MATES Data Visualization
Health Risk Data

https://experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/

Username: aqviewer
Password: Aqmd1234

Contents:

- Cancer Risk
- Chronic Hazard Index
- Criteria pollutant design values
- SB535
- CalEnviroScreen 3.0
- Healthy Places Index
- Green Space
- Large Facilities

MATES Data Visualization

experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/?draft=true&views=view_38

Overview | Cancer Risk | Hazard Index (Non-Cancer Risk) | SB535 Disadvantaged Communities | CalEnviroScreen 3.0

Healthy Places Index | Green Space | Freeways and Large Facilities | Trends | Gridded Cancer Risk | Criteria Pollutant Map | Criteria Pollutant Trends

Toxic air p… …than 54%
between … …cluding
cancer … …nts is
responsible… … Coast Air

67% of the … …aminants is
toxic air con… …ommunities

Air …

Formalde…
Arsenic: 6…

Other: 9.90%

Benzene: 10.60%

Diesel Particulate Matter: 67.40%

Air Toxics …

200
100
0

Disadvantaged Community*

Not Defined as a Disadvantaged Community*

How to use the MATES Interactive Data Display

Click tabs for other data

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About Air Toxics Cancer Risk

Information about community profile statistics
Information about emission sources

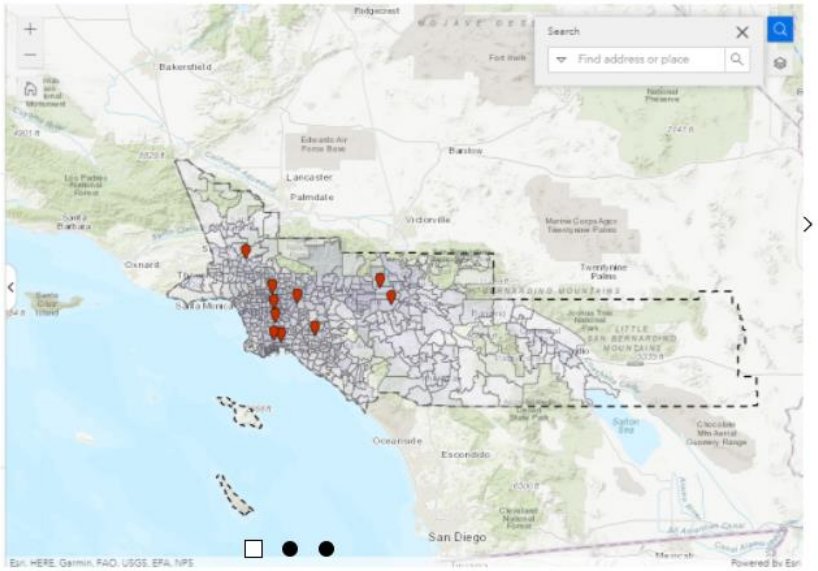
Residential Air Toxics Cancer Risk at MATES Monitoring Sites

Residential Air Toxics Cancer Risk Calculated from Model Data

Cancer Risk (per million)

- ≥2300
- ≥1000
- ≥850
- ≥700
- ≥550
- ≥400
- ≥250
- ≥100

South Coast AQMD Boundary

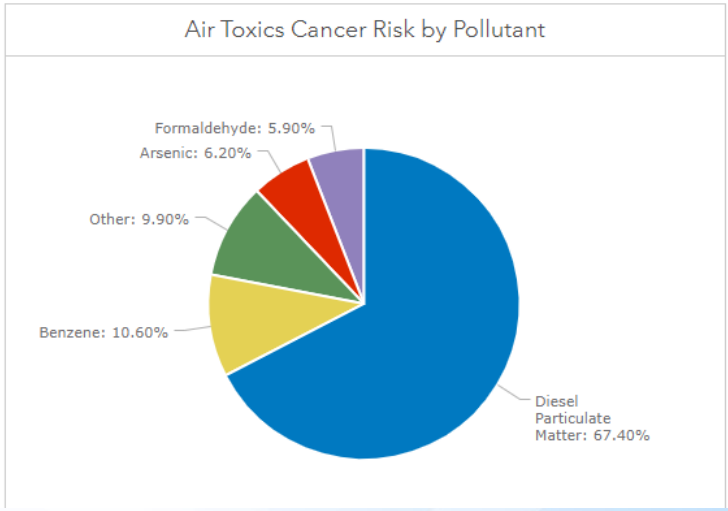


Do not show again

OK

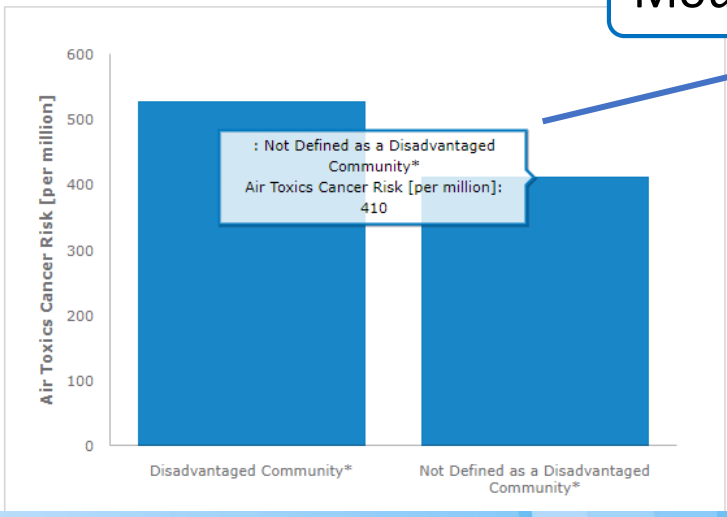
Toxic air pollution in the South Coast Air Basin has decreased by more than 54% between 2012 and 2018, but continues to contribute to health risks, including cancers and other chronic diseases. Exposure to toxic air contaminants is responsible for 454 cancer cases for every million residents in the South Coast Air Basin.

67% of the residential cancer risk due to toxic air contaminants is caused by **diesel particulate matter**



Cancer risk due to toxic air contaminants is **28%** higher in disadvantaged communities

Mouse-over information



MATES Data Visualization

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Residential Air Toxics Cancer Risk Calculated from Model Data

Cancer Risk [per million]

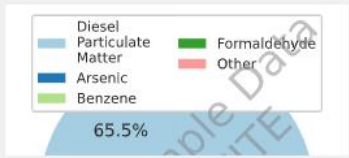
- 1601 - 4800
- 1451 - 1600
- 1301 - 1450
- 1151 - 1300
- 1001 - 1150
- 851 - 1000
- 701 - 850
- 551 - 700
- 401 - 550
- 251 - 400
- 101 - 250
- 0 - 100

South Coast AQMD Boundary

In zip code **91706**, the cancer risk is **562** per million

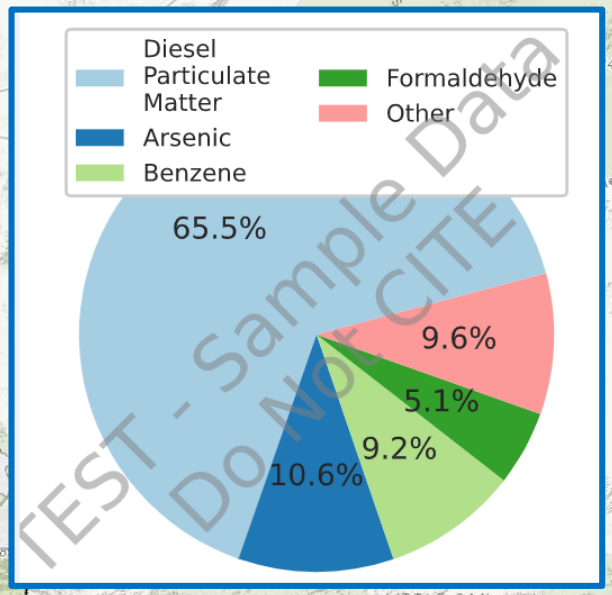
Air toxics cancer risk in this zip code is higher than **84.0%** of the South Coast AQMD population

Pollutants contributing to cancer risk



Zoom to

1 of 4



TEST - Sample Data Do Not CITE

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MATES Data Visualization

experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/page/home/?data_id=dataSource_71-3f073c428925431bba885873c212f9d3%3A259%2CdataSource_81-abc1c7f92104401a87770d0bbc92315f%3A8%2CdataSource_76-c2ddddc38be04c2...

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Healthy Places Index | Green Space | Freeways and Large Facilities | Trends | Gridded Cancer Risk | Criteria Pollutant Map | Criteria Pollutant Trends

Maximum Hazard Index | Respiratory System | Cardiovascular System | Central Nervous System | Reproductive Development | Skin

About Hazard Index

Information about community profile statistics
Information about emission sources

Hazard Index for Respiratory System at MATES Monitoring Sites

South Coast AQMD Boundary

At **Pico Rivera** the residential non-cancer chronic hazard index for the respiratory system is **6.2**

Pollutants contributing to residential non-cancer chronic hazard index for the the respiratory system

Zoom to

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MATES Data Visualization

experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/page/home/?data_id=dataSource_71-3f073c428925431bba885873c212f9d3%3A259%2CdataSource_81-abc1c7f92104401a87770d0bbc92315f%3A8%2CdataSource_76-c2ddddc38be04c2...

CalEnviroScreen 3.0 ranks census tracts in California based on potential exposures to pollutants, adverse environmental conditions, socioeconomic factors and prevalence of certain health conditions. See the CalEnviroScreen website for more information.

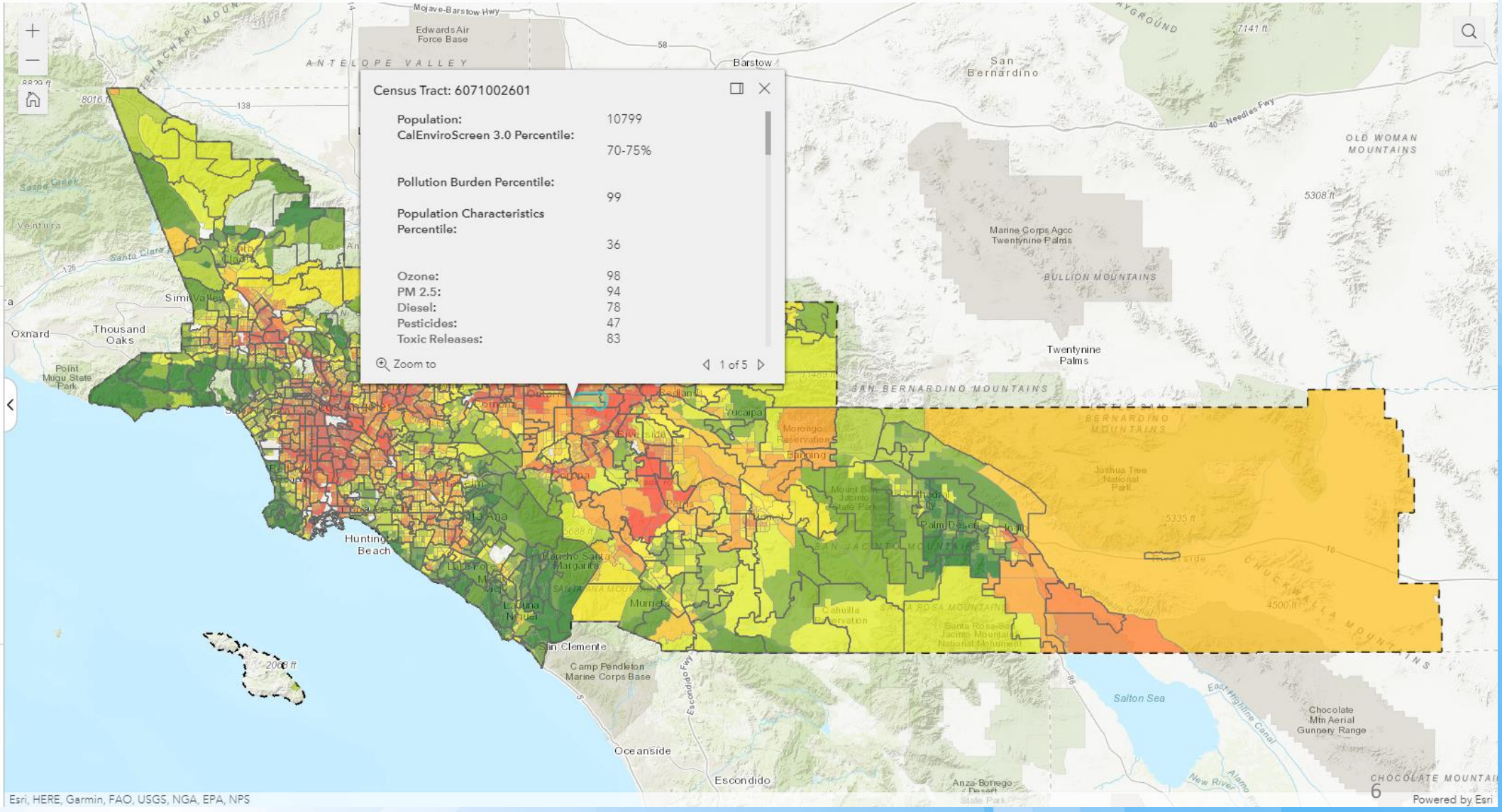
Zip Codes

CalEnviroScreen 3.0

- 91 - 100% (Highest Scores)
- 81 - 90%
- 71 - 80%
- 61 - 70%
- 51 - 60%
- 41 - 50%
- 31 - 40%
- 21 - 30%
- 11 - 20%
- 1 - 10% (Lowest Scores)

South Coast AQMD Boundary

CalEnviroScreen 3.0 is developed by the California Office of Environmental Health Hazard Assessment (OEHHA)



Select stations in map or chart to filter the chart

Overview | Cancer Risk | Hazard Index (Non-Cancer Risk) | SB535 Disadvantaged Communities | CalEnviroScreen 3.0

