EJSCREEN Training – Day 1

For Permit Writers

U.S. Environmental Protection Agency
Region 9 Air and Radiation Division, Permits Office

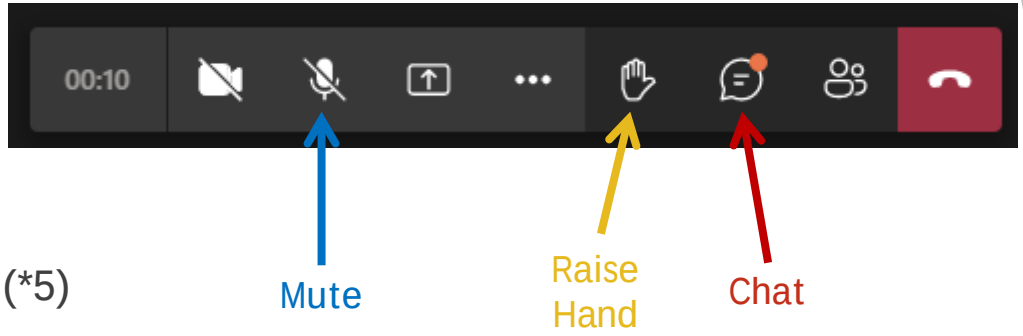
Agenda

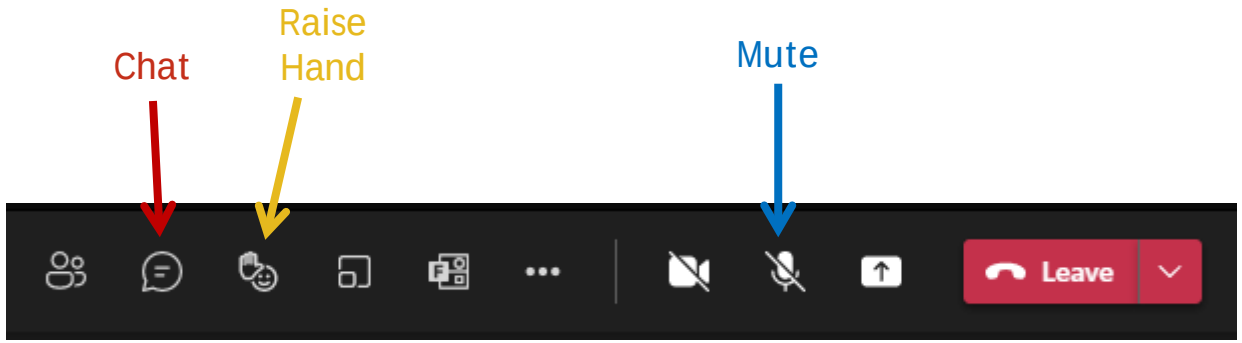
- Housekeeping
- Training Objectives
- Background on Environmental Justice
- EJSCREEN Tutorial
- Questions

Housekeeping

- Please mute yourselves (*6)
- There will be time for Q&A
  - We will be monitoring the chat
  - There is a raise/lower hand feature (*5)
- Slides will be available
- Introductions

Browser Version





Teams Desktop App

Training Objectives

Day 1

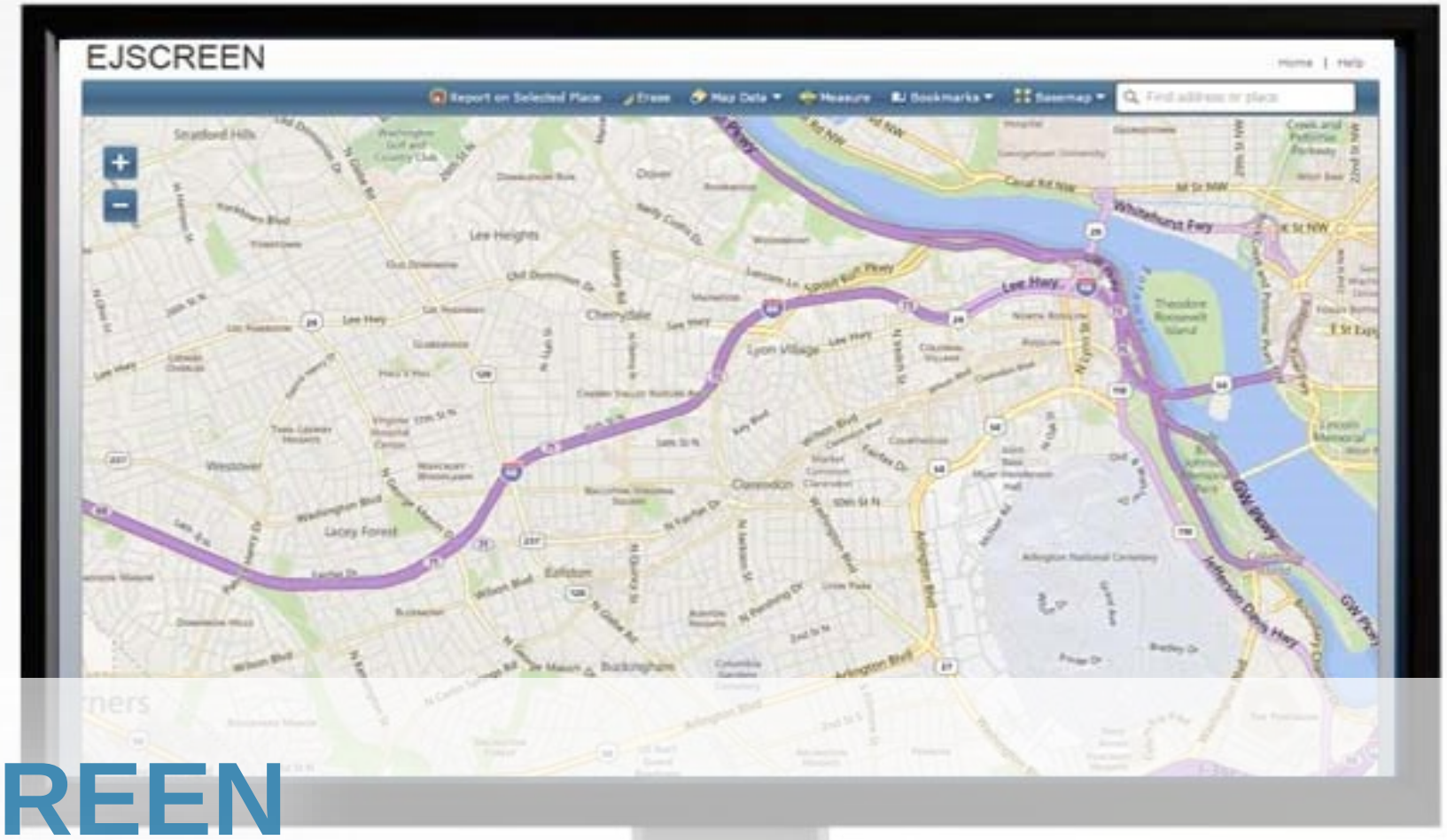
- **How to use EJSCREEN**

Day 2

- Case studies

Purpose:

- Introduction to EJSCREEN and how it can be used as a tool in the air permitting process.
- Provide ideas and examples on ways to improve engagement with communities.



EJSCREEN
EPA's Environmental Justice Screening Tool

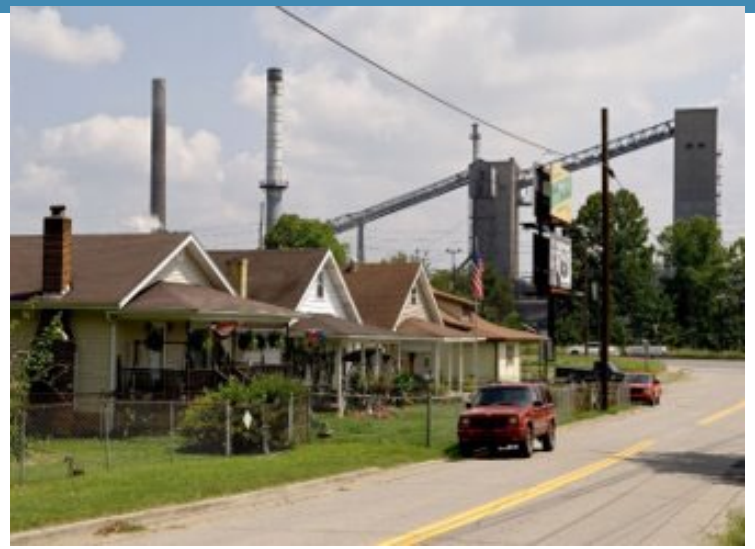
"Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"

Executive Order 12898

(signed 1994)

Federal Directive for agencies to:

- identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law.
- develop a strategy for implementing environmental justice.
- promote nondiscrimination in federal programs that affect human health and the environment, as well as provide minority and low-income communities access to public information and public participation.



EPA Environmental Justice Definition

Environmental justice is defined as the ***fair treatment*** and ***meaningful involvement*** of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies.

Fair treatment

No group of people should bear a **disproportionate share of the negative environmental consequences** resulting from industrial, governmental and commercial operations or policies.

