cost effective potential routes for walking and biking between high bike/walk communities and job rich areas. High bike/walk communities were identified as those block groups where more than 50% of the population commutes by walking or bicycle. Job rich districts were identified using an employees per mile density layer derived from ESRI business analyst data. A least cost path analysis was completed to derive all possible routes between high bike/walk communities as the source and job rich districts as the destinations. The identified routes were buffered by 200 ft. to identify the corridors with high potential for active transportation projects.

Data/Data Sources:
Source/Destinations:
High Bike/Walk Communities: Percent of the population with >50% population biking or walking to work. (5-year estimate, 2008-2012)
Business Locations: ESRI business analyst
Least Cost Path Cost Grid: Potential Bike Baths, Existing Bike Paths, NAVTEQ Streets 2015 Q3

Connect High Bike/Walk Communities to Medical Facilities and Shopping Centers

Data Interpretation: Routes providing the most cost effective path from a high bike/walk community to a job rich area.

Very High (5) = all routes identified in the least cost path analysis.

Methodology: This model identifies the most cost effective potential routes for walking and biking between high bike/walk communities and medical facilities and grocery stores. High bike/walk communities were identified as those block groups where more than 50% of the population commutes by walking or biking. . Medical facilities and grocery stores were identified from ESRI business analyst data. A least cost path analysis was completed to derive all possible routes between high bike/walk communities as the source and medical facilities and grocery stores as the destinations. The identified routes were buffered by 200 ft. to identify the corridors with high potential for active transportation projects.

Data/Data Sources:
Source/Destinations:
High Bike/Walk Communities: Percent of the population with >50% population biking or walking to work. (5-year estimate, 2008-2012)
Medical Facilities and Grocery Stores: ESRI business analyst
Least Cost Path Cost Grid: Potential Bike Baths, Existing Bike Paths, NAVTEQ Streets 2015 Q3

CT06: Provide Access to LA River Revitalization Projects

Data Interpretation: Areas within a 10 minute walk (1/2 mile) of an identified LA River Revitalization Project.

Very High (5) = All areas within a 10 minute walk to all proposed Los Angeles River Revitalization Projects

Methodology: A primary goal in the Sustainable LA Plan is to increase access to parks and open space with a focus on a revitalized LA River and building out the LA River Bike Path. This model identifies the areas within a 10 minute walk to all proposed Los Angeles River Revitalization Projects. Network Analyst tools were used to derive the 10-minute walk service area.

Data/Data Sources:

CT07: Provide Access to Public Schools

Data Interpretation: Areas within a 10 minute walk (1/2 mile) of an identified LA River Revitalization Project.

Very High (5) = All areas within a 10 minute walk to schools identified as a Top 50 Safe Routes to Schools Priority

High (4) = All areas within a 10 minute walk to the remaining public schools

Methodology: This model identifies the areas within a 10 minute walk to all public schools. The 10 minute walk areas for the top 50 priority schools identified in safe routes to schools report were given highest priority (5); the 10 minute walk service areas for the remainder of the public schools were given a priority moderate to high priority value of 4. Network Analyst tools were used to derive the 10-minute walk service areas.

Data/Data Sources
LA Public Schools - LA County Open Data Portal

Top 50 Safe Routes to School Priorities - LA Safe Routes to School (created by TPL)
https://saferoutes.lacity.org/wpcontent/uploads/2014/12/SRTS_Fact_Sheet_2013-05-28.pdf

CT08: Provide Access to Universities and Colleges

Data Interpretation: Areas within a 10 minute walk (1/2 mile) of an a university or college

Very High (5) = All areas within a 10 minute walk to a university or college

Methodology: This model identifies the areas within a 10 minute walk to all a university or college. Network Analyst tools were used to derive the 10-minute walk service area.

Data/Data Sources

College and University Locations – Southern California Association of Governments (SCAG)

CT09: First/Last Mile Priorities

Data Interpretation: This model prioritizes areas within a mile of low-income communities, job-rich areas, grocery stores, and medical facilities.