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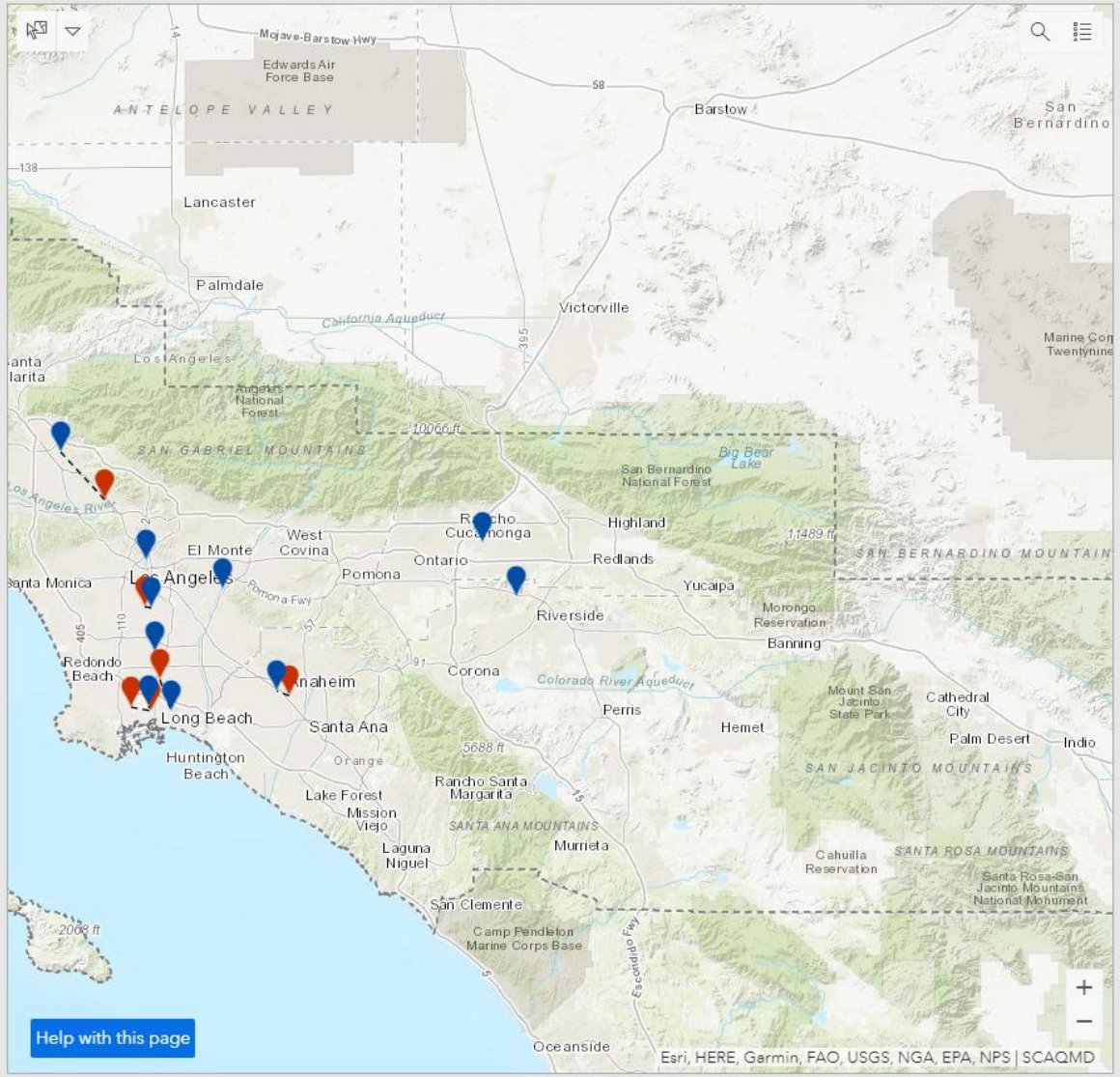
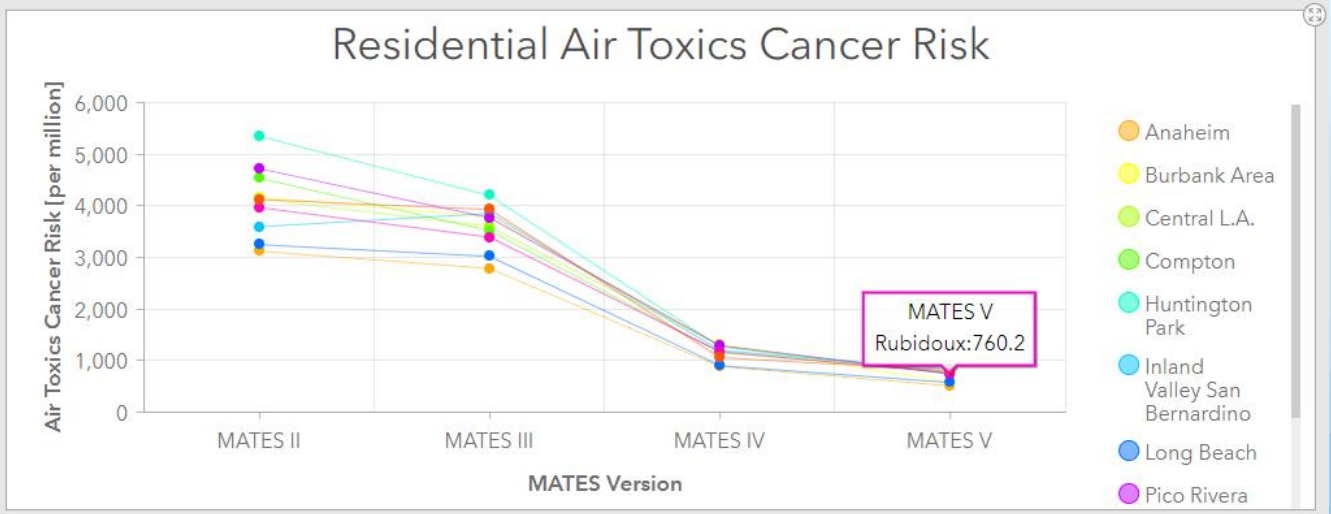
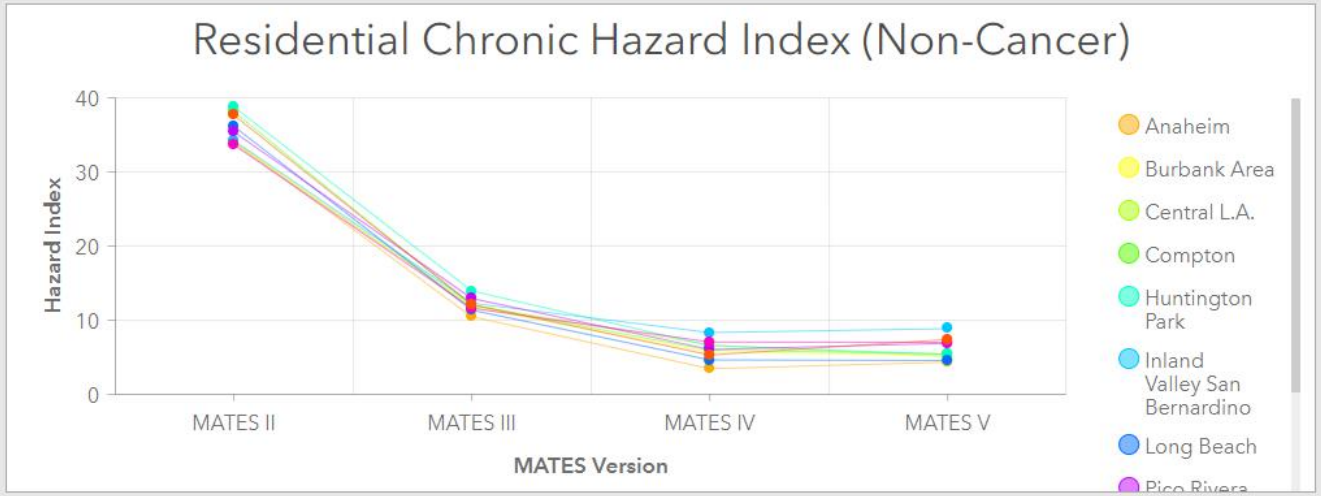


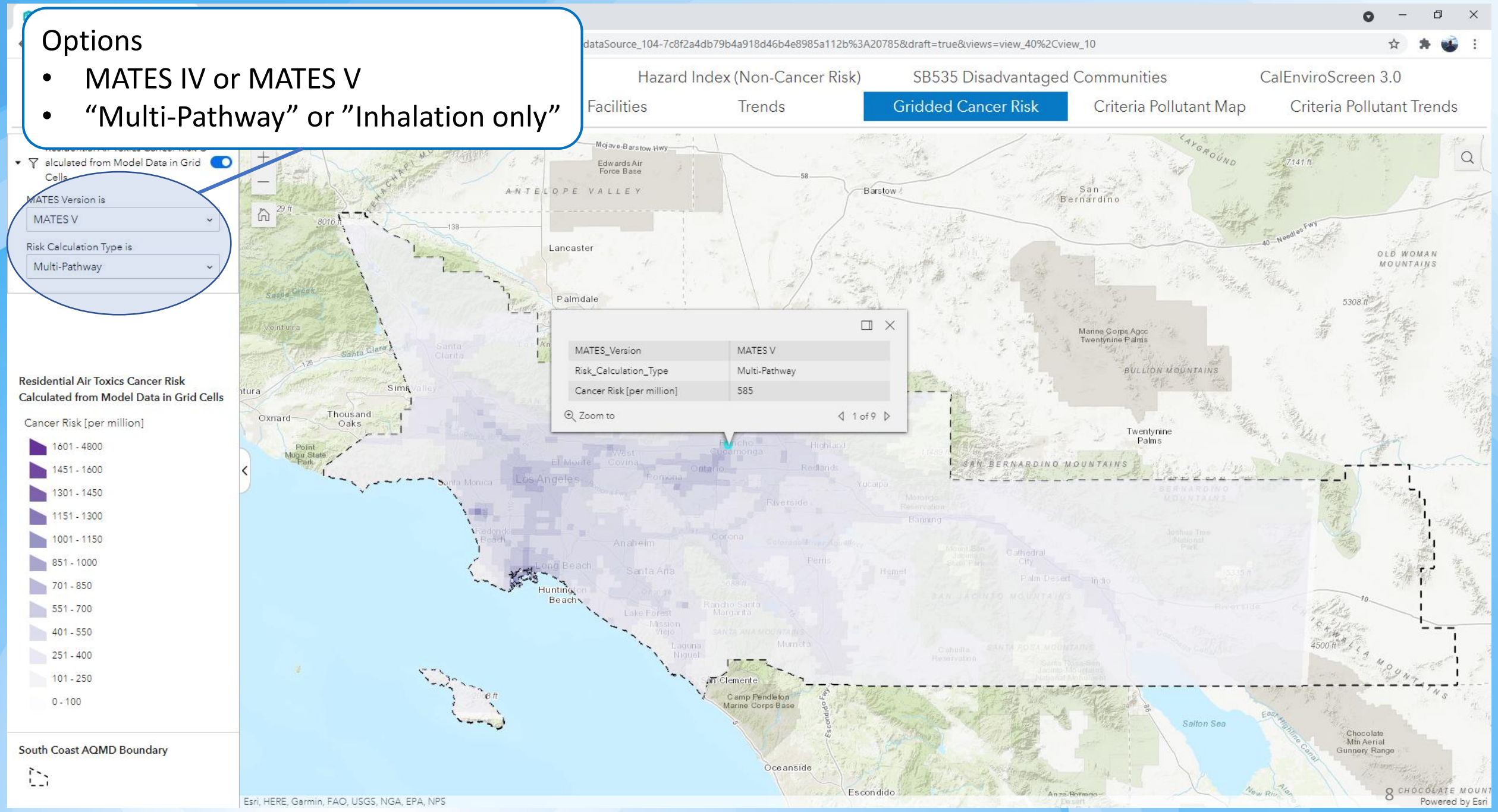




MATES II through MATES IV measurement data was reanalyzed using the same modern data treatment techniques used to analyze MATES V data. Some stations have been relocated over time and are shown with red (past location) and blue (MATES V location) pins on the map.

Options

- MATES IV or MATES V
- “Multi-Pathway” or ”Inhalation only”



About Criteria Pollutants

$PM_{2.5}$ NAAQS: 35 µg m^{-3}
(98th percentile of 24-hour averages in a year, averaged over 3 years)

Year is
2019 (MATES V)

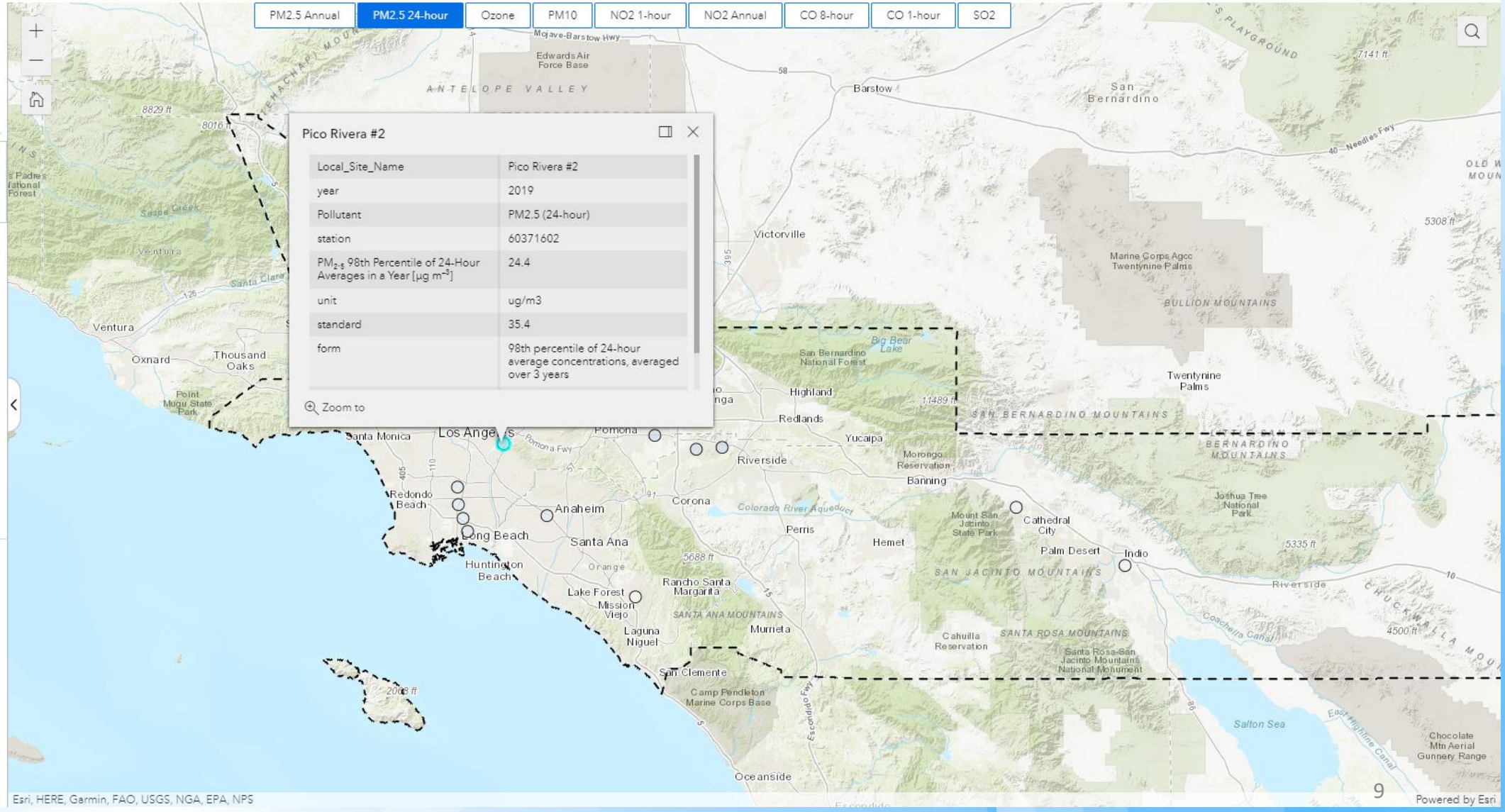
$PM_{2.5}$ 98th Percentile of 24-Hour Averages in a Year

$PM_{2.5}$ 98th Percentile of 24-Hour Averages in a Year [µg m^{-3}]

- ≤85.6
- ≤76.3
- ≤67.0
- ≤57.8
- ≤48.5
- ≤39.2
- ≤29.9
- ≤20.7

South Coast AQMD Boundary

*The design value is calculated from the 1-year statistics that are shown on this page