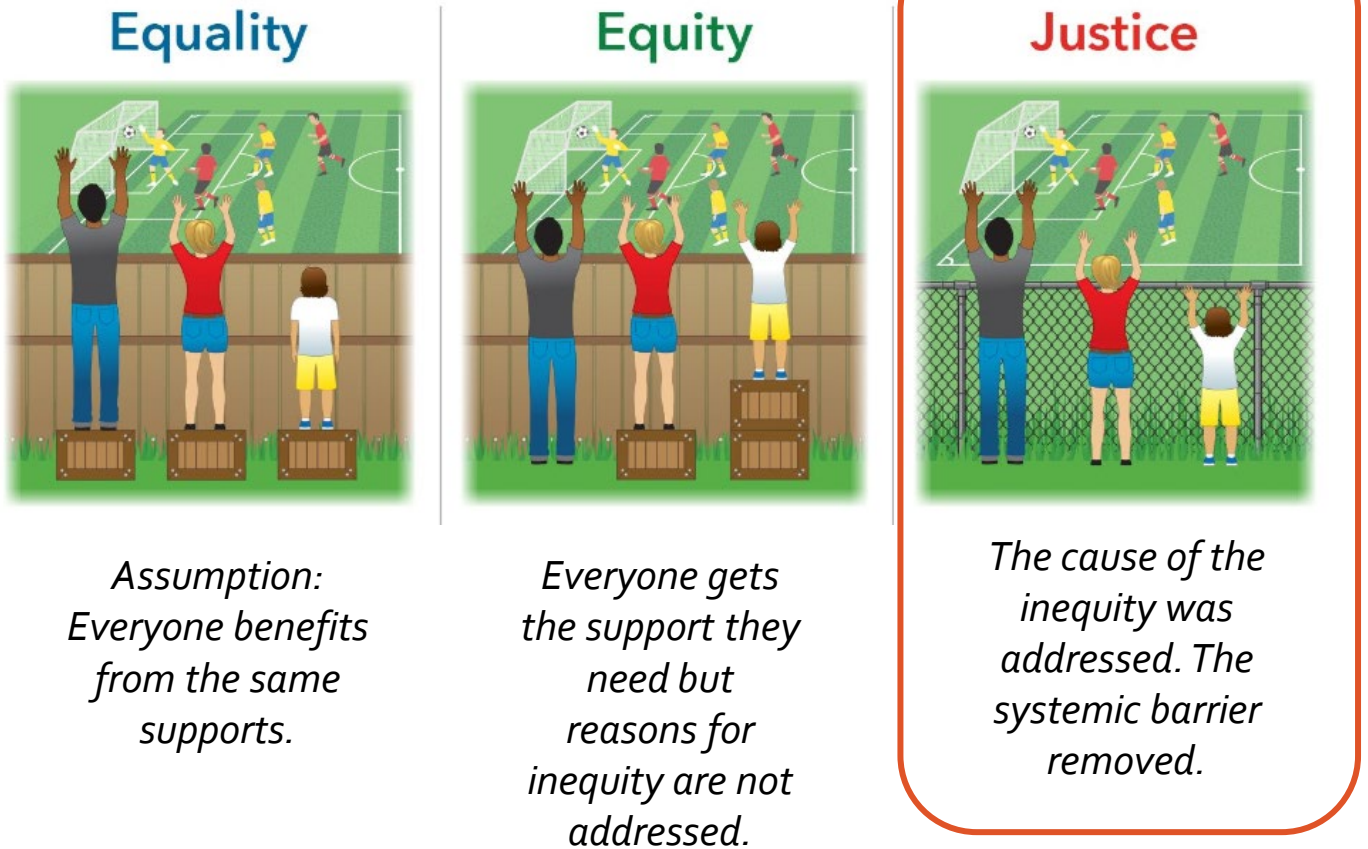
Meaningful Involvement

- **Suitable outreach** for engagement and involvement with potentially affected communities
- **Opportunity** to participate in decisions about activities that may affect their environment and/or health
- **Recognition** that their contributions have the ability to influence the regulatory agency's decision
- **Consideration** of community concerns within the decision making process.

Understanding EJ Principles

Examples of injustice are embedded throughout the laws, policies, and practices of the government's structures and systems.

- Examples include:
  - Redlining / segregation
  - Siting facilities
  - Access to loans / lack of fair housing practices
  - Access to education
  - Lack of voting rights / voter suppression



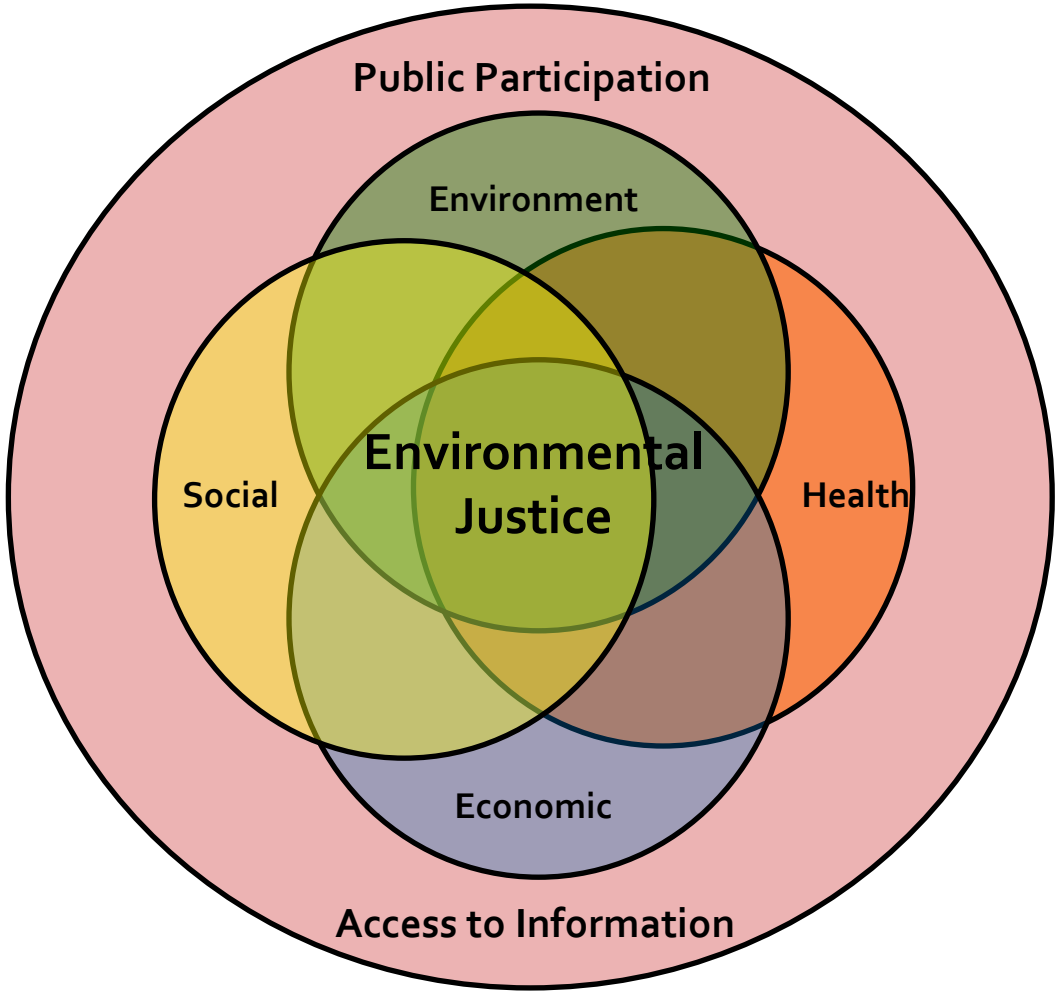
Assumption: Everyone benefits from the same supports.

Everyone gets the support they need but reasons for inequity are not addressed.

The cause of the inequity was addressed. The systemic barrier removed.

Communities with EJ Concerns

- People who live, work, play, and pray in the most polluted environments are commonly people of color, indigenous, and low-income.
- These communities suffer from **disproportionate** impacts from interactions of four categories of stress:
  - Environment
  - Health
  - Economic
  - Social
- These impacts are often the result of generations of systemic racism and disinvestment
- Lack meaningful public participation
- Have poor access to information



EPA Toolkit for Assessing Potential Allegations of Environmental Injustice

Disproportionate Impacts

Proximity & Exposure to Environmental Hazards

Unique Exposure Pathways

Cumulative & Multiple Environmental Impacts

Lack of Voice & Public Participation

Vulnerable Infrastructure

Vulnerable Population

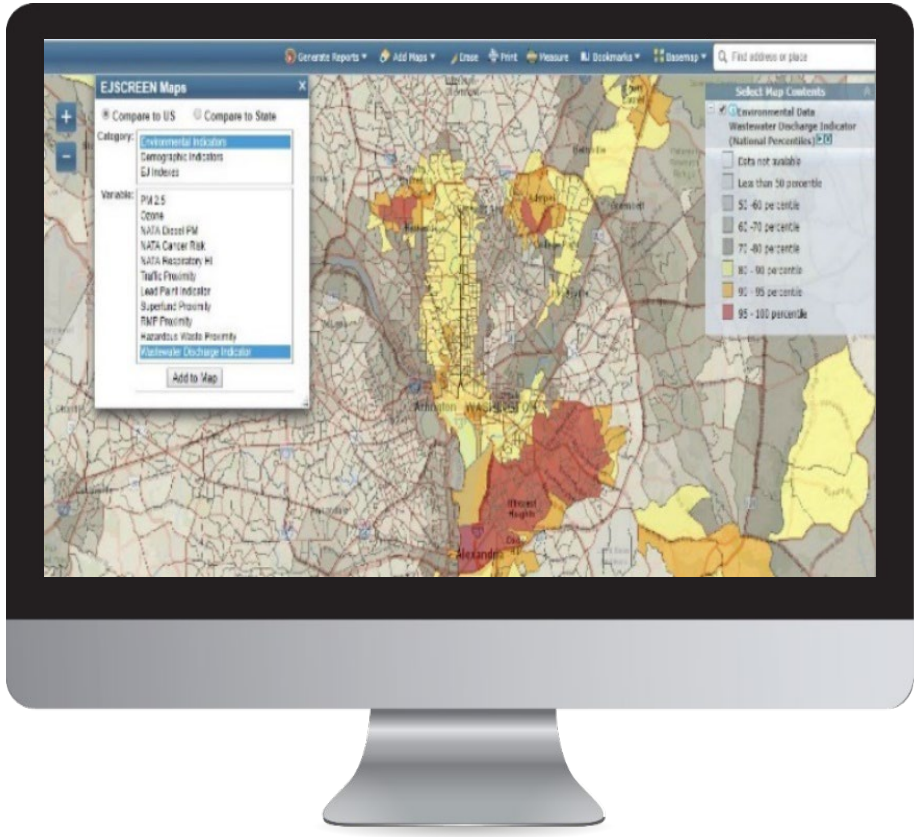
RECENT ENVIRONMENTAL JUSTICE INITIATIVES

Introduction to EJSCREEN

EPA's Environmental Justice Screening and Mapping Tool

What is EJSCREEN?