Very High (5) = Areas within a mile of 3 or 4 of all destinations listed above

High (4) = Areas within a mile of 2 of all destinations listed above

Moderate (3) = Areas within a mile of 1 of destinations listed above

Methodology: In 2012, the Los Angeles Metro Board authorized development of the First-Last Mile Strategic Plan with the goal of coordinating infrastructure investments that would expand reach and ridership of transit. The draft study found that "all metro riders must contend with the first-last mile challenge, and the easier it is to access the system, the more likely people are to use it" . This layer prioritizes areas where there is overlap within a mile of of low-income communities, job-rich areas, grocery stores, and medical facilities. Highest priority (5) was given to areas where there is overlap of 3 or 4 mile service areas of low-income communities, job-rich areas, grocery stores, and medical facilities; high (4) priority was given to areas where there is overlap of the mile service areas groups for 2 of the above groups; and moderate priotiy was given to areas where there is a mile service area for only one group.

Data/Data Sources

Low Income Communities: Percent of the population living below two times the federal poverty level (5-year estimate, 2008-2012)
Job Rich Areas: LA County Business Locations
Shopping Centers: NAICS codes for grocery stores from ESRI business analyst data
Medical Facilities: NAICS codes for grocery stores from ESRI business analyst data

CTAll: Overall Connect Priorities

Data Interpretation: This layer identifies areas where the potential for active transportation demand projects is highest.

Moderate (3) = Moderate Connect Priority
High (4) = High Connect Priority
Very High (5) = Very High Connect Priority

Methodology: Overall Connect Priorities were derived using a weighted overlay tool using equal weights: Connect Low-income Communities to Job Rich Districts (11%); Connect Low-income Communities to Medical Facilities and Shopping Centers (11%); Connect Low-income Communities to High Quality Transit (11%); Connect High Bike/Walk Communities to Job Rich Districts (11%); Connect High Bike/Walk Communities to Medical Facilities and Shopping Centers (11%); Provide Access to LA River Revitalization Projects (11%); Provide Access to Public Schools (11%); Provide Access to Universities and Colleges (11%); First/Last Mile Priorities (11%)

Absorb Analysis Results – Absorb analysis layers identify areas there is significant potential for stormwater green infrastructure infiltration projects

AB01: Riparian Areas

Data Interpretation: This model identifies riparian areas that can store or absorb local rainfall and remove pollutant and sediments in stormwater runoff.

Very High (5) = All riparian features

Methodology: McElfish e.t al. 2008 found that pollutants are removed within a 15-30 ft. buffer of a wetland and sediment was removed within 30 to 100 feet buffer[1]. Areas mapped included streams, and riparian areas. All features were buffer areas by 30 feet. Southern California Wetlands Mapping Project riparian areas were not buffered as they appear buffered already. Priority value 5 (High) given to all buffered features.

Data/Data Sources:

AB02: Flood Prone Areas

Data Interpretation: This model assigns flooding risk priorities based on 2015 Flood Advisory Zones developed by FEMA.

Very High (5) = Areas within 100-yr flood zone
High (4) = Areas within 500-yr flood zone

Methodology: The Flood Advisory Zones take into consideration a combination storm surge, wave setup, and overland wave action. Zone A designates areas subject to coastal flood effects based on the

[1] Planner's Guide to Wetland Buffers for Local Governments. (n.d.). Retrieved from http://www.bing.com/cr?IG=8442A0A6979841F1A2423D4CFA756FAD&CID=005A9FAA01C06ED12A31938E003D6FB6&rd=1&h=lZLqu0-jzySr2-bq486boXgGvKmZZj_zQ2hjQA46LKM&v=1&r=http://www.eli.org/sites/default/files/eli-pubs/d18_01.pdf&p=DevEx.LB.1,5501.1

1% annual chance flood elevation (100-yr flood event). Zone X designates areas subject to coastal flood effects associated with 0.2% annual chance flood event (500-yr flood event). The Advisory Flood Zones are intended to serve as the best available data for understanding coastal flood hazard risk and the elevations that communities should build to in order to protect themselves from future coastal flood events. Priority values of known flooding areas (class A,AE,AH,AO) are 5 (Very High) and 500-yr flood areas are 3 moderate.

Data/Data Sources:
FEMA Flood Zones – LA County Department of Public Works

AB03: Permeable Soils

Data Interpretation: This model identifies areas with higher permeable soils.

Very High (5) = Areas with high permeability (KSAT > 0.75) soils on slopes of <= 3%
High (4) = Areas with high permeability (KSAT > 0.75) soils on slopes of > 3% and <=6%

Methodology: Permeable soils are soils with KSAT values of 0.75 and higher and slopes <=6%. The KSAT value is most reliable measure of the infiltration rate of a soil and is based on soil texture and structure. A KSAT Value above 0.3 are indicative of permeable soils. The Technical Advisory Team recommended KSAT value above 0.75 to identify priority permeable soils. Mapped areas with slope <=3% are coded 5 (Very High) and areas with slope >3% but <=6% are coded 4 (High).