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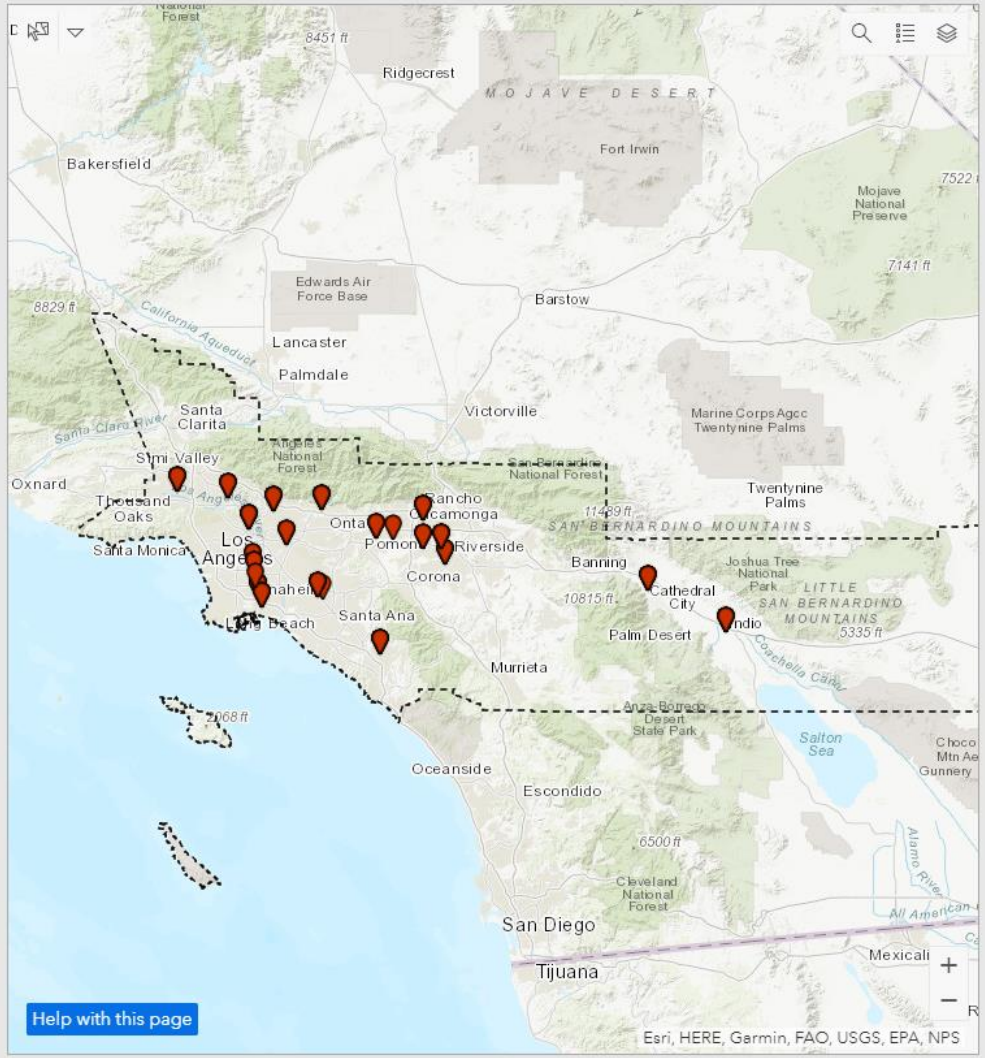
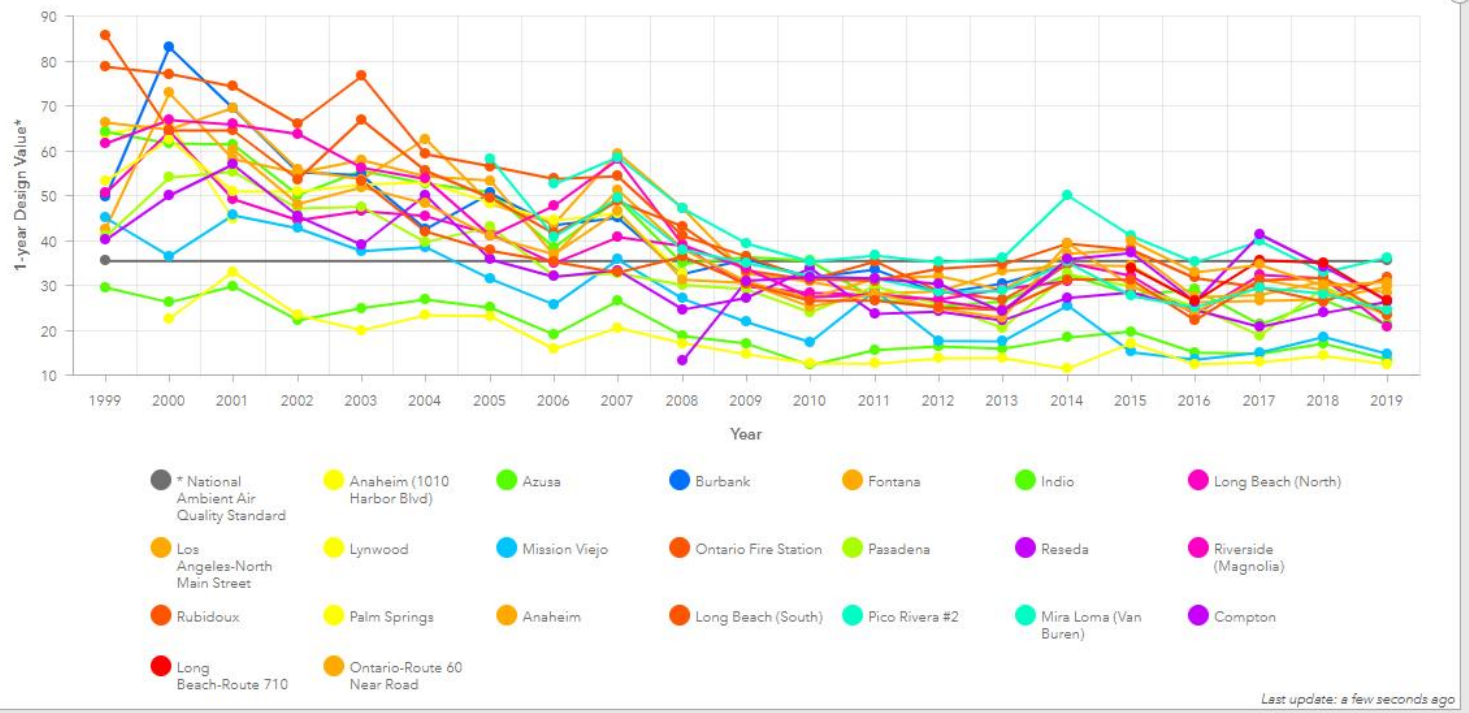
CO (1-hour) | CO (8-hour) | NO2 (1-hour) | NO2 (1-year) | O3 | PM10 | PM2.5 (1-year) | **PM2.5 (24-hour)** | SO2



PM2.5 (24-hour) [ug/m3]

(98th percentile of 24-hour average concentrations, averaged over 3 years)

Year of the National Ambient Air Quality Standard: 2006



Last update: a few seconds ago

*The 1-year design values shown in this graph are 1-year statistics that are based on the form of the National Ambient Air Quality Standard (NAAQS). The design value for PM10 shown on this graph is the second highest concentration in the year. Attainment of the NAAQS is based on the three-year average of the 1-year design value.

Exceptional events were not removed from the concentration data before calculating the 1-year statistics. Determination of attainment will be based on three-year design values calculated without exceptional events.

MATES V Data Visualization All Tabs

MATES Data Visualization

experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/?draft=true&views=view_38

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- ≥700
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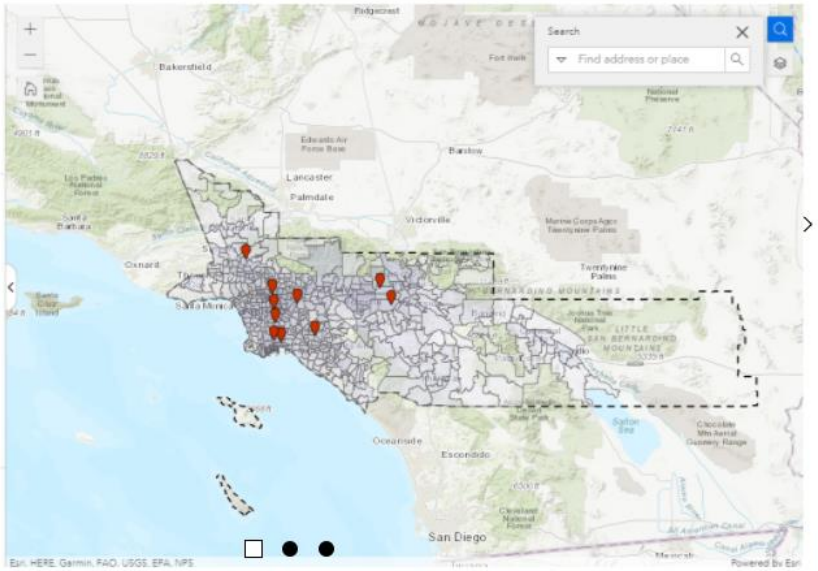
- ≥250
- ≥100

South Coast AQMD Boundary



Do not show again

OK

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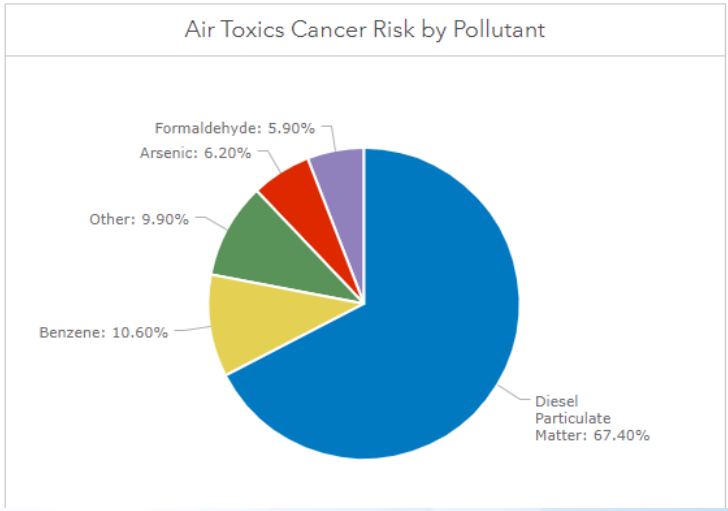

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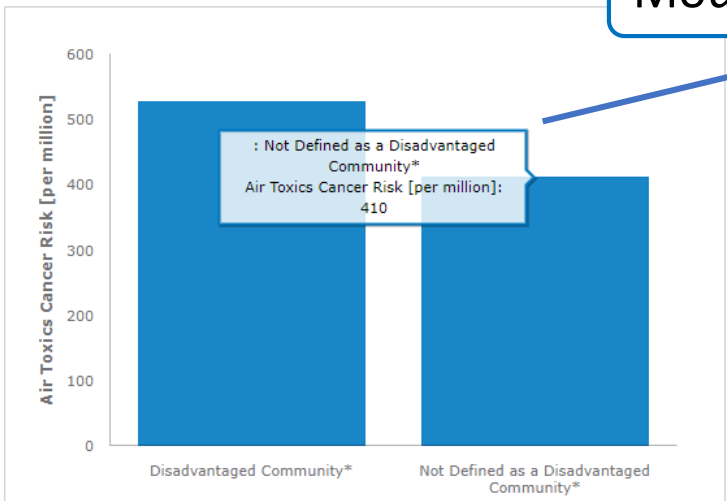
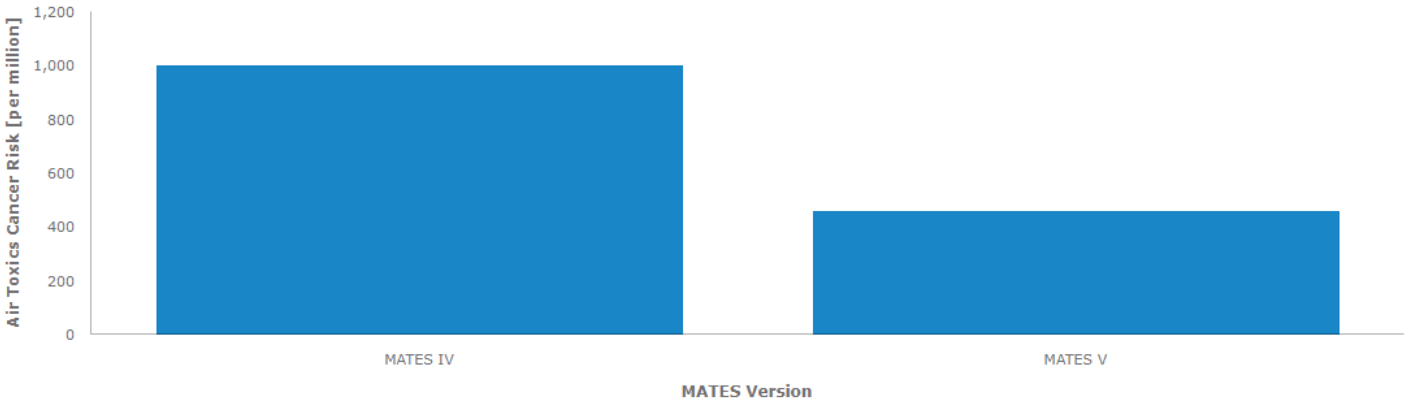
Mouse-over information



*Disadvantaged communities are defined by SB 535, which considers different types of pollution in communities as well as health, social, and economic characteristics o the community.

Trend of Air Toxics Cancer Risk in the South Coast Air Basin



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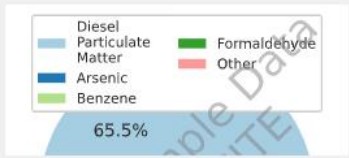
- 701 - 850
- 551 - 700
- 401 - 550
- 251 - 400
- 101 - 250
- 0 - 100

South Coast AQMD Boundary

In zip code **91706**, the cancer risk is **562** per million

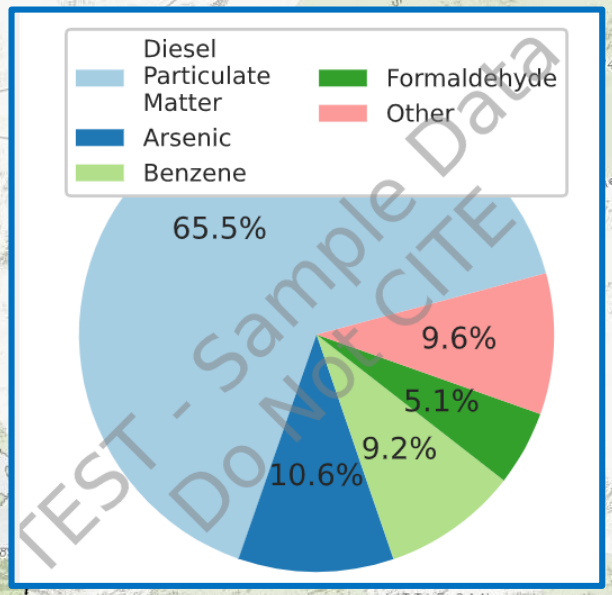
Air toxics cancer risk in this zip code is higher than **84.0%** of the South Coast AQMD population

Pollutants contributing to cancer risk



Zoom to

1 of 4



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About Cancer Risk

MATES Data Visualization

experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/page/home/?data_id=dataSource_105-a5ba9580e3aa435...9%2Cview_1

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South Coast AQMD Boundary

What is Cancer Risk?