- EPA's web-based GIS tool for nationally consistent EJ screening and mapping
- Combines environmental and demographic data to highlight areas where **vulnerable populations** may be **disproportionately impacted** by pollution



Caveats & Limitations

EJSCREEN does not cover all environmental or EJ issues

Environmental indicators are mostly screening-level proxies for actual exposure or risk

Indicators vary in vintage

Census data has limitations and can obscure small communities

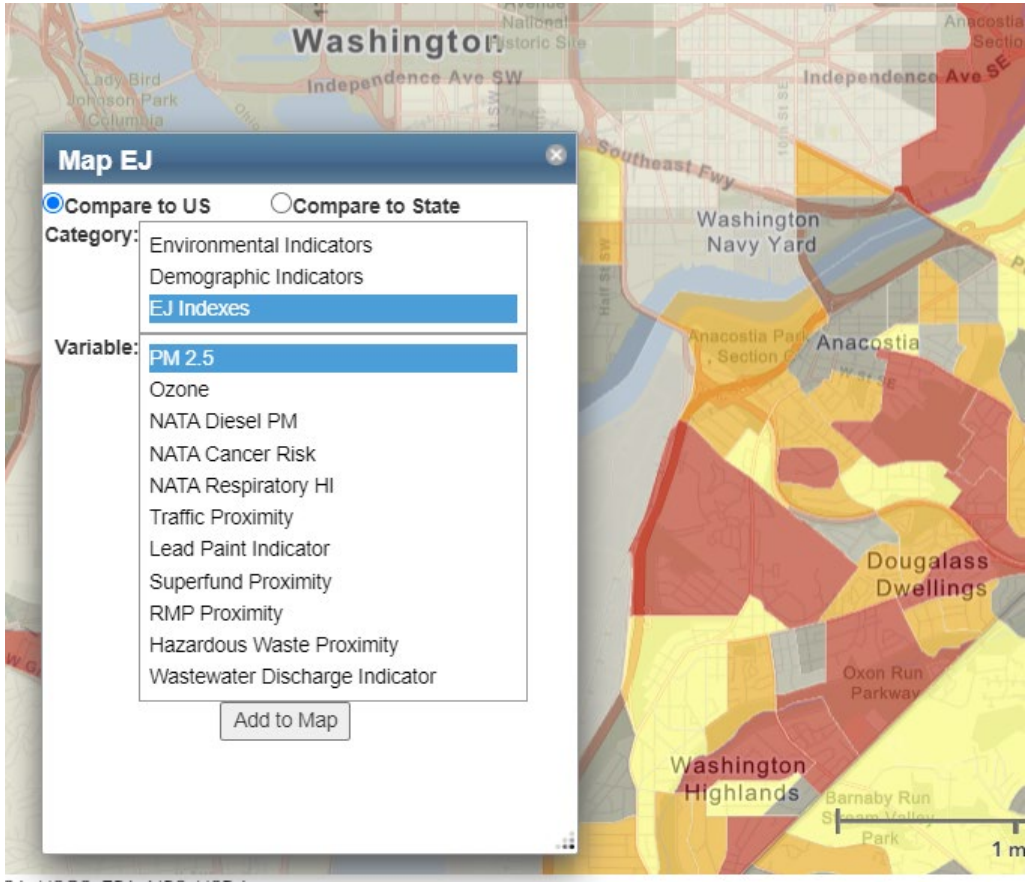
Results should be verified on the ground when possible

EJSCREEN does not label EJ communities

*It helps identify areas that may have **higher pollution burdens** and **vulnerable populations** present.

EJSCREEN Key Features

- 12 EJ Indexes – one for each environmental indicator
- Annually updated environmental data
- Annually updated demographics – from most recent U.S. Census Bureau American Community Survey (ACS)
- Highest resolution data available
- Ability to download data
- Accessibility / ease of use



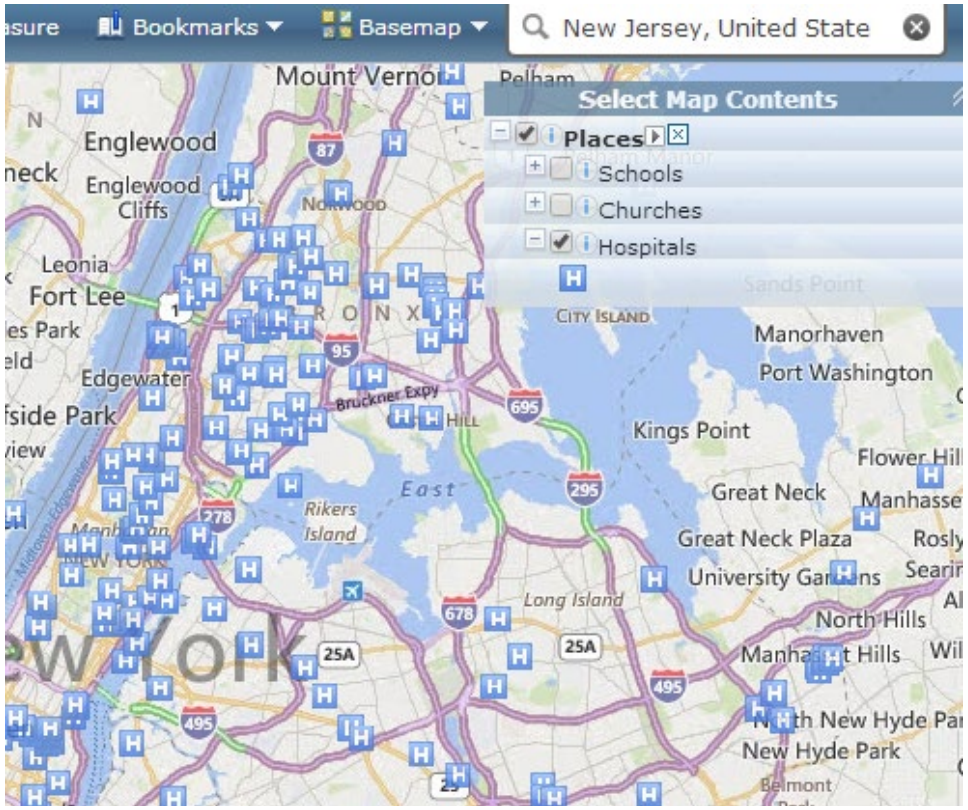
New EJSCREEN 2.0 Features

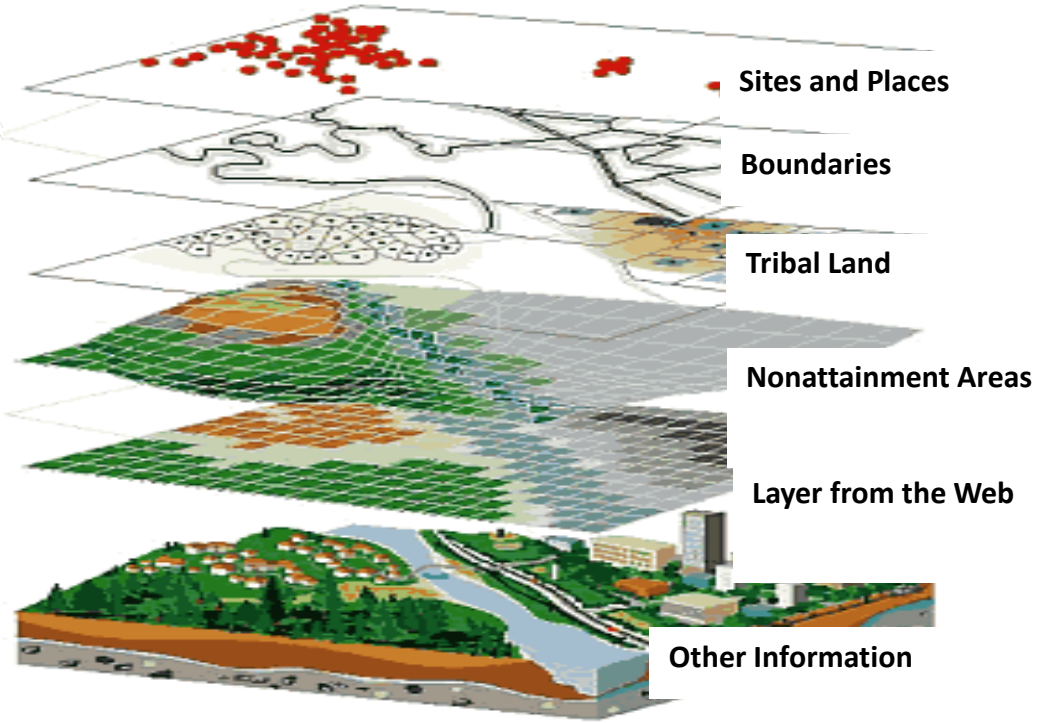
- Updated **user-interface**
- Updated ACS data & Environmental Indicators
  - National Air Toxics datasets
- Added **12th EJ Index**/Environmental indicator:
  - Underground storage tanks
  - Additional **climate change** indicators:
    - Wildfire Hazard Potential, Drought
  - **Health** data
    - Low-life Expectancy, Heart Disease, Asthma
  - **Critical Service** Gaps
    - Food Deserts, Medically Underserved, Unemployment