Data/Data Sources
GWAM High Infiltration Soils - Council for Watershed Health

AB04: Spreading Grounds

Data Interpretation: This model identifies spreading grounds that can store or absorb local rainfall

Very High (5) = All areas within 1500ft of a spreading ground

Methodology: The Los Angeles Department of Public Works uses water conservation facilities or spreading grounds adjacent to river channels and in soft-bottom channels for flood control. Spreading grounds permit water to percolate into groundwater basins for later Spreading grounds from LA County. All spreading ground polygon features were buffered by 1500 feet and assigned a very high priority value (5).

Data/Data Sources:
Spreading grounds – Los Angeles County Open Data portal

AB05: Wetland Areas

Data Interpretation: This model identifies wetland areas that can store or absorb local rainfall.

Very High (5) = All areas within 30ft of a wetland

Methodology: Wetlands are critical natural infrastructure for mitigating and minimizing flood damage. Wetlands store and slowly release surface water, rain, snowmelt, groundwater and flood waters. All wetland features were buffered by 30 feet and assigned a very high priority value (5).

Data/Data Sources
NHD Streams and Waterbodies – Los Angeles County Open Data Portal
NWI Wetlands Areas – US Fish and Wildlife Service
Southern California Wetlands Mapping Project Wetlands – California State Northridge

AB06: Lakes and Ponds

Data Interpretation:

Methodology: In cities with high impervious cover like Los Angeles, there is an increased rate and volume of surface water from building and pavement. Ponds and lakes are critical natural infrastructure for mitigating and minimizing flood damage from urban runoff. All lake and pond features were buffered by 30 feet and assigned a very high priority value (5).

Data/Data Sources
NHD Streams and Waterbodies – Los Angeles County Open Data Portal
NWI Wetlands Areas – US Fish and Wildlife Service

AB07: Groundwater Forebays

Data Interpretation: This model identifies groundwater forebay areas with highest likelihood of groundwater aquifer infiltration.

Methodology: Groundwater forebay areas are areas and where confining layers in the aquifer do not prevent the downward migration of water and where recharge is likely to occur.

Data/Data Sources
LA Central Basins Groundwater Forebay - Council for Watershed Health Council for Watershed Health Groundwater Forebay - San Fernando Valley LA Department of Water and Power (LADWP)

AB08: Groundwater Basins

Data Interpretation: This model identifies areas overlaying ground water basins with at least some likelihood of infiltration to a ground water aquifer.

> Very High (5)= all areas identified as overlaying groundwater basins in the upper portion of the LA Basin (San Fernando Basin).
> High (4) = the groundwater forebay areas that overlap within the Central LA Basin

Methodology: The groundwater basin of upper basin were classified as very high priority indicating these areas have highest potential for groundwater infiltration. The forebay areas within the LA Central Basin were classified as high priority indicating high potential for groundwater infiltration.

Data/Data Sources
Groundwater Basins – Los Angeles County Open Data Portal
LA Central Basins Groundwater Forebay - Council for Watershed Health Council for Watershed Health Groundwater Forebay - San Fernando Valley LA Department of Water and Power (LADWP)

AB09: Historic Channels

Data Interpretation: This layer identifies areas within 500ft of a concrete lined stormwater channels that were as a proxy for historic channels.

Methodology: Concrete channels, which have replaced natural washes, send stormwater quickly downstream. Where possible, parks can be located at the downstream end of drainage corridors. Creative design will incorporate more drainage features, providing opportunities for further integration of LID principles. All features were buffered by 500 feet and assigned a very high priority value (5).

Data/Data Sources
Historic channels/Open channels: Los Angeles County Open Data Portal

AB10: Slope

Data Interpretation: This layer identifies areas where the slope is <18%.

Very High (5) = slopes up to 6%
Moderate (3) = slopes between 6% and 18%

Methodology: Green infrastructure strategy employed depends upon physical constraints and opportunities of the location as well as the purpose of the green infrastructure. Shallow slopes (<6%) are easier to design for infiltration projects. However, green infrastructure can be implemented on slopes up to 18%. This layer identifies areas where the slope is <18%. Very high priority was assigned to slopes up to 6% and moderate priority was assigned to slopes between 6% and 18%.