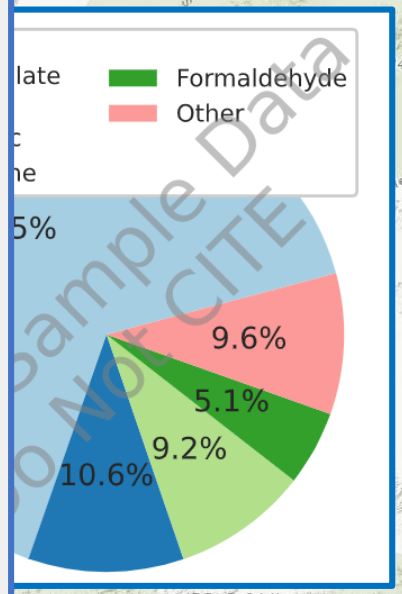
Cancer risk is expressed as the number of extra cancer cases occurring over a 70 year lifetime per one million people exposed to toxic air contaminants.

How is Cancer Risk Determined?

Cancer risk is determined by a method called health risk assessment. Between 2019 and 2020 the South Coast AQMD conducted a comprehensive health risk assessment, as part of MATES V, involving widespread measurements and air pollution modeling.

Why are Measured and Modeled Risks Not Exactly the Same?

Modelled cancer risks are calculated from simulations of toxics concentrations for every hour of the year in the entire South Coast AQMD jurisdiction. These simulations depend on weather models, emissions, and chemistry, which have uncertainties. Measured cancer risks are calculated from air toxics measurements at 10 sites, which are conducted for a 24-hour period every 6th day for the entire year. There are also uncertainties in these measurements, which arise when the levels of some species are too small to accurately measure with modern measurement techniques.



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About Community Profile Statistics

MATES Data Visualization

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South Coast AQMD Boundary

CalEnviroScreen 3.0 Score

The CalEnviroScreen 3.0 score in the community profile statistics shows the range from the minimum to the maximum of the CalEnviroScreen 3.0 scores for census tracts that are inside the zip code.

SB535 Community

The SB535 community designation in the community profile statistics indicates if the census tracts inside the zip code are designated SB535 disadvantaged communities.

"Yes" - all census tracts are SB535 disadvantaged communities
"No" - no census tracts are SB535 disadvantaged communities
"Partially" some but not all census tracts are SB535 disadvantaged communities.

Healthy Places Index

The Healthy Places Index in the community profile statistics shows the range from the minimum to the maximum of the Healthy Places Index scores for the census tracts that are inside the zip code.

measurement techniques.

late

Formaldehyde

Other

5%

9.6%

5.1%

9.2%

10.6%

Sample Data Do Not CITE

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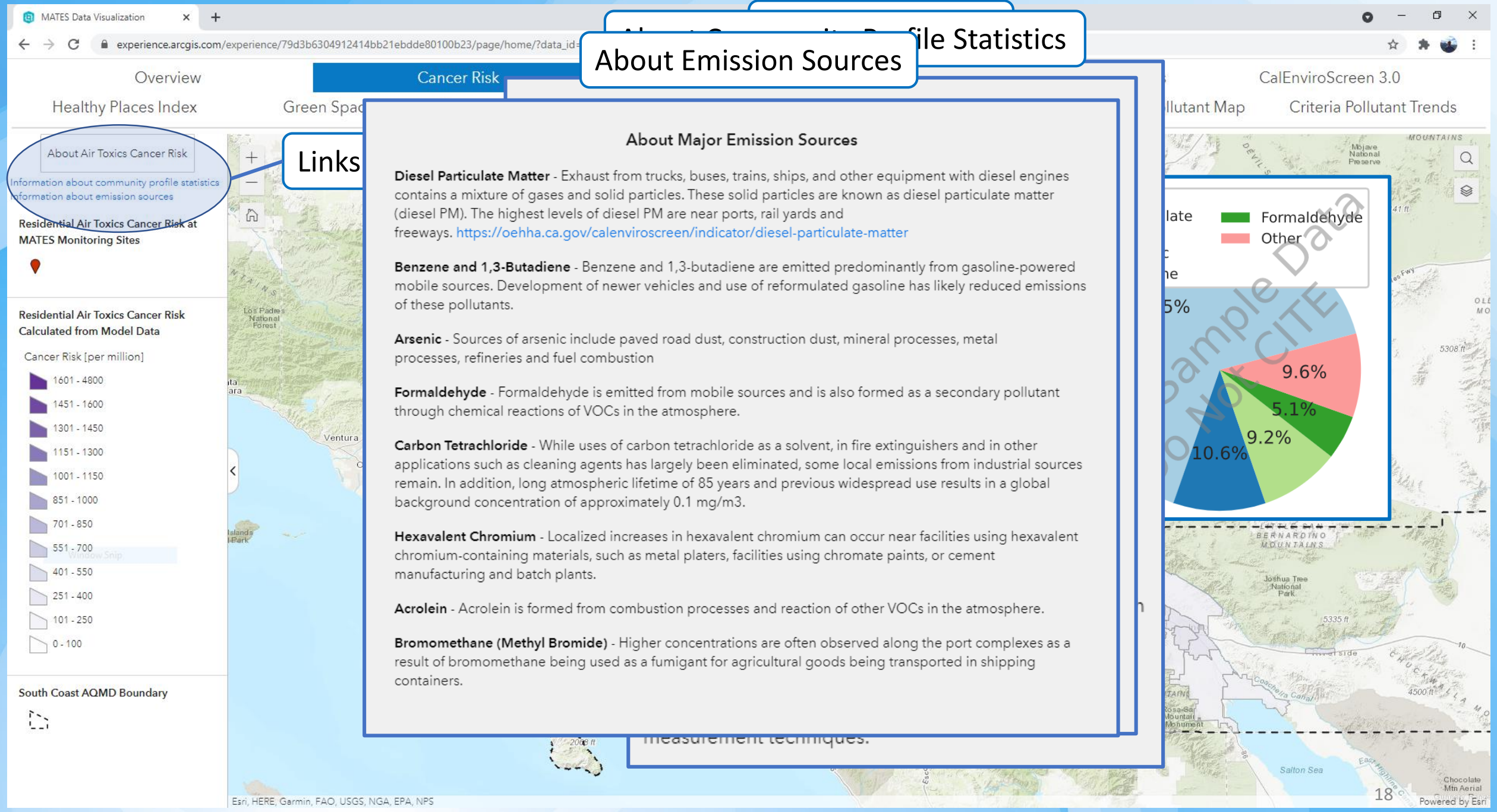
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South Coast AQMD Boundary
About Major Emission Sources
Diesel Particulate Matter - Exhaust from trucks, buses, trains, ships, and other equipment with diesel engines contains a mixture of gases and solid particles. These solid particles are known as diesel particulate matter (diesel PM). The highest levels of diesel PM are near ports, rail yards and freeways. https://oehha.ca.gov/calenviroscreen/indicator/diesel-particulate-matter
Benzene and 1,3-Butadiene - Benzene and 1,3-butadiene are emitted predominantly from gasoline-powered mobile sources. Development of newer vehicles and use of reformulated gasoline has likely reduced emissions of these pollutants.
Arsenic - Sources of arsenic include paved road dust, construction dust, mineral processes, metal processes, refineries and fuel combustion
Formaldehyde - Formaldehyde is emitted from mobile sources and is also formed as a secondary pollutant through chemical reactions of VOCs in the atmosphere.
Carbon Tetrachloride - While uses of carbon tetrachloride as a solvent, in fire extinguishers and in other applications such as cleaning agents has largely been eliminated, some local emissions from industrial sources remain. In addition, long atmospheric lifetime of 85 years and previous widespread use results in a global background concentration of approximately 0.1 mg/m3.
Hexavalent Chromium - Localized increases in hexavalent chromium can occur near facilities using hexavalent chromium-containing materials, such as metal platers, facilities using chromate paints, or cement manufacturing and batch plants.
Acrolein - Acrolein is formed from combustion processes and reaction of other VOCs in the atmosphere.
Bromomethane (Methyl Bromide) - Higher concentrations are often observed along the port complexes as a result of bromomethane being used as a fumigant for agricultural goods being transported in shipping containers.
Formaldehyde
Other
9.6%
5.1%
9.2%
10.6%
Sample Data
Do Not CITE
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18

MATES Data Visualization

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About Hazard Index

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Hazard Index for Respiratory System at MATES Monitoring Sites

South Coast AQMD Boundary

At **Pico Rivera** the residential non-cancer chronic hazard index for the respiratory system is **6.2**

Pollutants contributing to residential non-cancer chronic hazard index for the the respiratory system

Zoom to

Esri, HERE, Garmin, FAO, USGS, NGA, EPA, NPS

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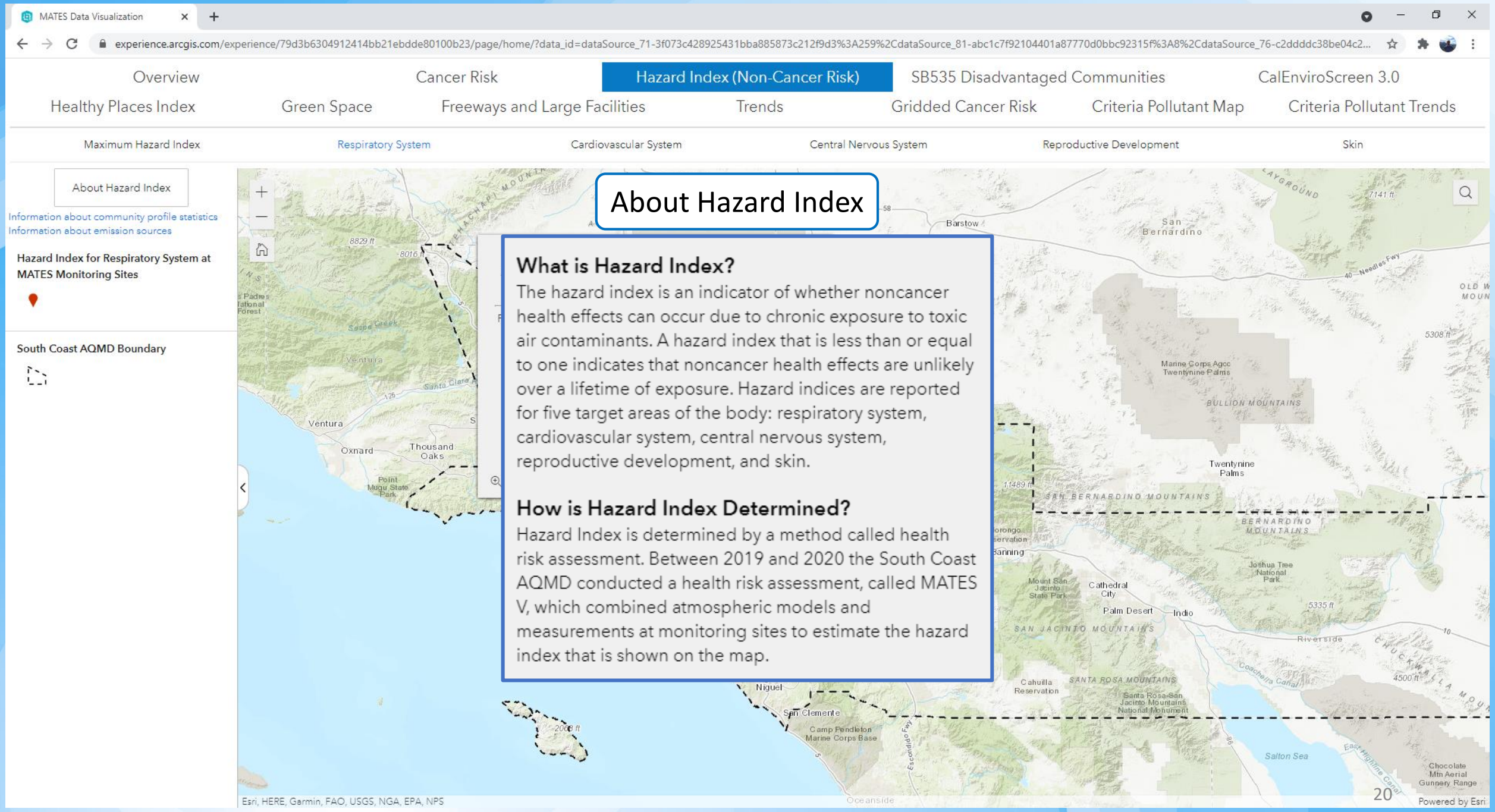
MATES Data Visualization
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Overview
Cancer Risk
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Trends
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Maximum Hazard Index
Respiratory System
Cardiovascular System
Central Nervous System
Reproductive Development
Skin
About Hazard Index
Information about community profile statistics
Information about emission sources
Hazard Index for Respiratory System at MATES Monitoring Sites
South Coast AQMD Boundary
About Hazard Index
What is Hazard Index?
The hazard index is an indicator of whether noncancer health effects can occur due to chronic exposure to toxic air contaminants. A hazard index that is less than or equal to one indicates that noncancer health effects are unlikely over a lifetime of exposure. Hazard indices are reported for five target areas of the body: respiratory system, cardiovascular system, central nervous system, reproductive development, and skin.
How is Hazard Index Determined?
Hazard Index is determined by a method called health risk assessment. Between 2019 and 2020 the South Coast AQMD conducted a health risk assessment, called MATES V, which combined atmospheric models and measurements at monitoring sites to estimate the hazard index that is shown on the map.
Barstow
San Bernardino
Ventura
Oxnard
Thousand Oaks
Point Mugu State Park
Twentynine Palms
Marine Corps Agcc Twentynine Palms
BULLION MOUNTAINS
SAN BERNARDINO MOUNTAINS
Joshua Tree National Park
Cathedral City
Palm Desert
Indio
SAN JACINTO MOUNTAINS
Riverside
SANTA ROSA MOUNTAINS
Cahuilla Reservation
Santa Rosa-San Jacinto Mountains National Monument
San Clemente
Camp Pendleton Marine Corps Base
Salton Sea
Oceanside
Esri, HERE, Garmin, FAO, USGS, NGA, EPA, NPS
Powered by Esri