EJSCREEN Data

EJSCREEN Data

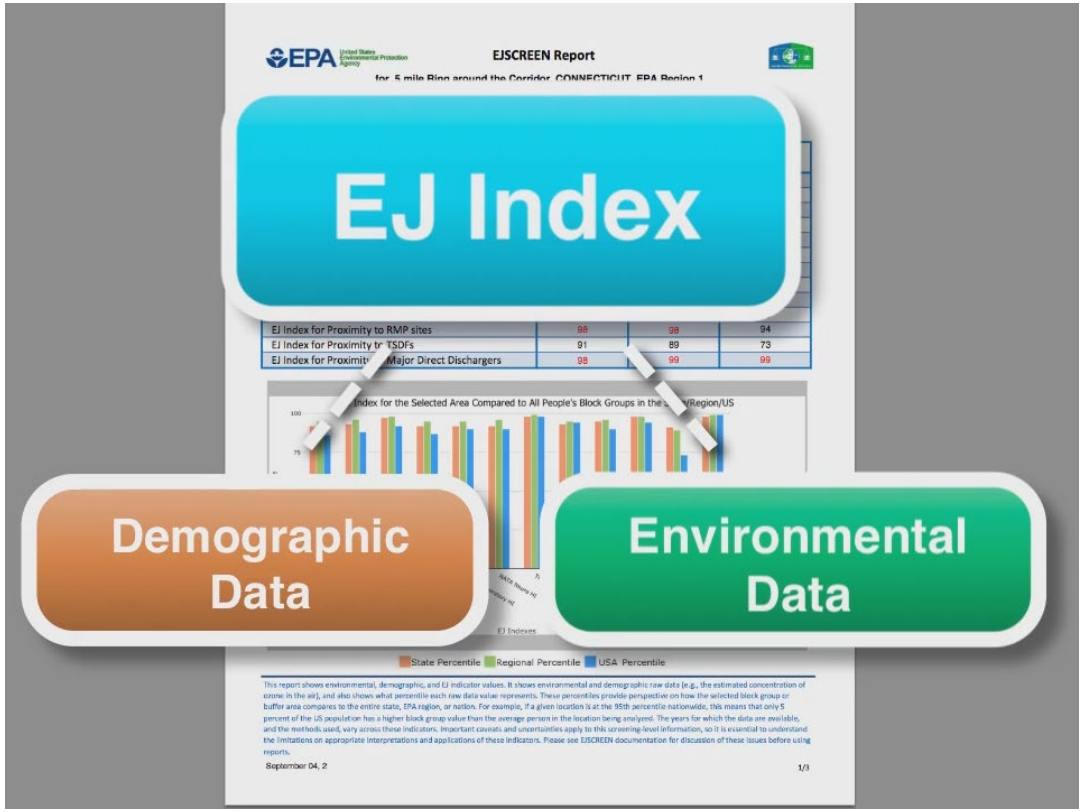
EJSCREEN adds many types of data
by overlaying various datasets called “layers”





Primary EJSCREEN Datasets

- **EJ Indexes** (12 indexes)
- **Environmental** (12 indicators)
- **Demographic** (6 indicators)
- **Health** (3 indicators)
- **Climate** (5 indicators)
- **Critical Service Gaps** (4 indicators)



UNITS OF ANALYSIS

United States

State

primary governmental divisions of the United States.

County

Largest divisions within states.

Census Tract

Collection of Census block groups, mostly between 1,200 and 8,000 people.

Block Group

Collection of residential blocks, mostly, between 600 and 3,000 people.

Block

Residential block, bounded on all sides by streets.

Demographic Indicators

Indicator	Definition
Low-Income	Households income is less than or equal to twice the federal "poverty level"
People of color (Minority)	Individuals who list their racial status as a race other than white alone and/or list their ethnicity as Hispanic or Latino
Less than high school education	People age 25 or older whose education is short of a high school diploma
Linguistic isolation	Households in which all members age 14 years speak English less than "very well" (have difficulty with English)
Individuals under age 5	People in a block group under the age of 5
Individuals over age 64	People in a block group over the age of 64
Demographic index	(Low income + People of Color) / 2

*Note: All demographic datasets are from the 2015 – 2019Census ACS

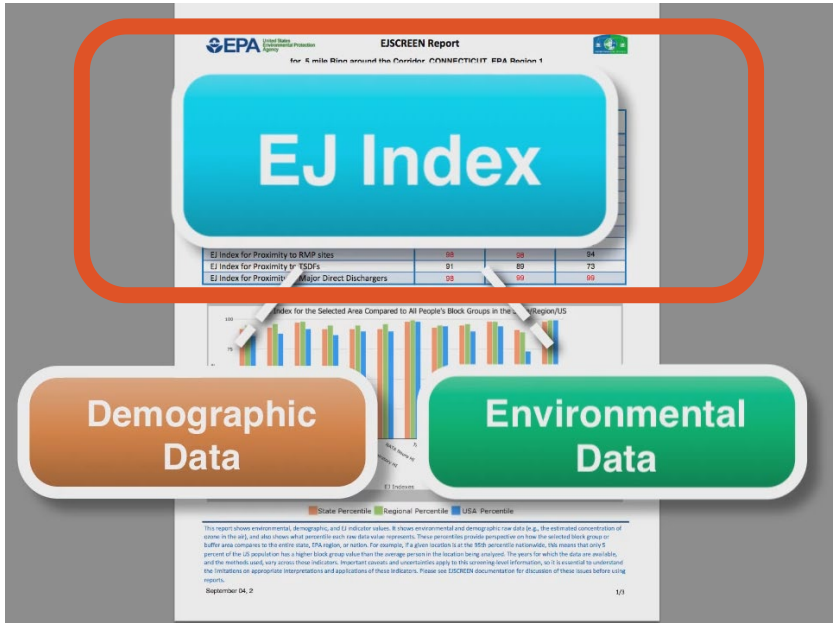
Environmental Indicators

Indicator	Description	Year
Air Toxics Cancer Risk	Lifetime cancer risk from inhalation of air toxics	2018
Air Toxics Respiratory Hazard Index	Air toxics respiratory hazard index (ratio of exposure concentration to health-based reference concentration)	2018
Diesel Particulate Matter	Diesel particulate matter level in air	2018
Particulate matter 2.5	Annual average of PM 2.5 levels in the air	2018
Ozone	Ozone summer seasonal avg. of daily maximum	2018
Traffic proximity and volume	Count of vehicles on major roads, divided by distance in meters	2018

Environmental Indicators (cont'd)

Indicator	Description	Year
Lead paint indicator	Percent of housing units built pre-1960, as indicator of potential lead paint exposure	2015 - 2019
Proximity to Risk Management Plan sites	Count of RMP (potential chemical accident management plan) facilities within 5 km, each divided by distance in kilometers	2021
Proximity to Hazardous Waste Facilities	Count of hazardous waste facilities (TSDFs and LQGs) within 5 km, each divided by distance in kilometers	2021
Proximity to National Priorities List sites	Count of proposed or listed NPL - also known as Superfund - sites within 5 km, each divided by distance in kilometers	2021
Wastewater Discharge Indicator	RSEI modeled Toxic Concentrations at stream segments within 500 meters, divided by distance in kilometers	2021
Underground Storage Tanks (UST)		2021

What does the EJ Index mean?



It helps identify areas that may have **higher pollution burdens** and **vulnerable populations** present

EJ Index Calculation:

One Environmental Indicator

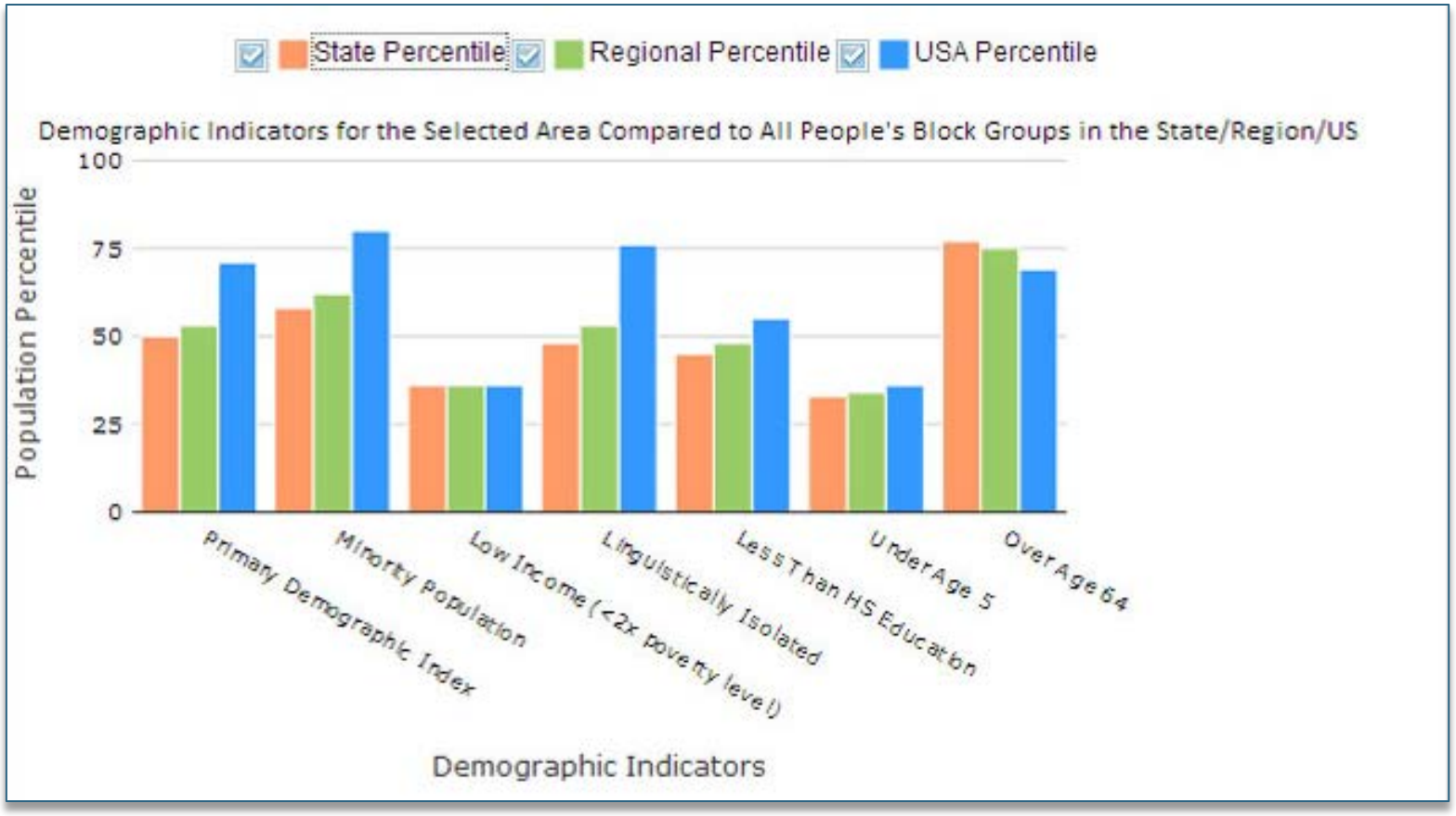
X (Demographic Index – US Average Demographic Index)

X Block Group Population

EJ Index for Given Environmental Indicator

Results are Ranked as Percentiles

- Percentiles put indicators into common units of 0 – 100.
- A place at the 80th percentile nationwide means 20% of the US population has a higher value.
- Ranking values as percentiles allows comparison of indicators measured with different units. <u>It does not mean the risks are equal or comparable</u>.