Data/Data Sources
Slope layer provided as summarized layer based on the 3ft DEM developed by The River Project

ABall: Overall Absorb Priorities

Data Interpretation: This layer identifies areas where the potential for groundwater infiltration projects from stromwater is highest.

Moderate (3) = Moderate Absorb Priority
High (4) = High Absorb Priority
Very High (5) = Very High Absorb Priority

Methodology: This model was created using a weighted overlay identifying where there is overlap between all the Absorb analysis layers that the advisory team considered important for prioritizing infiltration projects. Not all analysis layers were included in the overlay priority layer. The analysis layers

were weighted as follows: Riparian areas (5%); Flood Prone areas (5%); Permeable Soils (25%); Wetland Areas (5%); Groundwater Basins (30%); Historic Channels (10%); and Slope (20%).

Protect Analysis Results – Protect analysis layers identify areas there is significant potential for green infrastructure to address risk of coastal and riverine flooding.

PR01: Coastal High Hazard Areas

Data Interpretation: The exposure of a reach of coastline to storm waves is a qualitative indicator of the potential for shoreline erosion. Protection or restoration of natural habitats in these areas may mitigate impacts.

Very High (5) = Flood zones subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action

Methodology: This model assigns Coastal High Hazard Areas risk based on FEMA Flood Insurance Rate Mapping (FIRM). Specifically those areas mapped as flood zones V and VE were assign very high priority (5).

Data/Data Sources

FEMA Flood Zones: LA County Department of Public Works

PR02: Projected Storm Inundation Areas

Data Interpretation: The exposure of a reach of coastline to inundation is a qualitative indicator of the potential for shoreline erosion. Protection or restoration of natural habitats in these areas may mitigate impacts.

Very High (5) = Flood zones with additional hazards due to sea level rise for 0.5m sea level rise
High (4) = Flood zones with additional hazards due to sea level rise for 1m sea level rise
Moderate (3) = Flood zones with additional hazards due to sea level rise for 1.5m sea level rise

Methodology: In the National Research Council report "Sea-Level Rise for the Coasts of California, Oregon, and Washington" (2012) sea level rise for Southern California is projected to be from 17 to 66 inches (0.43 to 1.68 meters) between the year 2000 and 2100. This model assigns priority value to areas expected to have increased storm inundation due to climate change and expected sea-level rise. Using the CoSMoS 100 year storm flood projections and set the priority value to 5 for 0.5m sea level rise, 4 for 1m sea level rise, 3 for 1.5m sea level rise areas.

Data/Data Sources

USGS, Pacific Coastal Marine Science Center, Coastal Storm Modeling System (CoSMoS) 3.0 100 year storm flood projections https://walrus.wr.usgs.gov/coastal_processes/cosmos/socal3.0/index.html

PR03: Cliff Erosion

Data Interpretation: This layer identifies cliff erosion hazard zones with additional hazards due to sea level rise. Protection or restoration of natural habitats in areas susceptible to cliff and coastline erosion areas may mitigate impacts and are indicative of where beach erosion may be accelerated potentially impacting recreation and critical infrastructure (e.g. wastewater buildings).

Very High (5) = Cliff retreat projections due to sea level rise for 0.5m sea level rise
High (4) = Cliff retreat projections due to sea level rise for 1m sea level rise
Moderate (3) = Cliff retreat projections due to sea level rise for 1.5m sea level rise

Methodology: In the National Research Council report "Sea-Level Rise for the Coasts of California, Oregon, and Washington" (2012) sea level rise for Southern California is projected to be from 17 to 66 inches (0.43 to 1.68 meters) between the year 2000 and 2100. This model assigns priority to areas with high probability for cliff erosion. Using the CoSMoS 100 year cliff retreat projection uncertainty polygons and set the priority value to 5 for 0.5m sea level rise, 4 for 1m sea level rise, 3 for 1.5m sea level rise areas.

Data/Data Sources

USGS, Pacific Coastal Marine Science Center, Coastal Storm Modeling System (CoSMoS) 3.0 cliff retreat projections https://walrus.wr.usgs.gov/coastal_processes/cosmos/socal3.0/index.html

PR04: Shoreline Change

Data Interpretation: This layer identifies dune (sandy shore) erosion hazard zones with additional hazards due to sea level rise. Protection or restoration of natural habitats in areas susceptible to cliff and coastline erosion areas may mitigate impacts and are indicative of where beach erosion may be accelerated potentially impacting recreation and critical infrastructure (e.g. wastewater buildings).