MATES Data Visualization

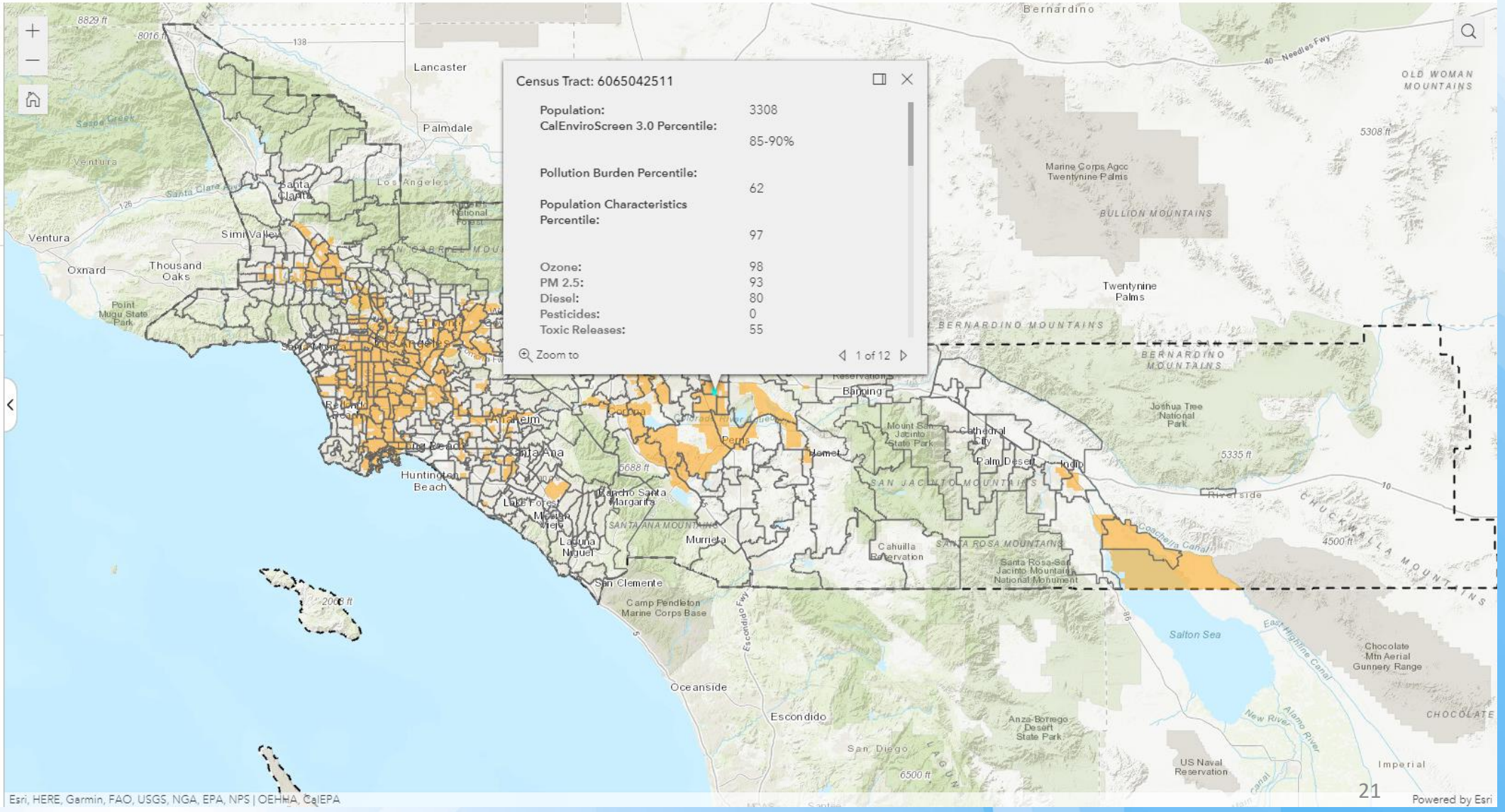
experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/page/home/?data_id=dataSource_71-3f073c428925431bba885873c212f9d3%3A259%2CdataSource_81-abc1c7f92104401a87770d0bbc92315f%3A8%2CdataSource_76-c2ddddc38be04c2...

Disadvantaged communities are defined based on California Senate Bill 535, which considers pollution burdens and population characteristics. See the SB 535 website for more information.

Zip Codes

SB535 Disadvantaged Communities

South Coast AQMD Boundary



MATES Data Visualization

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CalEnviroScreen 3.0 ranks census tracts in California based on potential exposures to pollutants, adverse environmental conditions, socioeconomic factors and prevalence of certain health conditions. See the CalEnviroScreen website for more information.

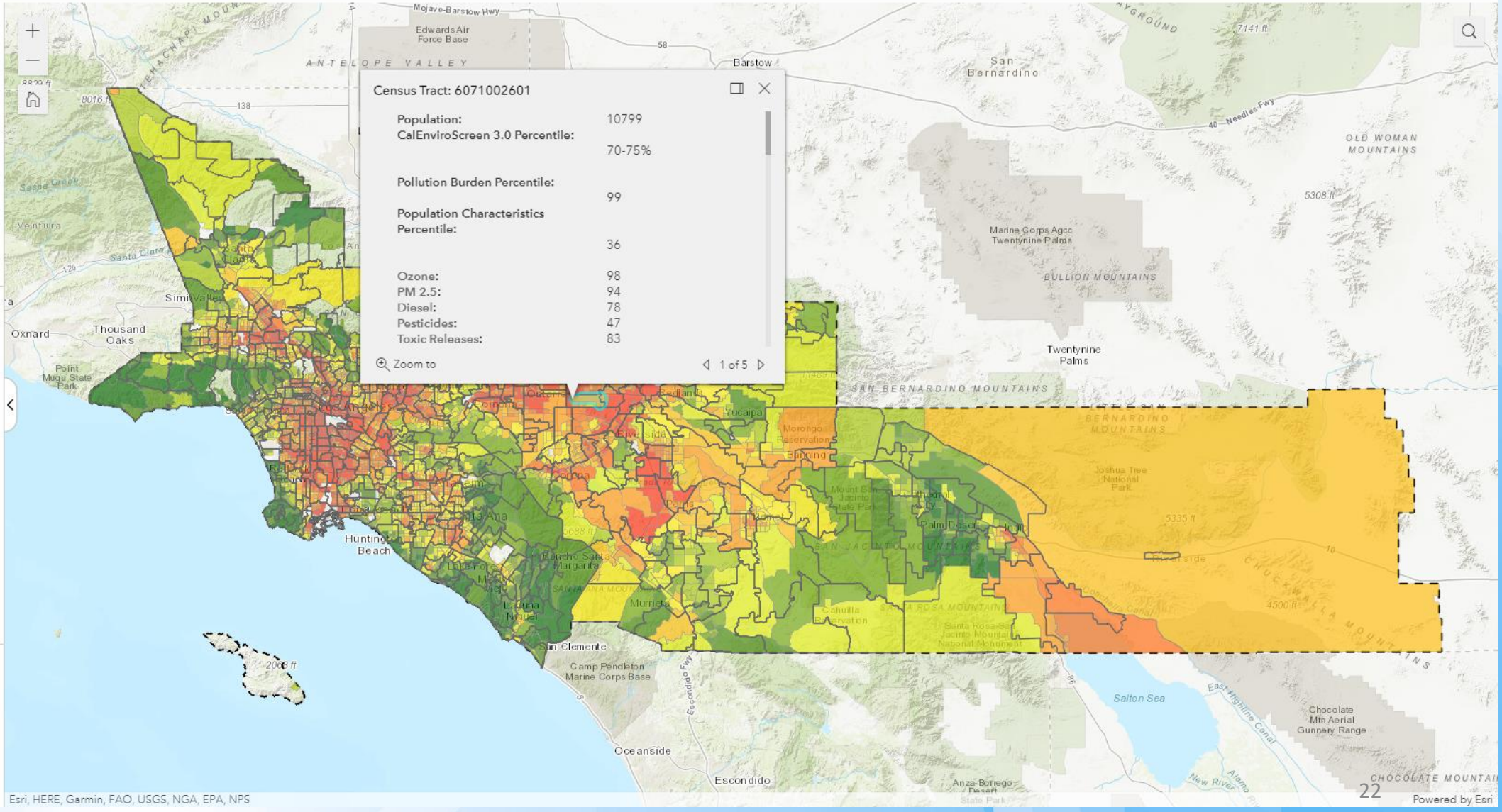
Zip Codes

CalEnviroScreen 3.0

- 91 - 100% (Highest Scores)
- 81 - 90%
- 71 - 80%
- 61 - 70%
- 51 - 60%
- 41 - 50%
- 31 - 40%
- 21 - 30%
- 11 - 20%
- 1 - 10% (Lowest Scores)

South Coast AQMD Boundary

CalEnviroScreen 3.0 is developed by the California Office of Environmental Health Hazard Assessment (OEHHA)



MATES Data Visualization

experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/page/home/?data_id=dataSource_71-3f073c428925431bba885873c212f9d3%3A259%2CdataSource_81-abc1c7f92104401a87770d0bbc92315f%3A8%2CdataSource_76-c2ddddc38be04c2...

The Healthy Places Index is based on 25 indicators that help shape life expectancy such as housing, transportation, and education. See the healthy places index website for more information.

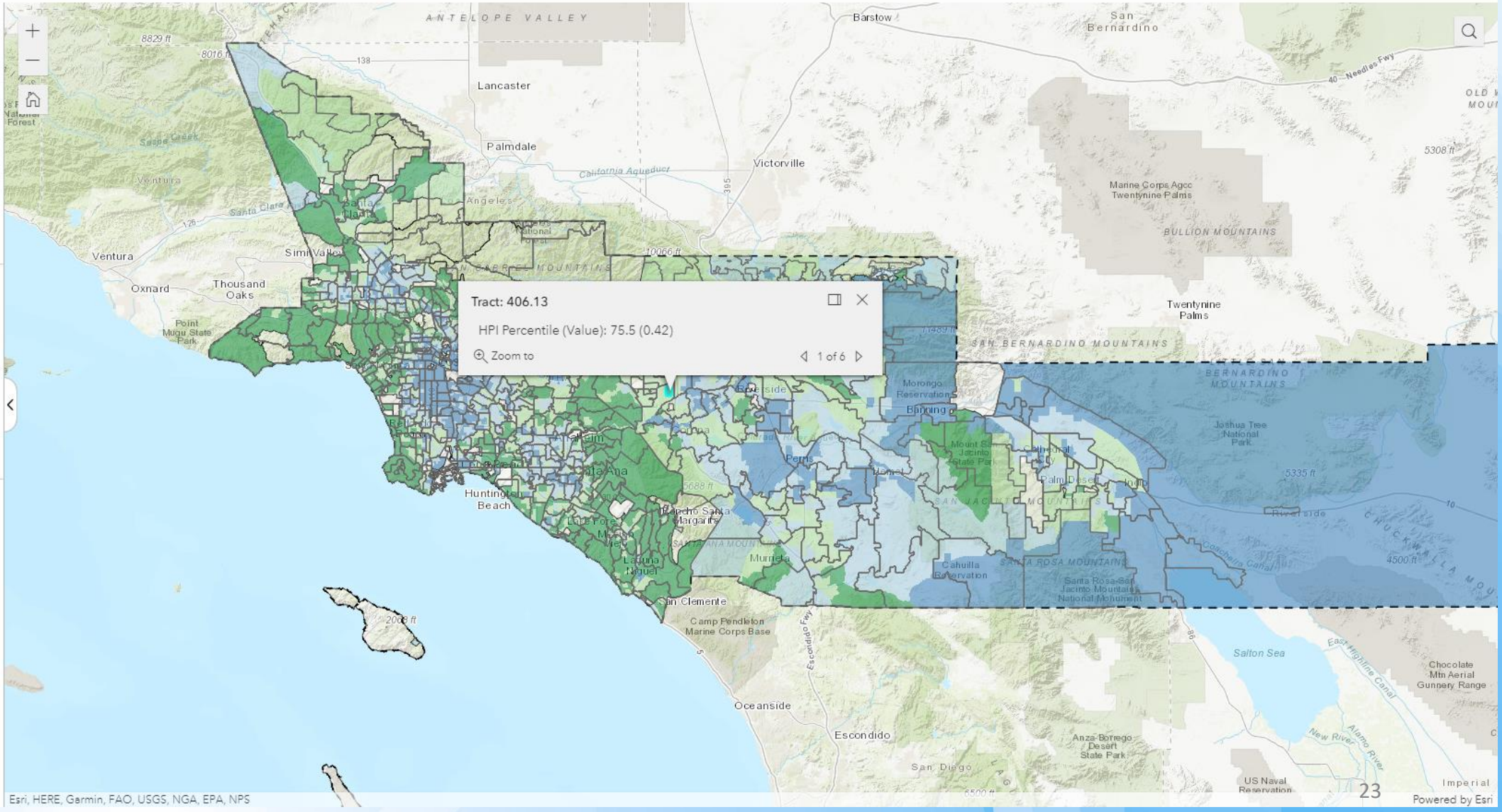
Zip Codes

Healthy Places Index

- 75 - 100
- 50 - 75
- 25 - 50
- 0 - 25
- No Data Available

South Coast AQMD Boundary

The Healthy Places Index is developed by the Public Health Alliance of Southern California.



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Green space, also called open space, "is any open piece of land that is undeveloped (has no buildings or other built structures) and is accessible to the public" (EPA). Open space is associated with lower pollution emissions than areas with roads or stationary sources. This map depicts the California Protected Areas Database (CPAD), "a GIS dataset depicting lands that are … protected for open space purposes by over 1,000 public agencies or non-profit organizations." (https://www.calands.org/)

Zip Codes

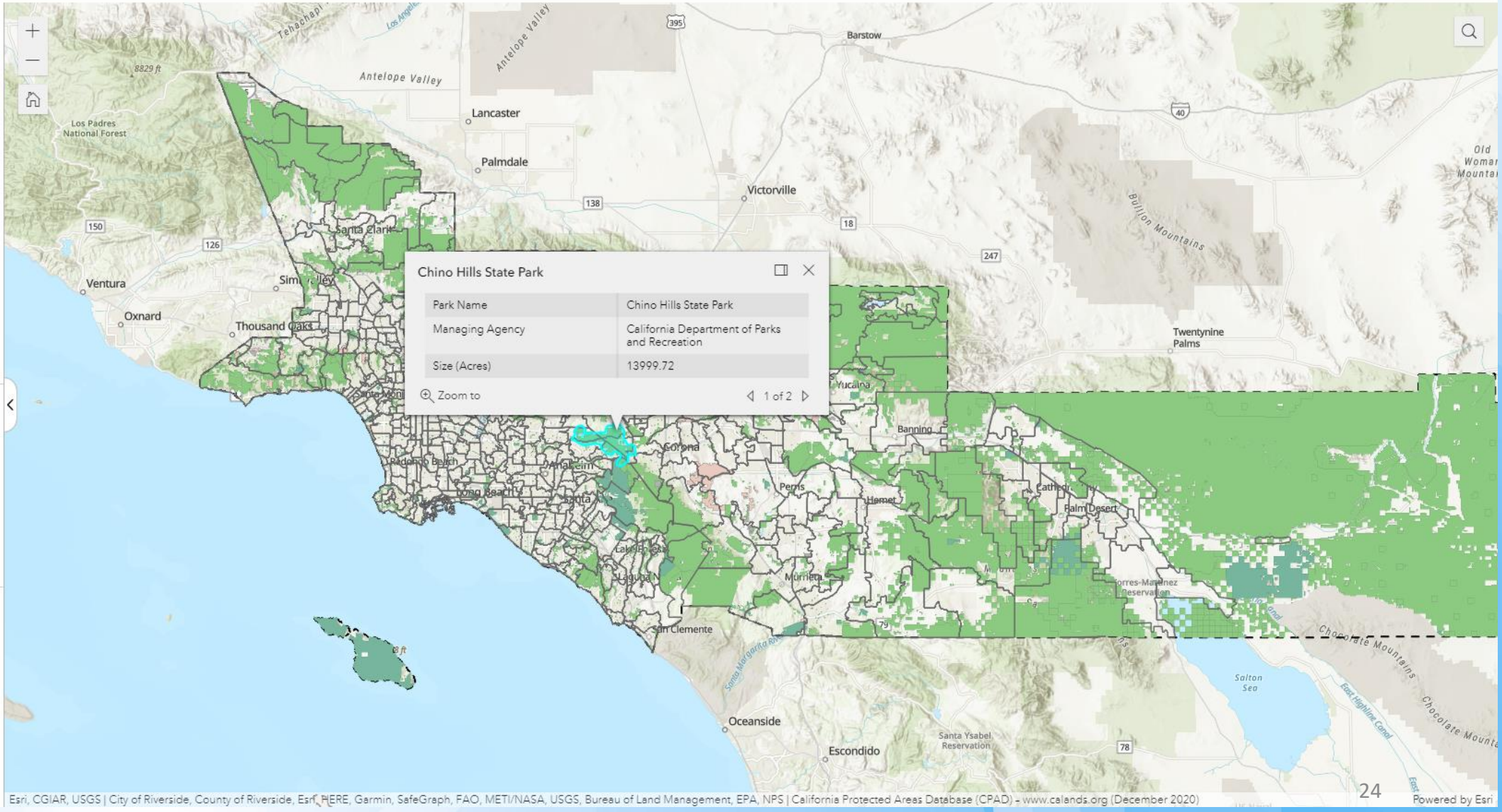
California Protected Areas Database

Access Type

- Open Access
- Restricted Access
- No Public Access
- Unknown Access

South Coast AQMD Boundary

Open Access means open to the public for agency-designated use. **Restricted** areas require permits or have irregular hours. **No Public Access** areas are not open to the public.