Health Indicators (2.0 Update)

Indicator	Definition
Low Life Expectancy	Average life expectancy
Heart Disease	Heart disease prevalence among adults aged 18 years or older
Asthma	Asthma prevalence among adults aged 18 or older.

*Note: All Health indicators come from the CDC and are at the Census tract level

Climate Indicators

Indicator	Definition
Wildfire Hazard Potential	Relative potential for wildfire that may be difficult to control
Drought	Change in drought conditions across the contiguous 48 states from 1900 to 2020
Coastal Flood Hazard	Areas in coastal counties that are most prone to coastal flood hazards
100-year Flood Estimates	Estimated 100-year floodplains for the Conterminous US for 2016
Sea Level Rise	Land at risk of permanent flooding when sea level rises.

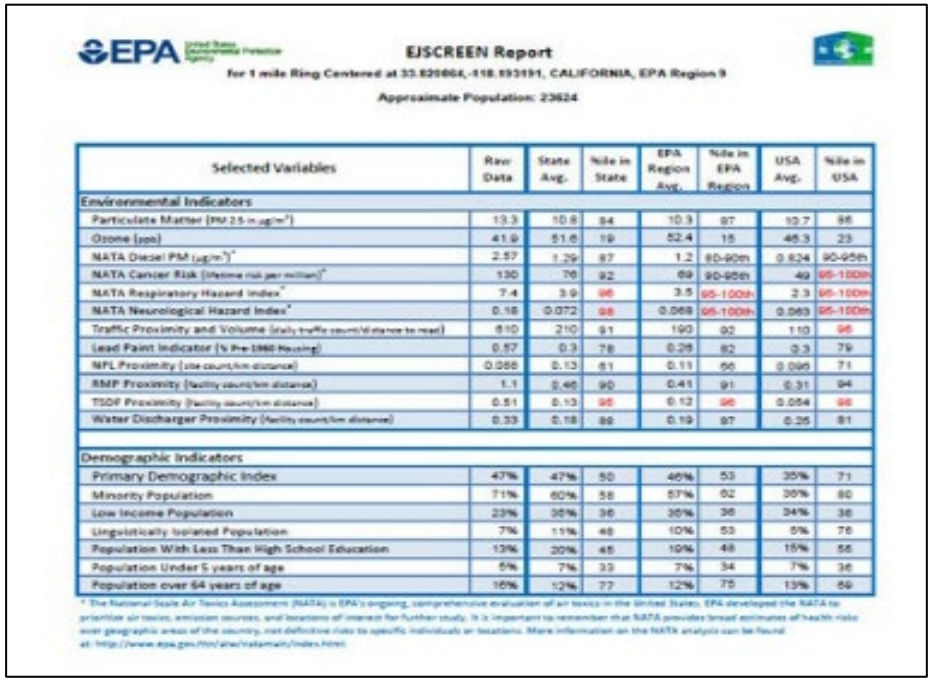
Critical Service Gaps Indicators (2.0 Update)

Indicator	Definition
Food Desert	Low income and low access to food from USDA
Medically Underserved	Areas having too few primary care providers, high infant mortality, high poverty or a high elderly population.
Unemployment	All those who did not have a job at all during the reporting period, made at least one specific active effort to find a job during the prior 4 weeks, and were available for work (unless temporarily ill).
Broadband Internet	Areas where less than 50% of population has broadband

Maps & Reports

Viewing EJSCREEN Data

You can view all of the indicators in EJSCREEN within reports or on maps.



EPA EJSCREEN Report

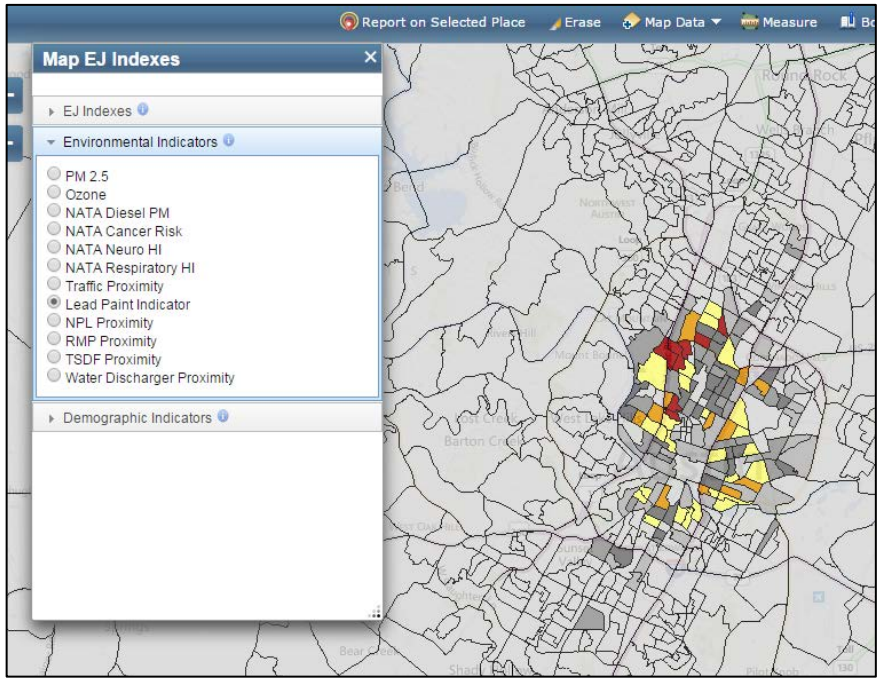
for 1 mile Ring Centered at 33.820864,-118.193191, CALIFORNIA, EPA Region 9

Approximate Population: 23624

Selected Variables	Raw Data	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	13.3	10.8	84	10.3	97	10.7	86
Ozone (ppb)	41.9	51.6	19	52.4	15	46.3	23
NATA Diesel PM (µg/m³)*	2.57	1.29	97	1.2	80-90th	0.824	90-95th
NATA Cancer Risk (lifetime risk per million)*	130	76	92	69	90-95th	49	95-100th
NATA Respiratory Hazard Index*	7.4	3.9	96	3.5	95-100th	2.3	95-100th
NATA Neurological Hazard Index*	0.18	0.072	98	0.069	95-100th	0.063	95-100th
Traffic Proximity and Volume (daily traffic count/distance to road)	610	210	91	190	92	110	96
Lead Paint Indicator (% Pre-1960 Housing)	0.57	0.3	78	0.29	82	0.3	79
NPL Proximity (site count/km distance)	0.088	0.13	61	0.11	66	0.096	71
RMP Proximity (facility count/km distance)	1.1	0.46	90	0.41	91	0.31	94
TSDF Proximity (facility count/km distance)	0.51	0.13	95	0.12	96	0.054	98
Water Discharger Proximity (facility count/km distance)	0.33	0.18	89	0.19	87	0.25	81
Demographic Indicators							
Primary Demographic Index	47%	47%	50	46%	53	35%	71
Minority Population	71%	60%	58	57%	62	38%	80
Low Income Population	23%	35%	36	35%	36	34%	36
Linguistically Isolated Population	7%	11%	48	10%	53	5%	76
Population With Less Than High School Education	13%	20%	45	19%	48	15%	55
Population Under 5 years of age	6%	7%	33	7%	34	7%	36
Population over 64 years of age	16%	12%	77	12%	75	13%	69

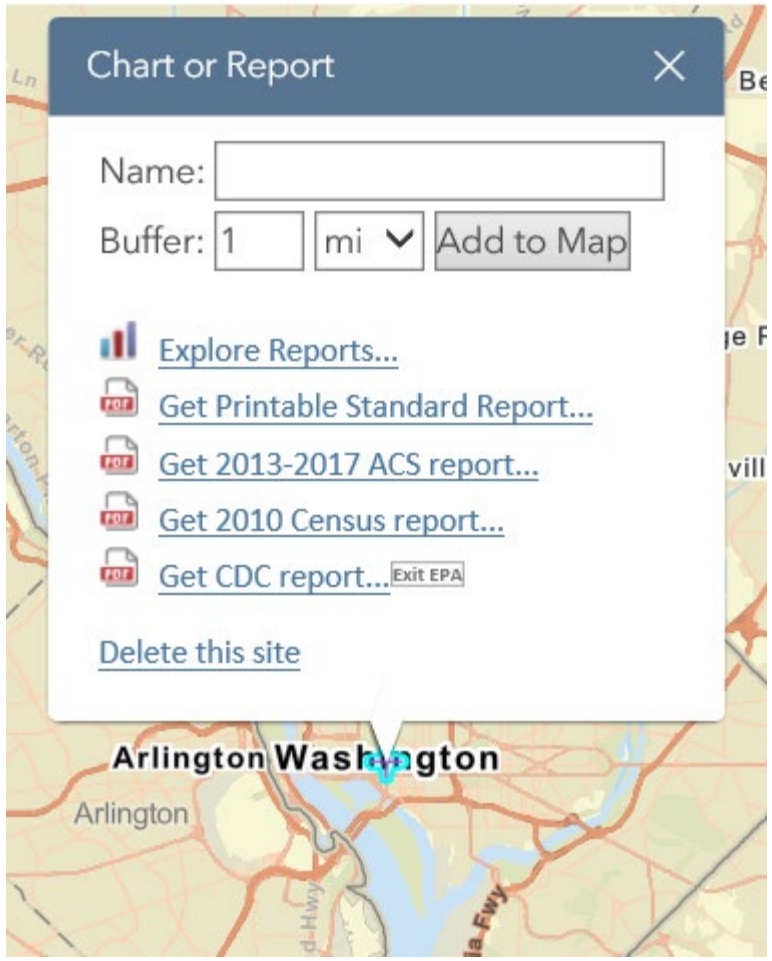
* The National Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: http://www.epa.gov/ttn/atw/natamain/index.html.