Very High (5) = Sandy shore erosion projections due to sea level rise for 0.5m sea level rise
High (4) = Sandy shore erosion projections due to sea level rise for 1m sea level rise
Moderate (3) = Sandy shore erosion projections due to sea level rise for 1.5m sea level rise

Methodology: In the National Research Council report "Sea-Level Rise for the Coasts of California, Oregon, and Washington" (2012) sea level rise for Southern California is projected to be from 17 to 66 inches (0.43 to 1.68 meters) between the year 2000 and 2100. This model assigns priority to areas with high probability for beach line. Using the CoSMoS 100 year dune (sandy shore) projection uncertainty polygons and set the priority value to 5 for 0.5m sea level rise, 4 for 1m sea level rise, 3 for 1.5m sea level rise areas.

Data/Data Sources

USGS, Pacific Coastal Marine Science Center, Coastal Storm Modeling System (CoSMoS) 3.0 dune (sandy shore) projections https://walrus.wr.usgs.gov/coastal_processes/cosmos/socal3.0/index.html

PR05: Flood Prone Area

Data Interpretation: This model assigns flooding risk priorities based on 2015 Flood Advisory Zones developed by FEMA.

Very High (5) = Areas within 100-yr flood zone
High (4) = Areas within 500-yr flood zone

Methodology: The Flood Advisory Zones take into consideration a combination storm surge, wave setup, and overland wave action. Zone A designates areas subject to coastal flood effects based on the 1% annual chance flood elevation (100-yr flood event). Zone X designates areas subject to coastal flood effects associated with 0.2% annual chance flood event (500-yr flood event). The Advisory Flood Zones are intended to serve as the best available data for understanding coastal flood hazard risk and the elevations that communities should build to in order to protect themselves from future coastal flood events. Priority values of known flooding areas (class A,AE,AH,AO) are 5 (Very High) and 500-yr flood areas are 3 moderate.

Data/Data Sources:
FEMA Flood Zones – LA County Department of Public Works

PRAll: Overall Protect Priorities

Data Interpretation: This layer identifies areas where the potential for green infrastructure to address risk of coastal and riverine flooding.

Moderate (3) = Moderate Absorb Priority
High (4) = High Absorb Priority
Very High (5) = Very High Absorb Priority

Methodology: This model was created using a weighted overlay identifying where there is overlap between all the Protect analysis layers that the advisory team considered important for prioritizing green infrastructure that can address risk of coastal and riverine flooding. The analysis layers were weighted as follows: Coastal High Hazard Areas (15%); Projected Storm inundation Areas (15%); Cliff Erosion (15%); Shoreline Change (15%); and Flood Prone Areas (40%).

Equity Analysis Results: Equity analysis layers identify areas with populations considered to be vulnerable to the impacts of climate change.

CE01: People of Color

Data Interpretation: This layer highlights block groups with high percent of people living below twice the federal poverty level and represent the top three quintiles for the study area.

Very High (5) = >86.7%
High (4) = 66.2% - 86.6%
Moderate (3) = 41.1% -66.1%

Methodology: Race and ethnicity is a key social determinant of health. Numerous studies have suggested that people of color are disproportionately exposed to pollutants and toxic substances. The block group data was classified into quintiles and assigned priority on a scale from 1 to 5, 5 being the highest quintile (20%)

Data/Data Sources
EPA EJScreen 2017

CE02: Low Income Population

Data Interpretation: This layer highlights block groups with high percent of people living below twice the federal poverty level and represent the top three quintiles for the study area.

Very High (5) = >53.8%
High (4) = 31.6% - 53.8%
Moderate (3) = 19.3% -31.5%

Methodology: Poverty is a key social determinant of health. Numerous studies have suggested that impoverished populations are more likely than wealthier populations to experience adverse health outcomes when exposed to environmental pollution. The block group data was classified into quintiles and assigned priority on a scale from 1 to 5, 5 being the highest quintile (20%)

Data/Data Sources
EPA EJScreen 2017

CE03: Less Than HS Education

Data Interpretation: This layer highlights block groups with high percent of people with less than a high school education and represent the top three quintiles for the study area.

Very High (5) = >25.1%
High (4) = 17.2% - 25.1%
Moderate (3) = 7.4% -17.1%

Methodology: Educational attainment is an important social determinant. Studies have suggested that lower educational attainment can decrease health status from economic hardship, stress, fewer occupational opportunities, lack of social support, and reduced access to health-protective resources such as medical care, prevention and wellness initiatives, and nutritious food. The block group data was classified into quintiles and assigned priority on a scale from 1 to 5, 5 being the highest quintile (20%)

Data/Data Sources
EPA EJScreen 2017

CE04: Linguistic Isolation

Data Interpretation: This layer highlights block groups with high percent of linguistically isolated households and represent the top three quintiles for the study area.