About Large Facilities

AB 2588 Facilities

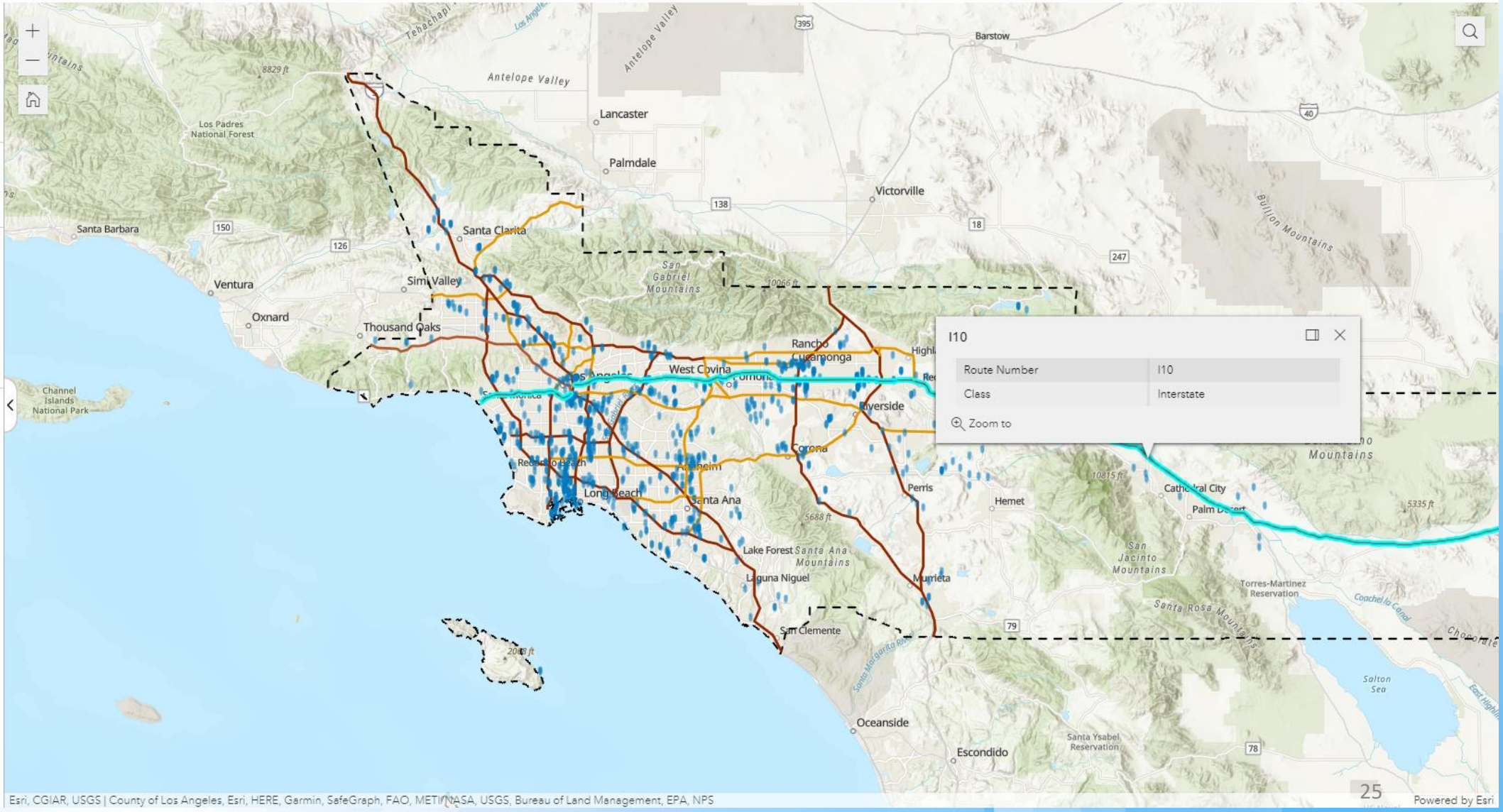
Title V Facilities

Freeways

Class

- Interstate
- State/County Highway
- US Highway

South Coast AQMD Boundary



About Large Facilities

AB 2588 Facilities

Title V Facilities

Freeways

Class

- Interstate
- State/County Highway
- US Highway

South Coast AQMD Boundary

About Large Facilities

This map displays freeways and approximate locations of some types of stationary emission sources that emit toxic air contaminants.

AB2588

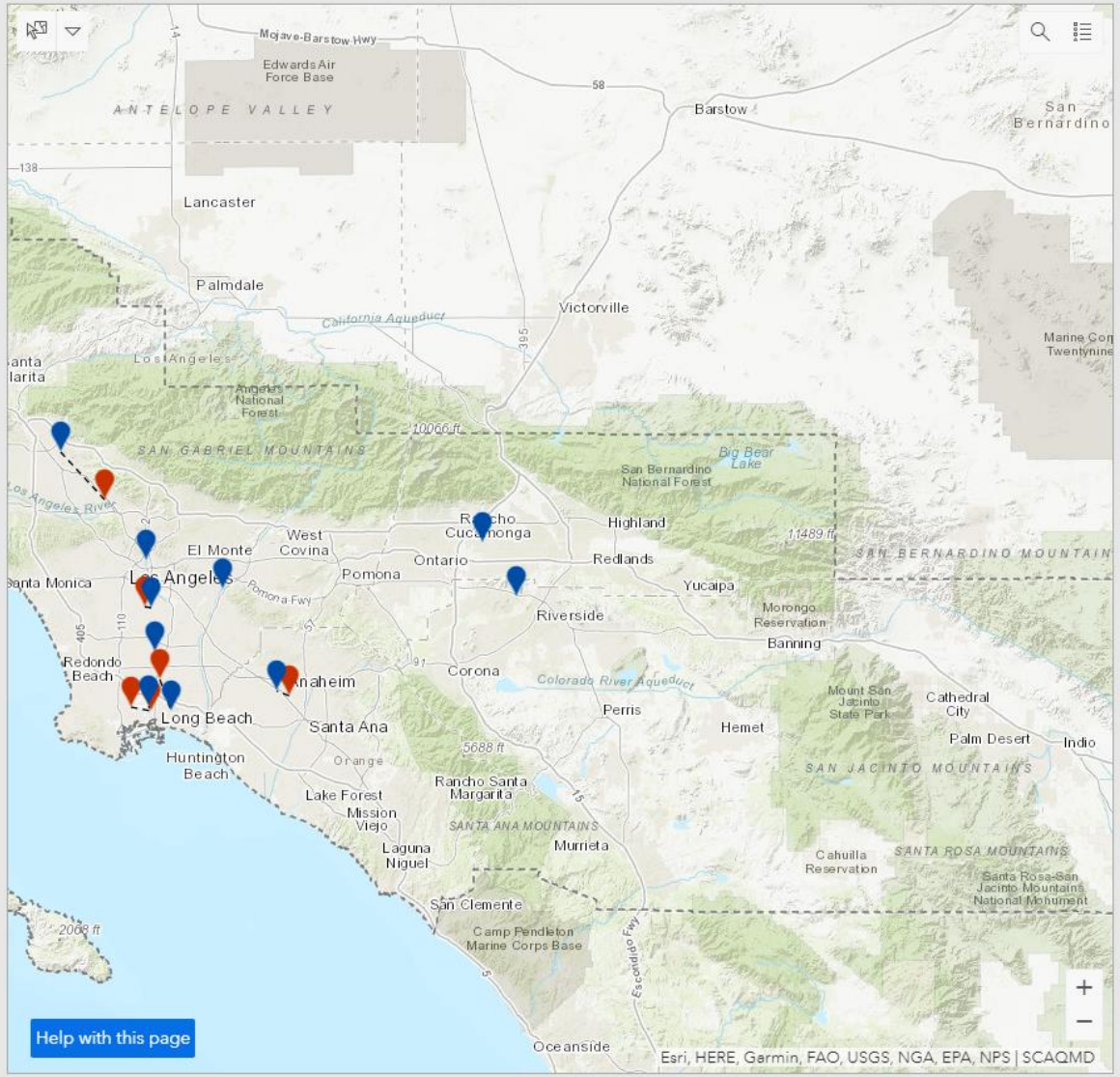
The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (commonly known as AB 2588) established a statewide program for the inventory of air toxics emissions from individual facilities as well as requirements for risk assessment and public notification of potential health risks. It addresses public concerns that emissions from individual facilities might cause a local concentration of air toxics "Hot Spots" or an elevated risk of adverse health effects.

Title V

Title V is a federal program designed to standardize air quality permits and the permitting process for major sources of emissions across the country.

Select stations in map or chart to filter the chart

Overview | Cancer Risk | Hazard Index (Non-Cancer Risk) | SB535 Disadvantaged Communities | CalEnviroScreen 3.0
Healthy Places Index | Green Space | Freeways and Large Facilities | **Trends** | Gridded Cancer Risk | Criteria Pollutant Map | Criteria Pollutant Trends



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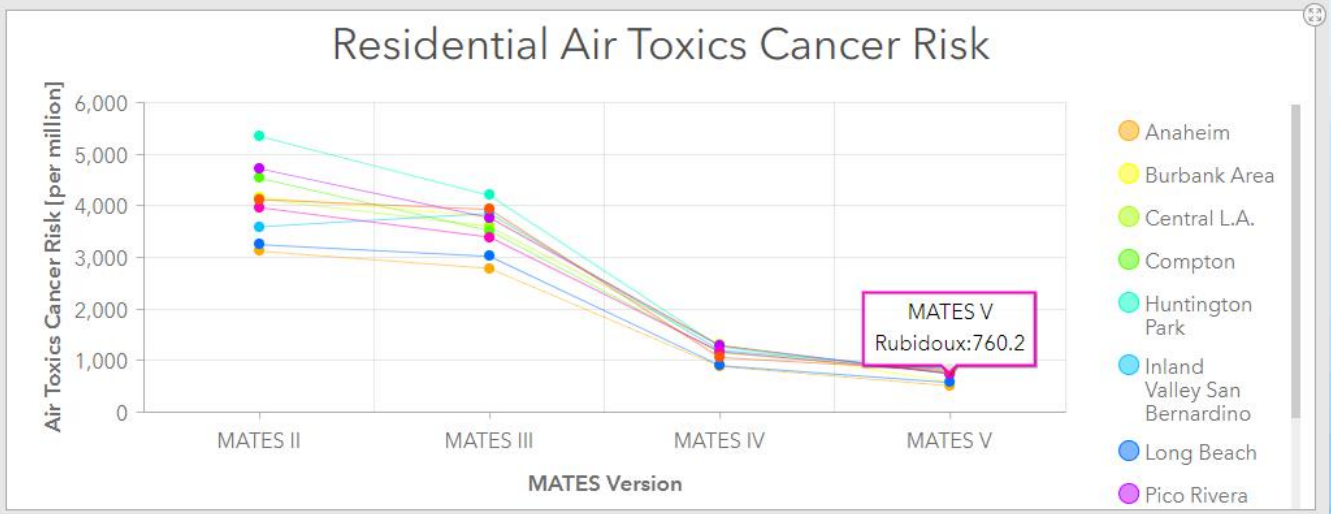
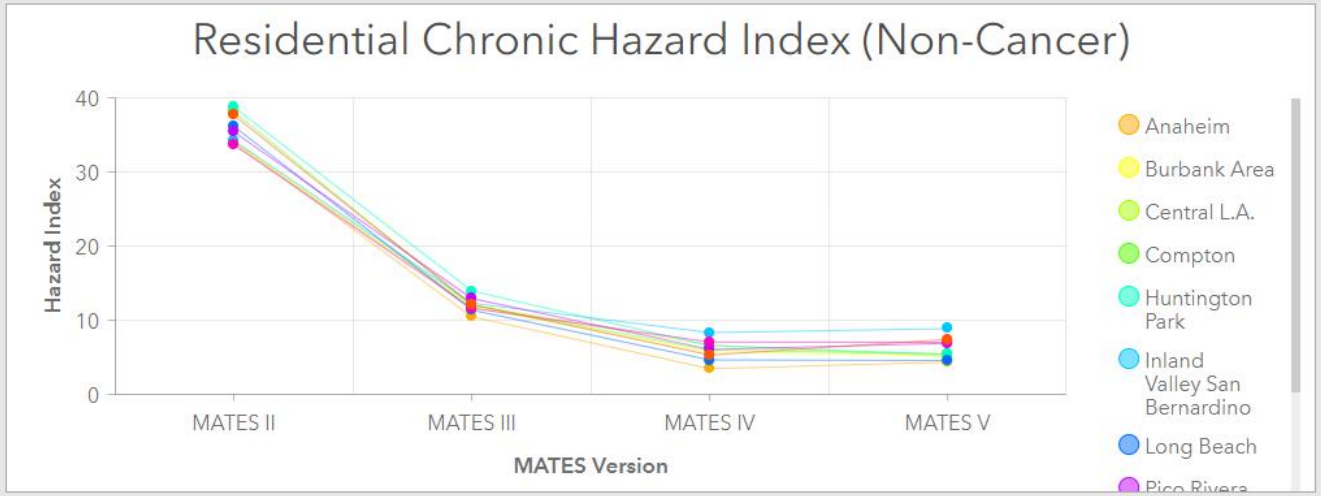
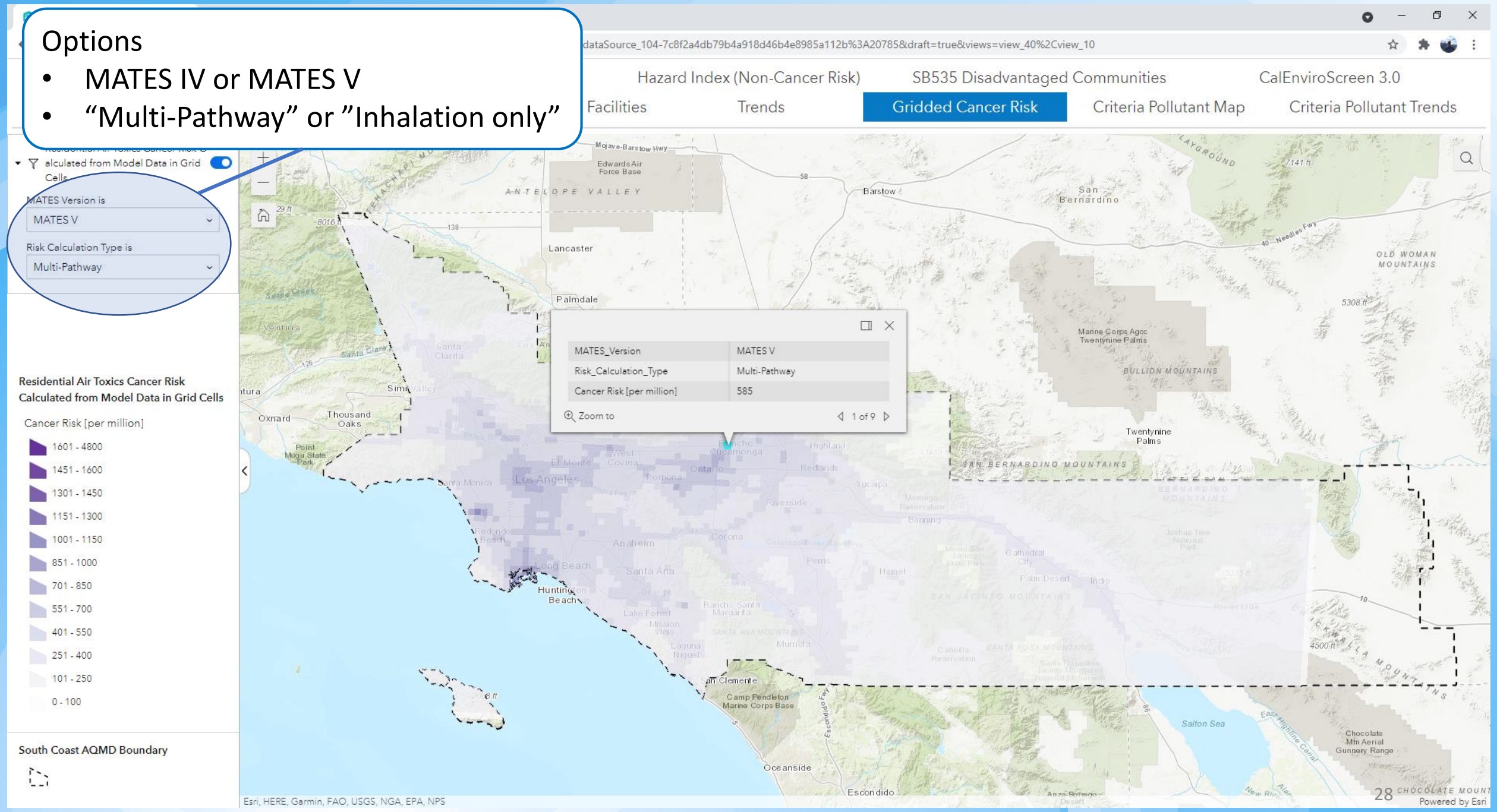