A standard report gives you all the indicators at once for a single specified location



A map gives you one indicator at a time, for each of the block groups within a wider area (e.g. across several miles)

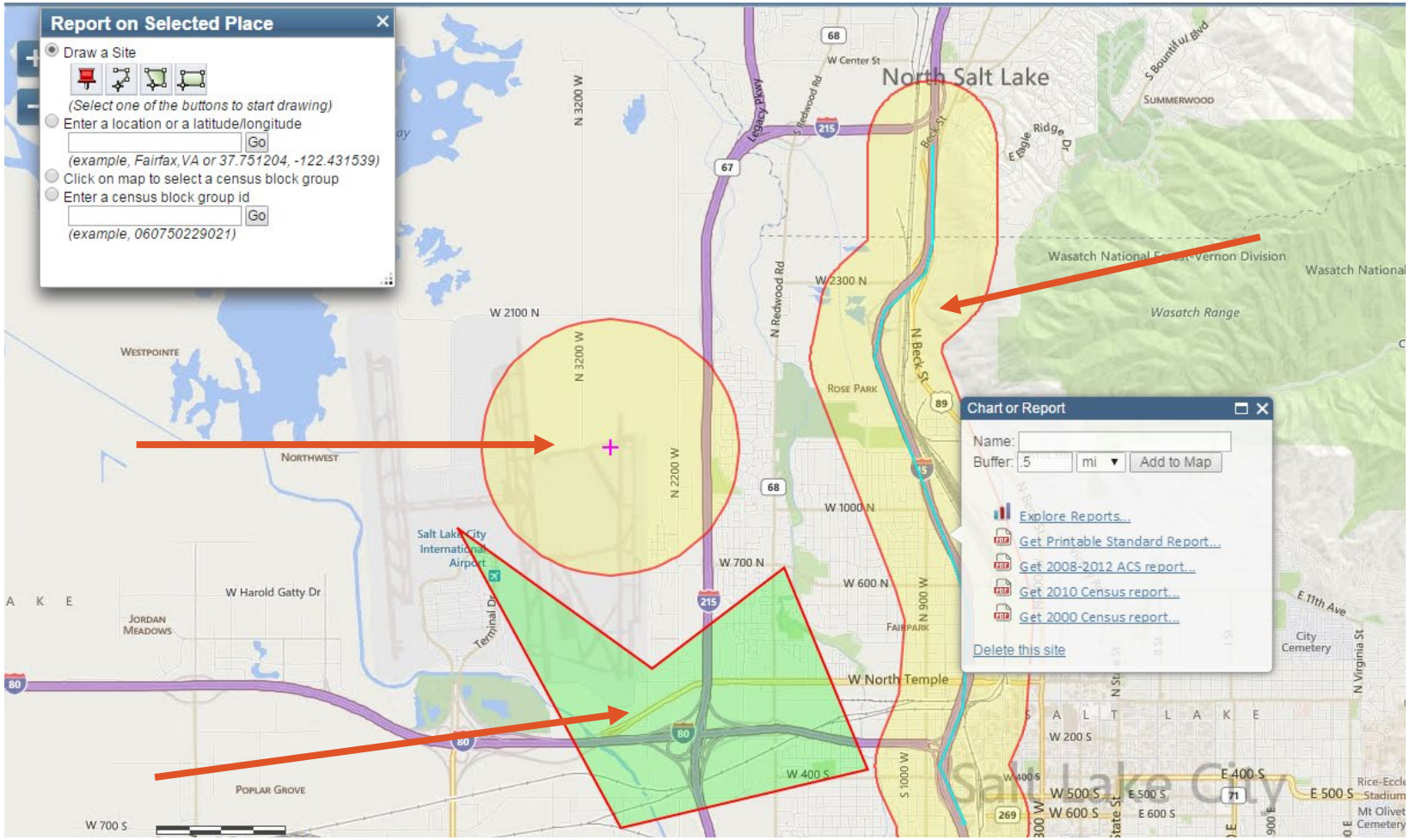
EJSCREEN Reports



- Multiple reports available in EJSCREEN
- Printable Standard Report
  - Sharable analysis of the selected location
  - Complete with maps, graphs, EJ indices, and raw values
- Census Reports
  - Utilize ACS or decennial census data
  - Demographic analysis of the selected location
- Health Data
  - Available at the county level via CDC reports

EJSCREEN Reports (cont'd)

You Can Specify User-Defined Areas to Generate Standard Reports



Additional EJSCREEN Data

Demographics: Access to a wealth of Census data on education, income, languages spoken, population, housing, etc…

EPA Sites: Superfund, Brownfields, nonattainment areas, etc…

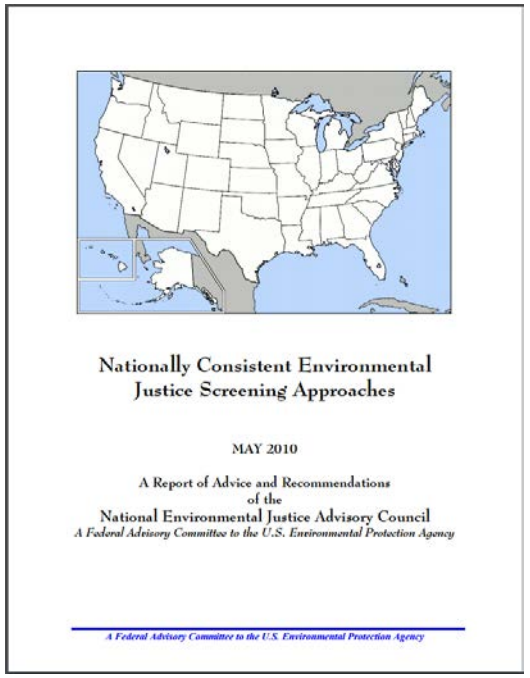
Places: Parks, schools, churches, hospitals, airports, etc…

EJ Considerations: Tribal areas, public housing, prisons, etc…

Outside maps: Ability to bring in outside maps

EJSCREEN
Uses

EJSCREEN Background



Click to read the full NEJAC report

EPA begins building nationally consistent EJ screening tool

EPA begins using EJSCREEN internally

Tool released to public

Annual update

2010 2011 2012 2013 2015 2017 2021

National Environmental Justice Advisory Committee report released on EJ screening methods

Peer reviewed by experts

Mobile version of the tool released

EJSCREEN in Action at EPA

EPA uses of EJSCREEN:

- for public outreach and engagement
- enforcement targeting
- inclusion in inspection reports
- permitting and NEPA reviews
- reviews of grant projects
- other placed-based initiatives
- retrospective reporting

Various EJSCREEN "platforms" for Integration:

- Web-based platform (https://ejscreen.epa.gov/mapper/)
- ArcGIS platform (https://www.epa.gov/ejscreen/download-ejscreen-data)
- ECHO platform (https://echo.epa.gov/)
- Other EPA and State mapping tools also now incorporate EJSCREEN data

EJSCREEN: External Uses

- **Federal Government:**
  - Department of Transportation (DOT), Army Corps of Engineers (ACE), Federal Emergency Management Agency (FEMA), and others use in their programs
- **State Governments:**
  - Many states are building their own EJ tools based on EJSCREEN
  - This allows them to incorporate state specific information and other datasets
- **Local and Tribal Governments:**
  - Use to implement environmental programs and regulations
  - Rely on EJSCREEN data as they often don't have the resources to build their own tools

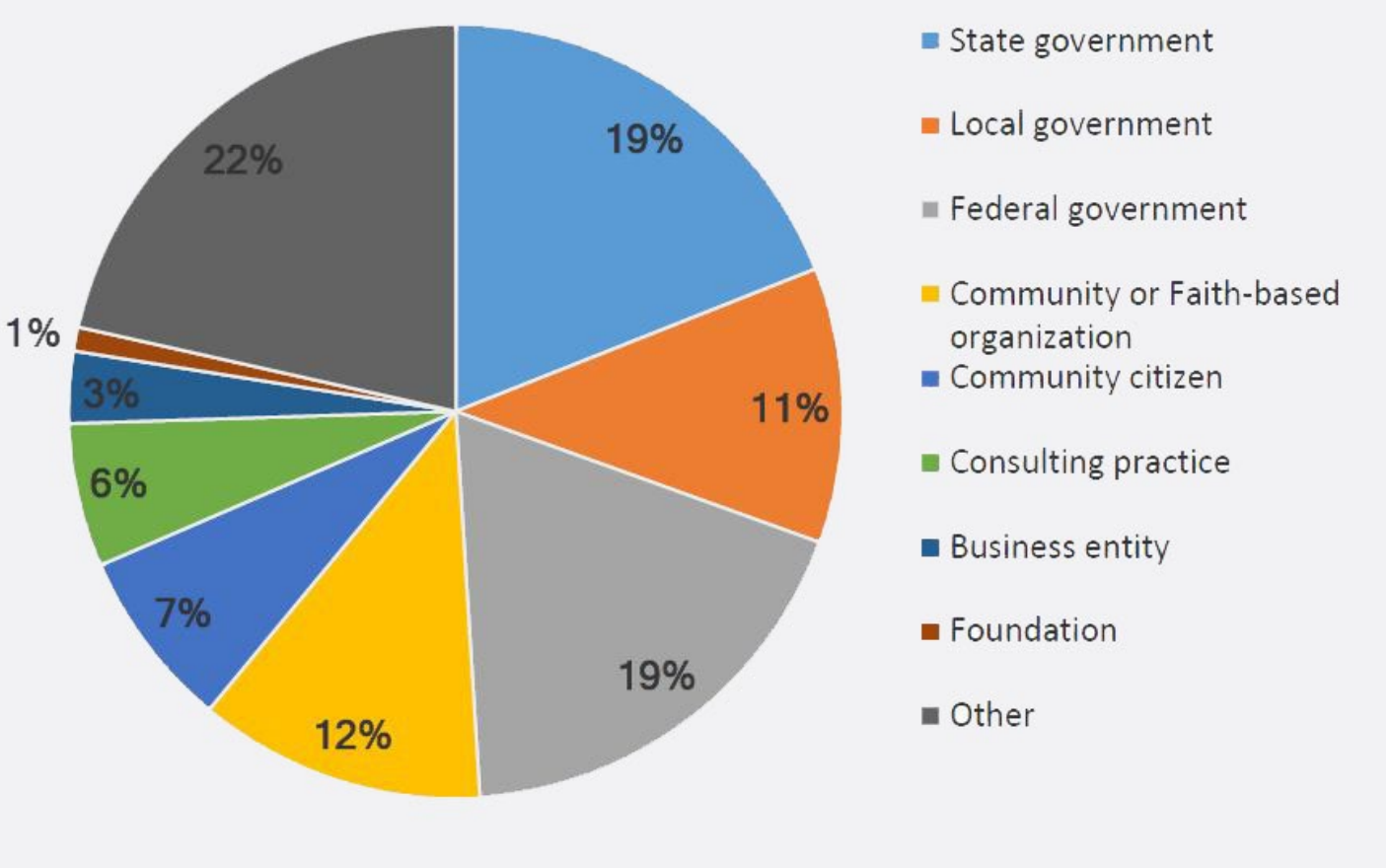
EJSCREEN: External Uses

- **Communities:**
  - Identifying potential issues
  - Grant writing
  - Comparing environmental burdens
- **Academic:**
  - Teaching about environmental justice
  - Research