Very High (5) = >13.8%
High (4) = 5.6% - 13.8%
Moderate (3) = 1.6% -5.5%

Methodology: Linguistic Isolation is an important social determinant. Studies have suggested that lower educational attainment can decrease health status from economic hardship, stress, fewer occupational opportunities, lack of social support, and reduced access to health-protective resources such as medical care, prevention and wellness initiatives, and nutritious food. The block group data was classified into quintiles and assigned priority on a scale from 1 to 5, 5 being the highest quintile (20%)

Data/Data Sources
EPA EJScreen 2017

CE05: Population under 5

Data Interpretation: This layer highlights block groups with high percent of children under 5 and represent the top three quintiles for the study area.

Very High (5) = >7.5%
High (4) = 4.6% - 7.5%
Moderate (3) = 2.3% -4.5%

Methodology: Children under 5 and seniors over64 are particularly vulnerable to adverse health impacts from environmental pollutants.

Data/Data Sources
EPA EJScreen 2017

CE06: Population over 64

Data Interpretation: This layer highlights block groups with high percent of seniors over 64 and represent the top three quintiles for the study area.

Very High (5) = >23.4%
High (4) = 16.9% - 23.4%
Moderate (3) = 12.7% -16.8%

Methodology: Children under 5 and seniors over64 are particularly vulnerable to adverse health impacts from environmental pollutants. The block group data was classified into quintiles and assigned priority on a scale from 1 to 5, 5 being the highest quintile (20%)

Data/Data Sources
EPA EJScreen 2017

CE07: Unemployment

Data Interpretation: This layer highlights block groups with high percent of unemployed individuals and represent the top three quintiles for the study area.

Very High (5) = >75%
High (4) = 55% - 75%
Moderate (3) = 39% -54%

Methodology: High unemployment is an indicator of disadvantaged community. Numerous studies have suggested that disadvantaged communities are disproportionately exposed to pollutants and toxic substances. The census tract data was classified into quintiles and assigned priority on a scale from 1 to 5, 5 being the highest quintile (20%)

Data/Data Sources
CalEnviroScreen v3.0

CE08: Asthma

Data Interpretation: This layer highlights tracts with high percent of asthma rates and represent the top three quintiles for the study area.

Very High (5) = >71%
High (4) = 45% - 70%
Moderate (3) = 31% -44%

Methodology: Asthma rates are a good indicator of population sensitivity to environmental stressors because asthma is both caused by and worsened by pollutants. The census tract data was classified into quintiles and assigned priority on a scale from 1 to 5, 5 being the highest quintile (20%).

Data/Data Sources
CalEnviroScreen v3.0

CE09: Low Birth Weight

Data Interpretation: This layer highlights tracts with high percent of low birth weight rates and represent the top three quintiles for the study area.

Very High (5) = >79%
High (4) = 57% - 79%
Moderate (3) = 38% -56%

Methodology: Low birth weight is a good indicator of a sensitive populations with increased vulnerability to pollutants. The census tract data was classified into quintiles and assigned priority on a scale from 1 to 5, 5 being the highest quintile (20%)

Data/Data Sources
CalEnviroScreen v3.0

CE10: Housing Cost Burden

Data Interpretation: This layer highlights tracts with high percent of households that are making less than 80% of the HUD Area Median Family Income and paying greater than 50% of their income to housing costs. The priorities represent the top three quintiles for the study area.

Very High (5) = >78%
High (4) = 55% - 78%
Moderate (3) = 35% -54%

Methodology: High housing cost burdens and unaffordable housing situations contribute to increased vulnerability to acute and chronic health problems, worsen stress and depression. The census tract data was classified into quintiles and assigned priority on a scale from 1 to 5, 5 being the highest quintile (20%)

Data/Data Sources
CalEnviroScreen v3.0

CEall: Overall Equity Priorities

Data Interpretation: the overall equity analysis priority layer highlights areas where there are greater numbers underserved and disadvantaged populations.

Methodology: This model was created using a weighted overlay identifying where there is overlap between all the Equity analysis layers that the advisory team considered important for prioritizing underserved and disadvantaged populations. The analysis layers were weighted equally.