MATES II through MATES IV measurement data was reanalyzed using the same modern data treatment techniques used to analyze MATES V data. Some stations have been relocated over time and are shown with red (past location) and blue (MATES V location) pins on the map.

Options

- MATES IV or MATES V
- “Multi-Pathway” or ”Inhalation only”



About Criteria Pollutants

$PM_{2.5}$ NAAQS: 35 µg m^{-3}
(98th percentile of 24-hour averages in a year, averaged over 3 years)

Year is
2019 (MATES V)

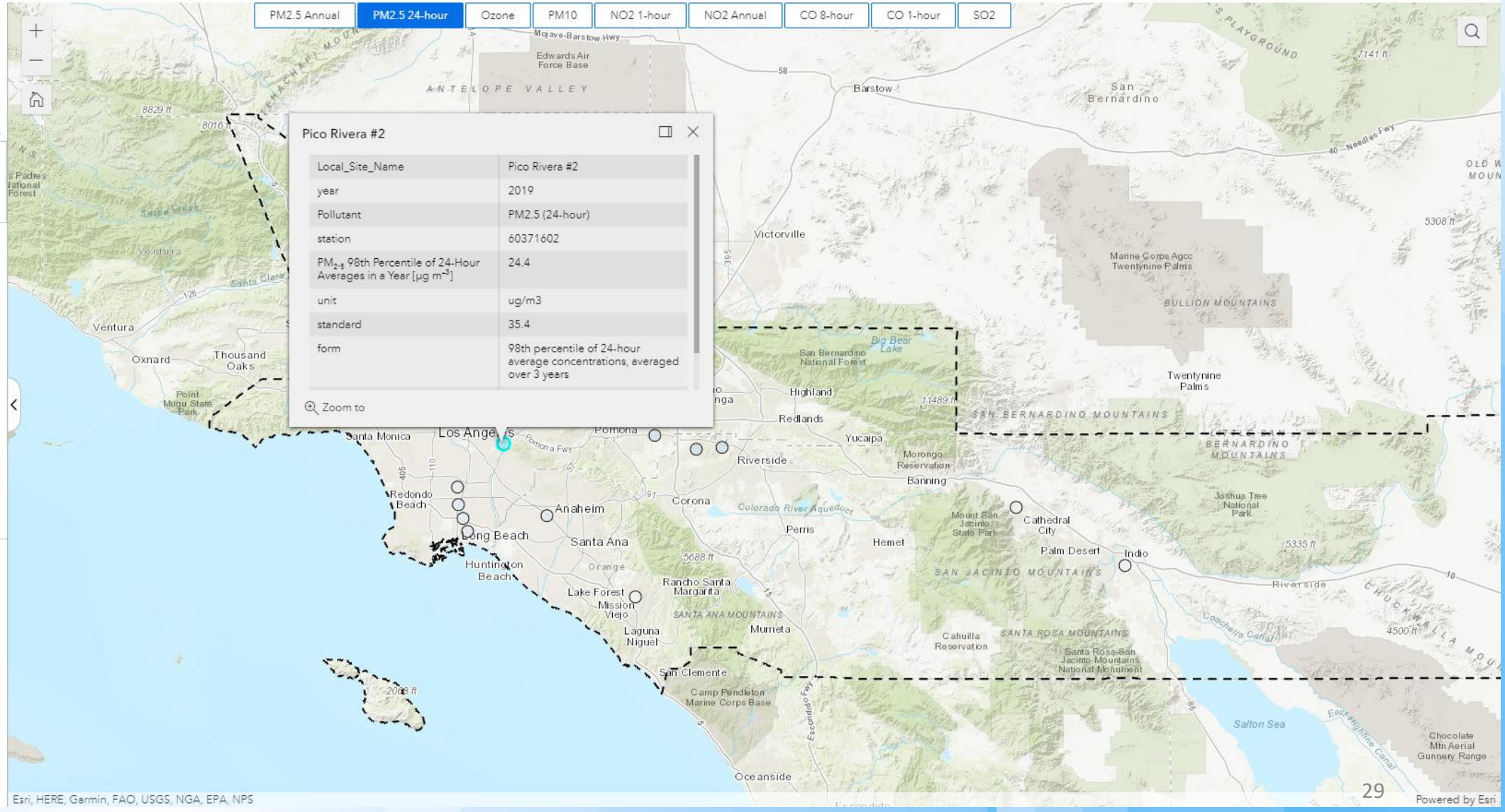
$PM_{2.5}$ 98th Percentile of 24-Hour Averages in a Year

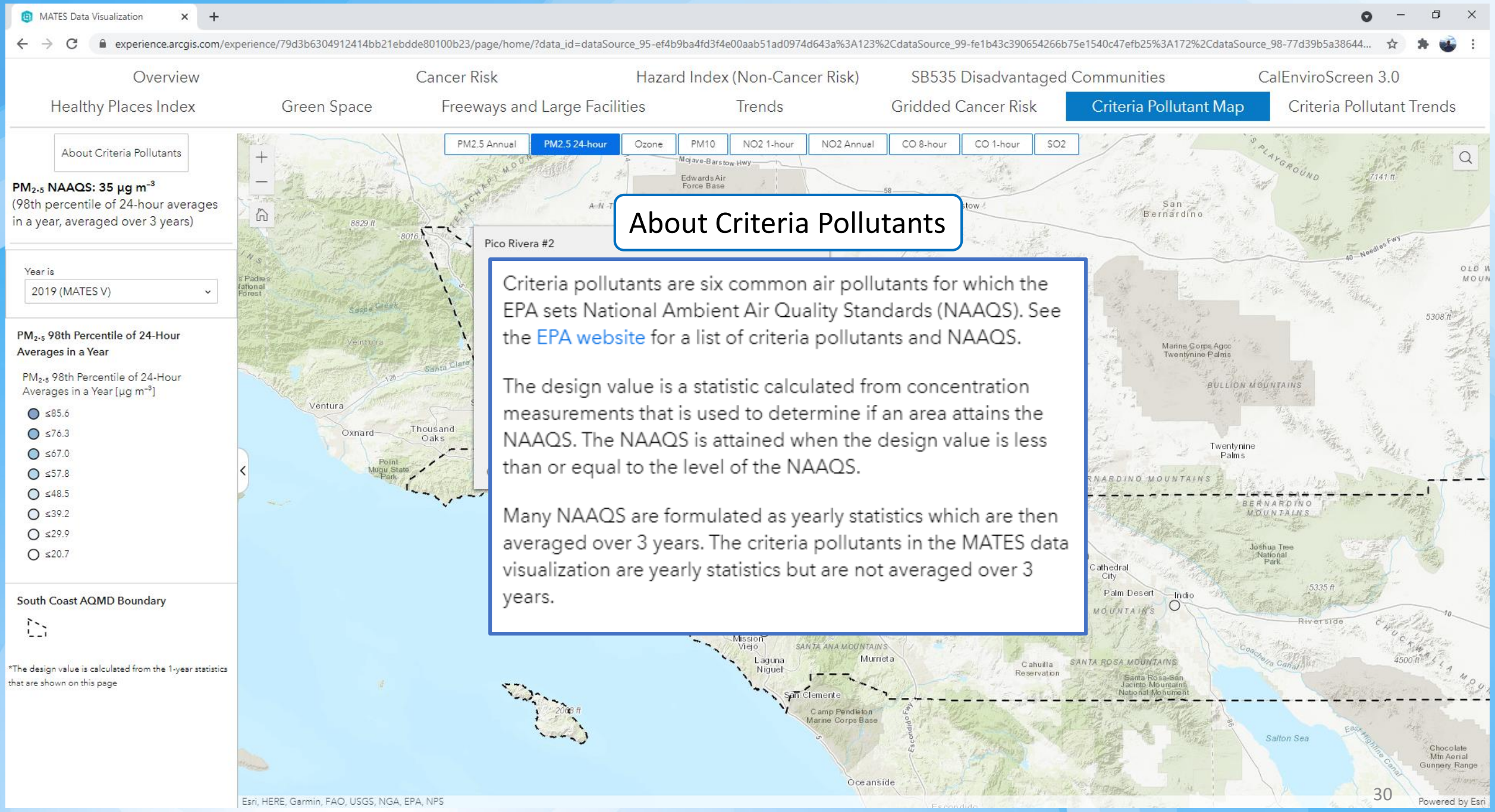
$PM_{2.5}$ 98th Percentile of 24-Hour Averages in a Year [µg m^{-3}]

- ≤85.6
- ≤76.3
- ≤67.0
- ≤57.8
- ≤48.5
- ≤39.2
- ≤29.9
- ≤20.7

South Coast AQMD Boundary

*The design value is calculated from the 1-year statistics that are shown on this page




MATES Data Visualization
experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/page/home/?data_id=dataSource_95-ef4b9ba4fd3f4e00aab51ad0974d643a%3A123%2CdataSource_99-fe1b43c390654266b75e1540c47efb25%3A172%2CdataSource_98-77d39b5a38644...
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(98th percentile of 24-hour averages in a year, averaged over 3 years)
Year is
2019 (MATES V)
PM2.5 98th Percentile of 24-Hour Averages in a Year
PM2.5 98th Percentile of 24-Hour Averages in a Year [µg m-3]
≤85.6
≤76.3
≤67.0
≤57.8
≤48.5
≤39.2
≤29.9
≤20.7
South Coast AQMD Boundary
*The design value is calculated from the 1-year statistics that are shown on this page
PM2.5 Annual
PM2.5 24-hour
Ozone
PM10
NO2 1-hour
NO2 Annual
CO 8-hour
CO 1-hour
SO2
About Criteria Pollutants
Criteria pollutants are six common air pollutants for which the EPA sets National Ambient Air Quality Standards (NAAQS). See the EPA website for a list of criteria pollutants and NAAQS.
The design value is a statistic calculated from concentration measurements that is used to determine if an area attains the NAAQS. The NAAQS is attained when the design value is less than or equal to the level of the NAAQS.
Many NAAQS are formulated as yearly statistics which are then averaged over 3 years. The criteria pollutants in the MATES data visualization are yearly statistics but are not averaged over 3 years.
Pico Rivera #2
Mojave-Barstow Hwy
Edwards Air Force Base
San Bernardino
Needles Fwy
Marine Corps Agcc Twentynine Palms
BULLION MOUNTAINS
Twentynine Palms
SAN BERNARDINO MOUNTAINS
Joshua Tree National Park
Cathedral City
Palm Desert
Indio
Riverside
SANTA ANA MOUNTAINS
SANTA ROSA MOUNTAINS
Mission Viejo
Laguna Niguel
Murrieta
San Clemente
Camp Pendleton Marine Corps Base
Cahuilla Reservation
Santa Rosa-San Jacinto Mountains National Monument
Salton Sea
Oceanside
Ventura
Oxnard
Thousand Oaks
Point Mugu State Park
Santa Clara
Sespe Creek
Esri, HERE, Garmin, FAO, USGS, NGA, EPA, NPS
Powered by Esri