EJSCREEN in Action: External Users

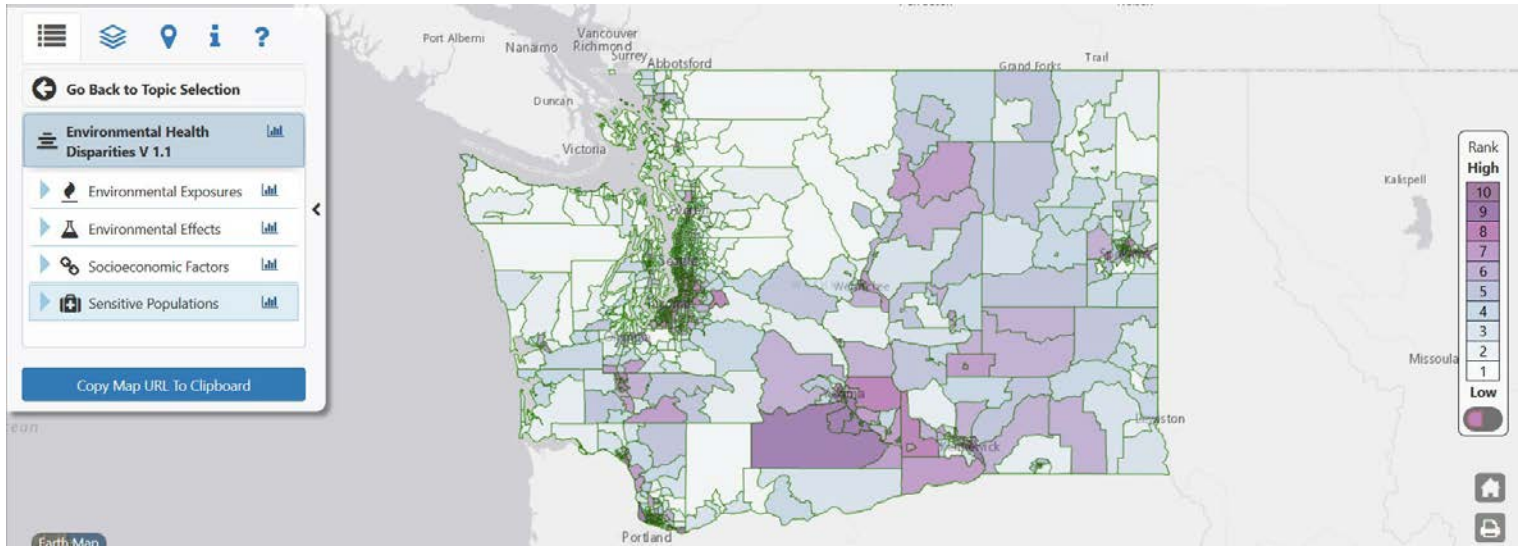
- EJ analyses
- Community outreach
- Prioritization
- Retrospective reports
- Environmental analysis
- Education and teaching
- Research

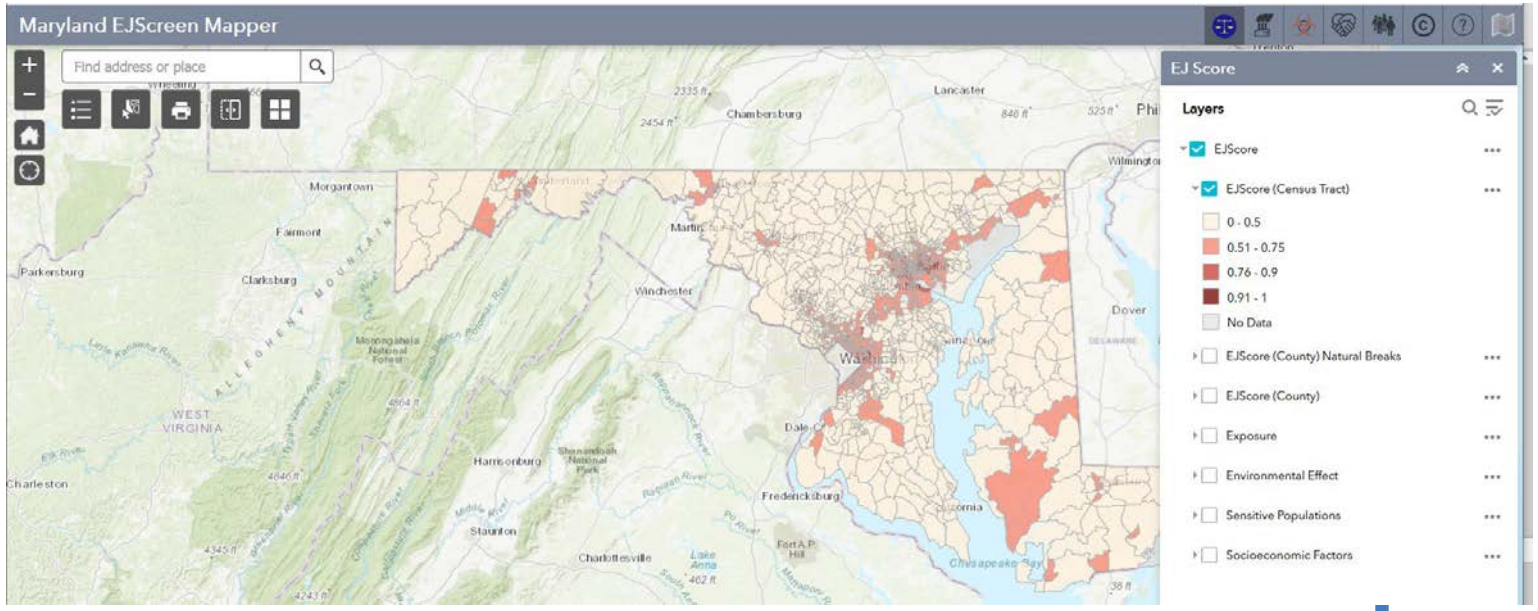
Who is using EJSCREEN?



Beyond EJSCREEN

- Other EPA Data and Mapping Tools
  - EnviroAtlas, NEPA Assist, etc.
- Indiana University's Environmental Resilience Institute EJ Mapping Tools Review
  - Identified 19 different tools and provided a detailed review of indicators & methodologies utilized
- Mapping Inequality: Redlining in New Deal America

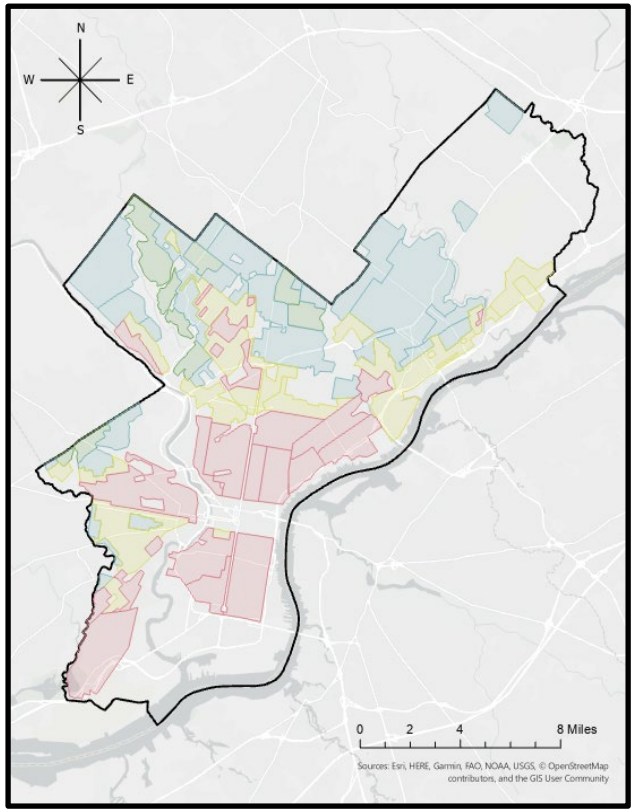




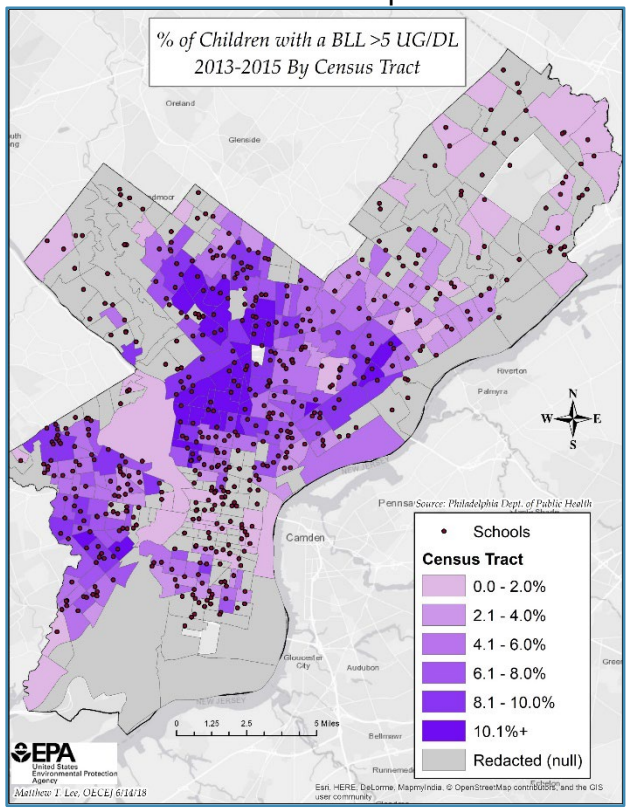
Enhancing/Supplementing EJSCREEN Info

Baseline screening should be supplemented with additional data, local information and experience.