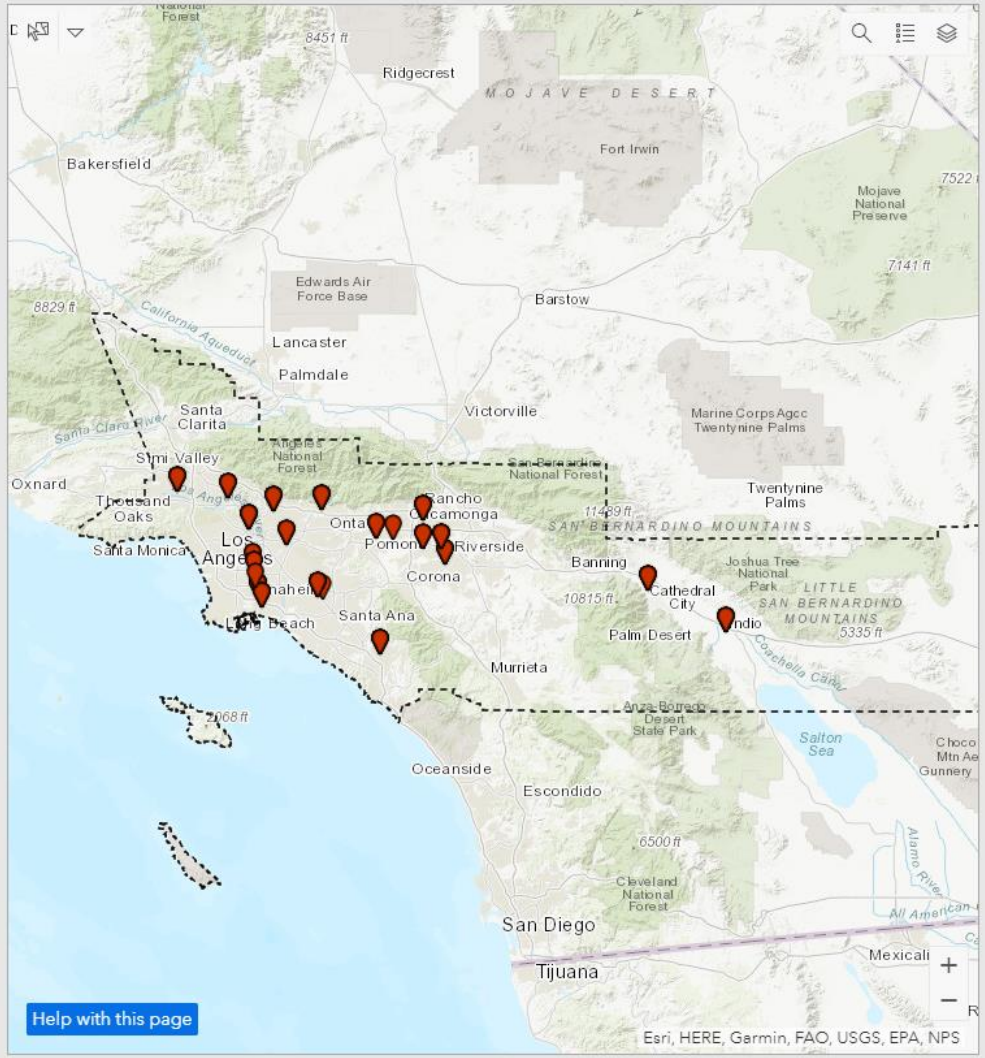
MATES Data Visualization

experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/page/home/?views=view_12

Overview | Cancer Risk | Hazard Index (Non-Cancer Risk) | SB535 Disadvantaged Communities | CalEnviroScreen 3.0

Healthy Places Index | Green Space | Freeways and Large Facilities | Trends | Gridded Cancer Risk | Criteria Pollutant Map | **Criteria Pollutant Trends**

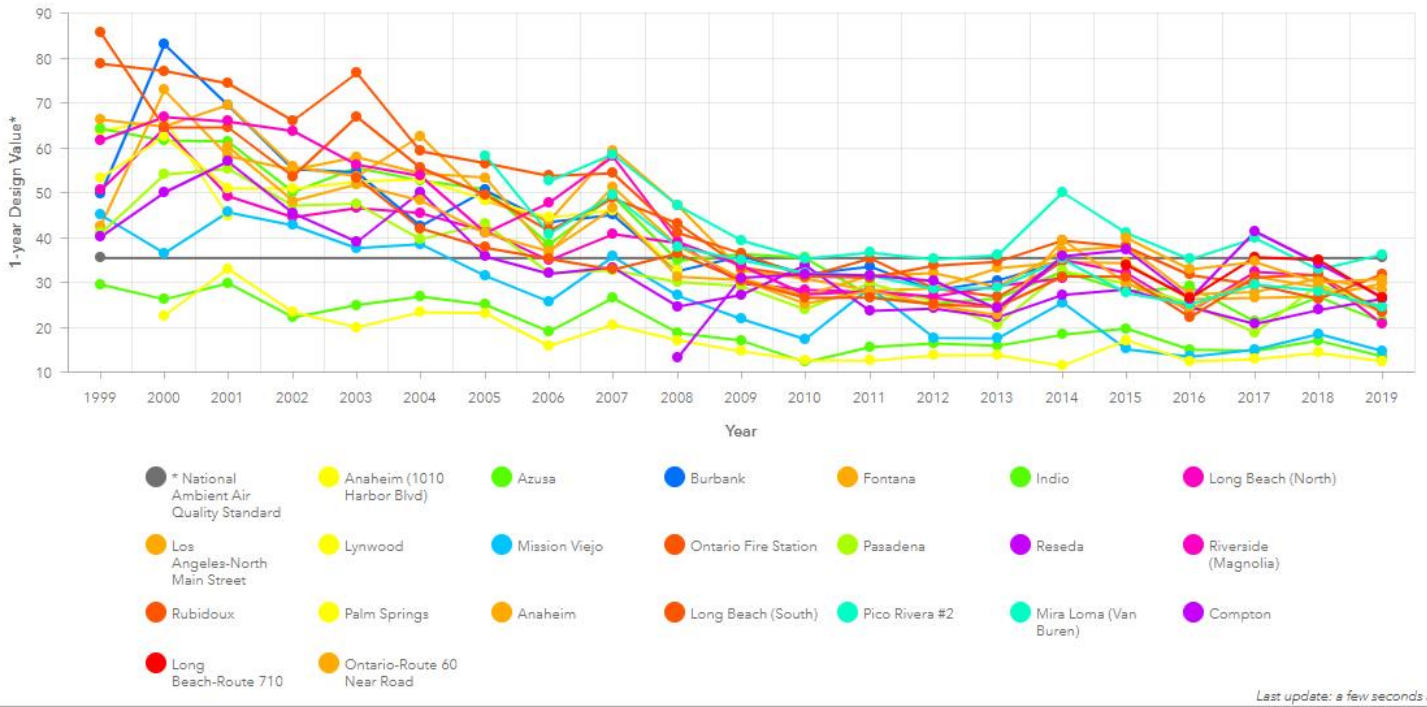
CO (1-hour) | CO (8-hour) | NO2 (1-hour) | NO2 (1-year) | O3 | PM10 | PM2.5 (1-year) | **PM2.5 (24-hour)** | SO2



PM2.5 (24-hour) [ug/m3]

(98th percentile of 24-hour average concentrations, averaged over 3 years)

Year of the National Ambient Air Quality Standard: 2006



Last update: a few seconds ago

*The 1-year design values shown in this graph are 1-year statistics that are based on the form of the National Ambient Air Quality Standard (NAAQS). The design value for PM10 shown on this graph is the second highest concentration in the year. Attainment of the NAAQS is based on the three-year average of the 1-year design value.

Exceptional events were not removed from the concentration data before calculating the 1-year statistics. Determination of attainment will be based on three-year design values calculated without exceptional events.

MATES Data Visualization

experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/page/home/?views=view_12

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CO (1-hour) | CO (8-hour) | NO2 (1-hour) | NO2 (1-year) | O3 | PM10 | PM2.5 (1-year) | **PM2.5 (24-hour)** | SO2

PM2.5 (24-hour) [ug/m3]

Hints

Select Monitor Sites | Expand Graphs

Overview | Cancer Risk | Hazard Index (Non-Cancer Risk) | SB535 Disadvantaged Communities | CalEnviroScreen 3.0

Healthy Places Index | Green Space | Freeways and Large Facilities | Trends | Concentration and Risk Data | Criteria Pollutant >

Select monitor sites to display in the graphs

Residential Air Toxics Cancer Risk

Residential Chronic Hazard Index (Non-Cancer)

MATES Version

Hints

Select Monitor Sites | Expand Graphs

Overview | Cancer Risk | Hazard Index (Non-Cancer Risk) | SB535 Disadvantaged Communities | CalEnviroScreen 3.0

Healthy Places Index | Green Space | Freeways and Large Facilities | Trends | Concentration and Risk Data | Criteria Pollutant >

Click here to expand the graph

Residential Air Toxics Cancer Risk

Residential Chronic Hazard Index (Non-Cancer)

MATES Version

Help with this page

Last update: a few seconds ago

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Esri, HERE, Garmin, FAO, USGS, EPA, NPS

Select stations in map or chart to filter the chart

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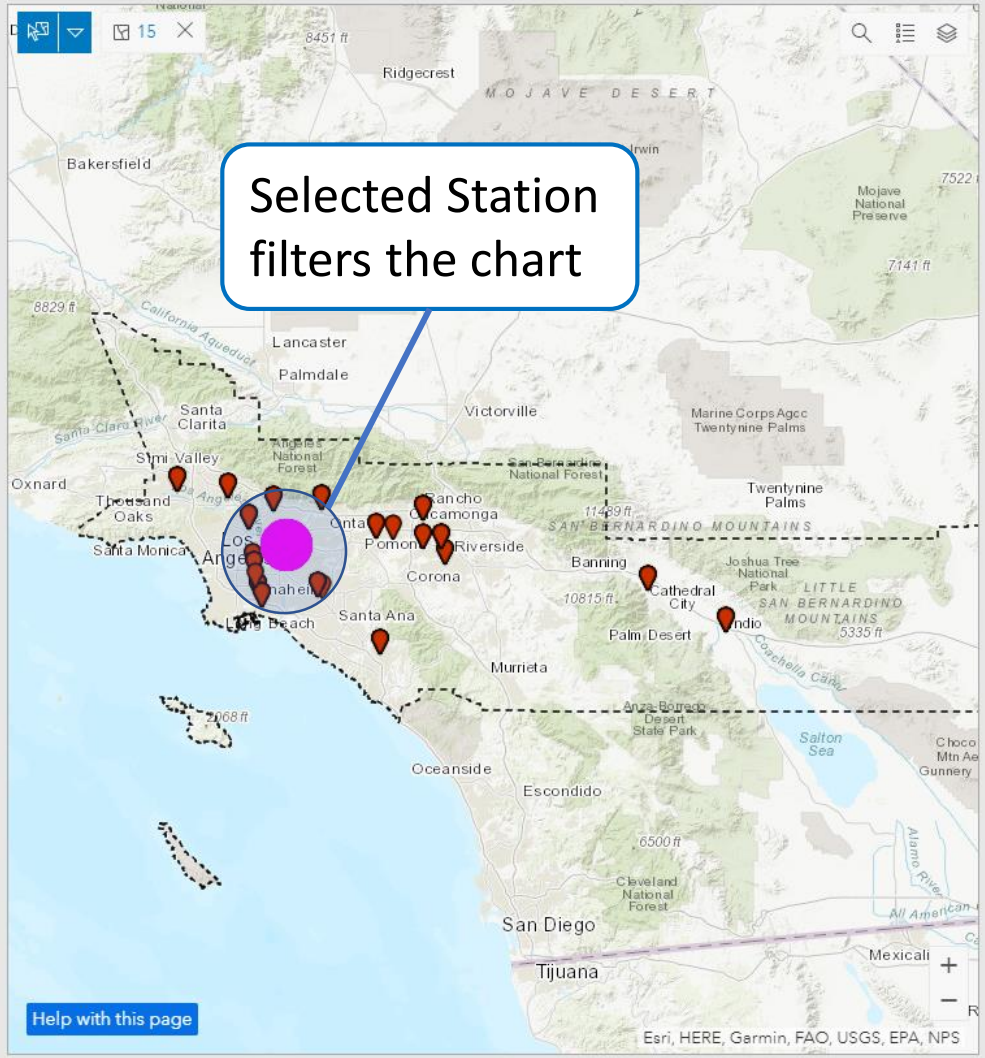
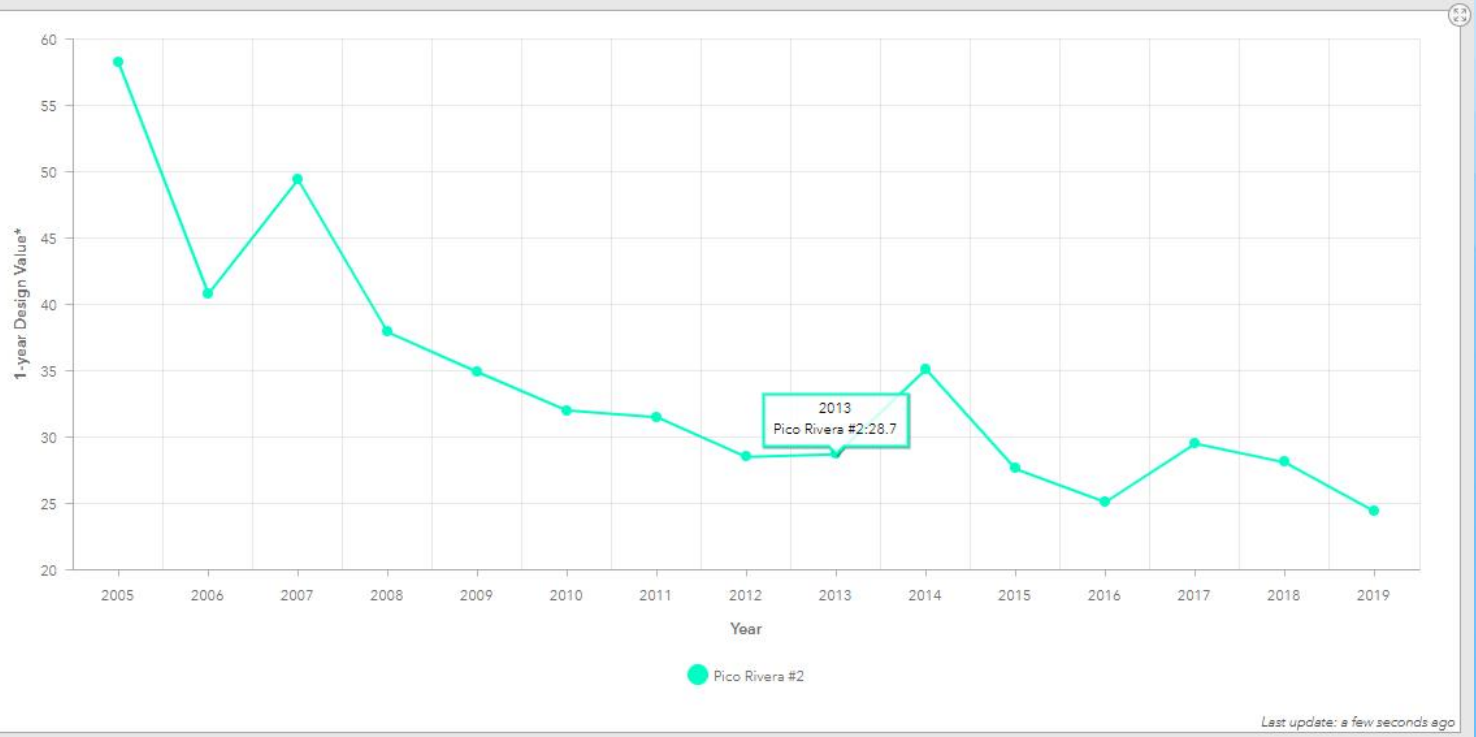
CO (1-hour) | CO (8-hour) | NO2 (1-hour) | NO2 (1-year) | O3 | PM10 | PM2.5 (1-year) | **PM2.5 (24-hour)** | SO2



PM2.5 (24-hour) [ug/m3]

(98th percentile of 24-hour average concentrations, averaged over 3 years)

Year of the National Ambient Air Quality Standard: 2006



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