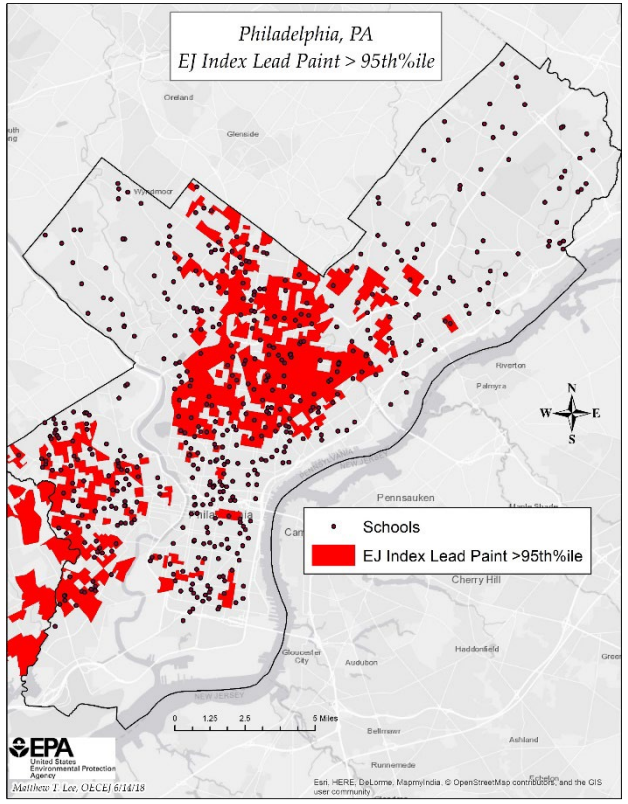
1938 "Redlining" Map



Child BLL Map



EJSCREEN Map

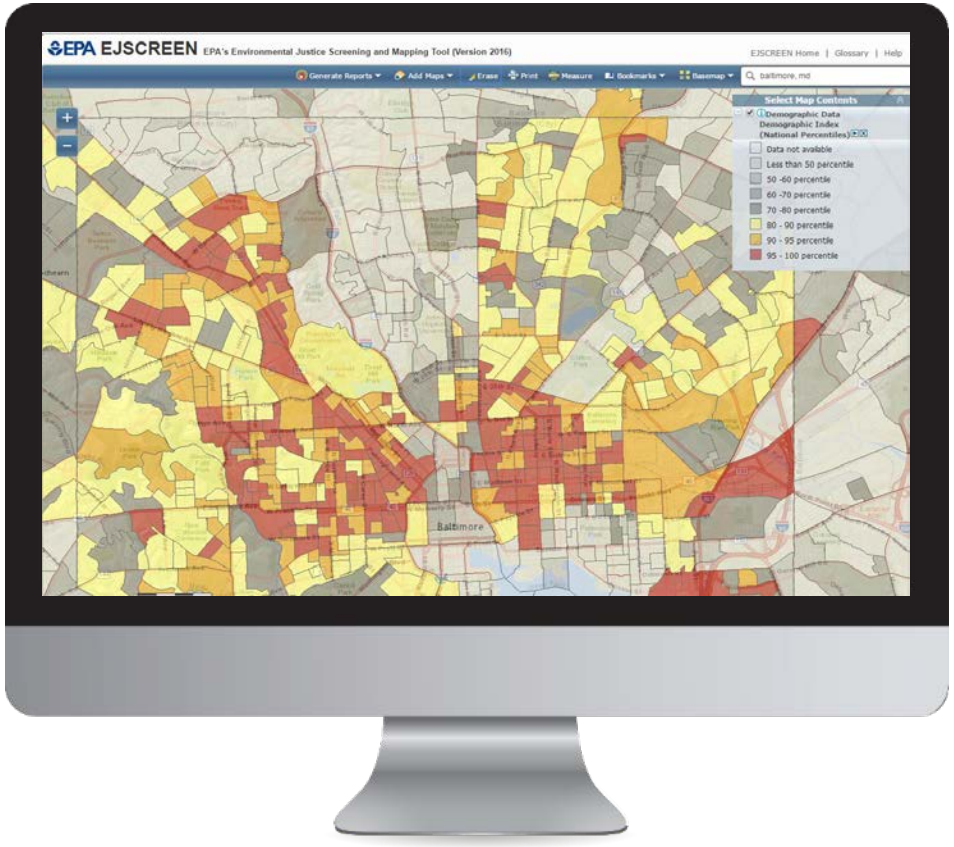


Future of EJSCREEN

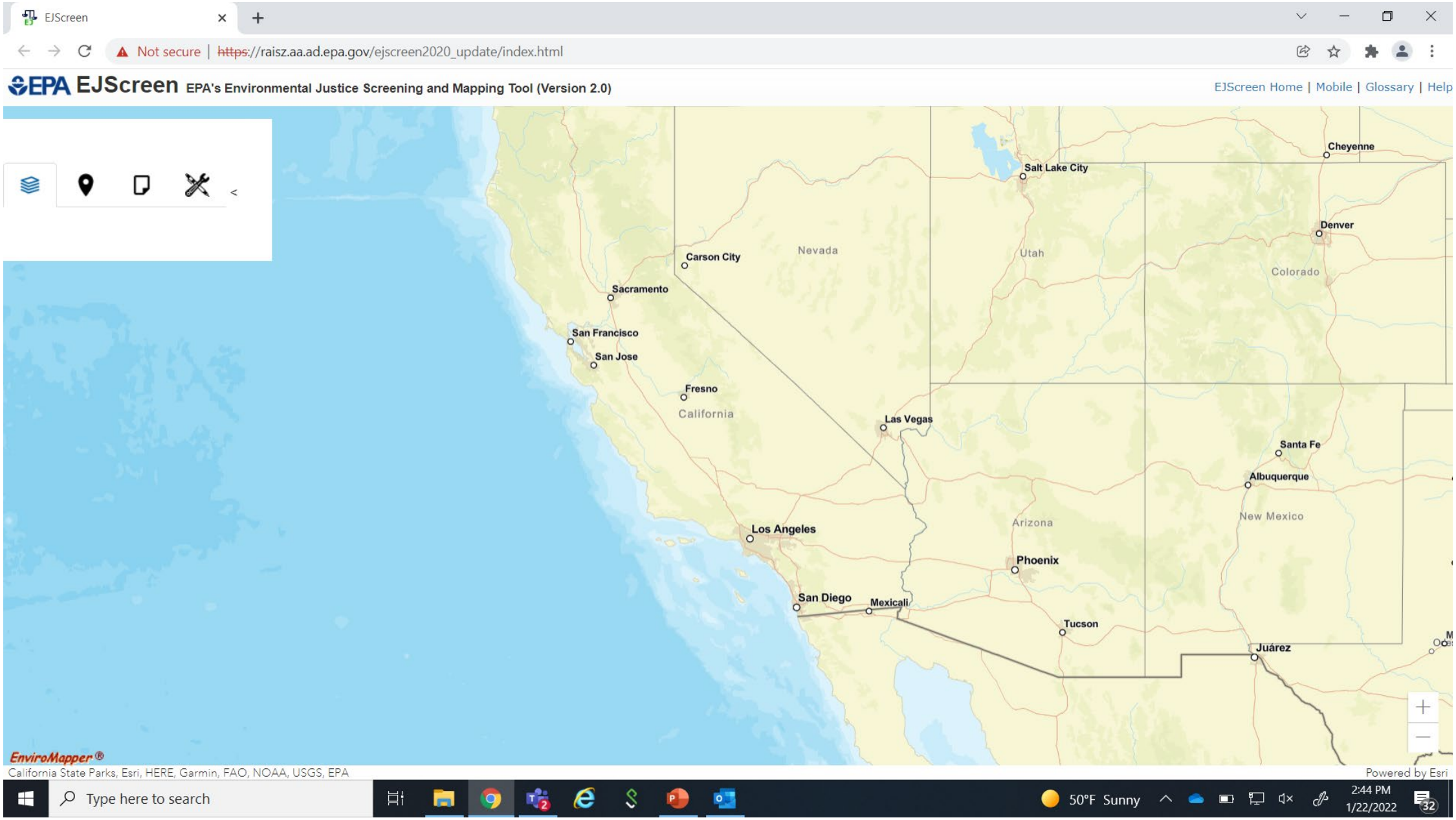
- Continuously looking for EJ relevant data to incorporate
- Continued incorporation into EPA programs and activities
- Support of partners using EJSCREEN to consider EJ
- Continued public engagement and evaluation
- Improved training and access to learning materials
- Improved usability and accessibility
- Expansion of map layers relevant to EJ communities

EJSCREEN Demonstration

LIVE DEMO



Click to access EJSCREEN Tool


EJScreen
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EPA EJScreen EPA's Environmental Justice Screening and Mapping Tool (Version 2.0)
EJScreen Home | Mobile | Glossary | Help
Cheyenne
Salt Lake City
Denver
Carson City
Nevada
Utah
Colorado
Sacramento
San Francisco
San Jose
Fresno
California
Las Vegas
Santa Fe
Albuquerque
New Mexico
Arizona
Los Angeles
Phoenix
San Diego
Mexicali
Tucson
Juárez
EnviroMapper®
California State Parks, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA
Powered by Esri
Type here to search
50°F Sunny
2:44 PM
1/22/2022

EJSCREEN Tool Learning Resources

- EJSCREEN Website
- Guidance Documents
- Video Tutorials
- Technical Information
- Understanding Results
- Other tools and resources

Click to access EJSCREEN Website

Announcing:

EJSCREEN Office Hours

Normally Monthly: 3rd Wednesday,
9-10:00 AM (Pacific Time)
Alternating Internal and
Public Audiences

Public Session (Exception- Feb. Update):

Feb. 23rd , 2022

https://www.epa.gov/ejscreen/ejscreen-office-hours

For More Information:

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Questions?

- Is there a preferred browser to use EJSCREEN in?
  - The EPA's preferred browser is generally Google Chrome; however, you should be able to effectively run EJSCREEN on desktop and mobile versions of Google Chrome, Internet Explorer, and Mozilla Firefox.
- What is a REST service?
  - REST is a GIS (geographic information system) term referring to a map service that allows layers to be pulled from one mapping tool to another and keep the symbology. Regular map services don't keep the original symbology which can sometimes make the data unusable.
  - A REST API (also known as a RESTful API) is an application programming interface (API or web API) that conforms to the constraints of REST architectural style and allows for interaction with RESTful web services.

Please take this anonymous survey:

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