Health & Environmental Justice Analysis

Prepared for the July 15th 2021 GPAC meeting

CITY OF PETALUMA GENERAL PLAN

raimi + associates

Overview

CITY OF
PETALUMA GENERAL PLAN

Introduction

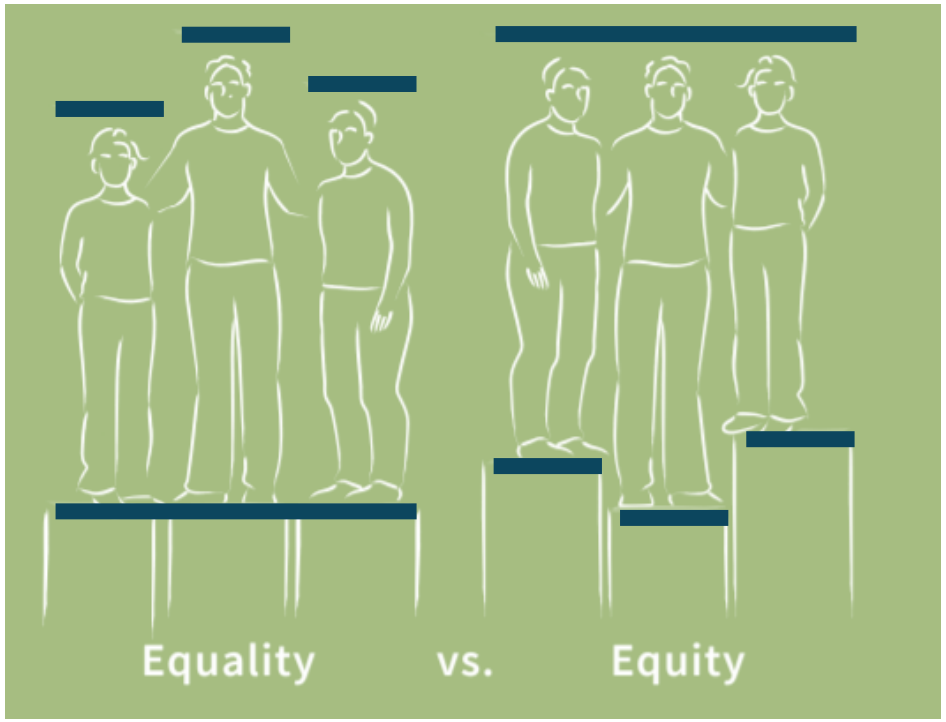
- This report provides **an existing conditions analysis** of community health and environmental justice conditions in Petaluma.
- The purpose of the report is as follows:
  - Provides the basis for the Senate Bill 1000 (Environmental Justice) analysis and the identification of “disadvantaged communities” in Petaluma. “Disadvantaged communities” are defined as geographic areas with a combination of socioeconomic hardship and adverse environmental or health conditions.
  - Provides a summary of existing health and environmental justice conditions in Petaluma to identify both positive and negative conditions and/or outcomes.
  - Serves as background information for the GPAC discussion at their July meeting.
- This information will be summarized in the Health and Environmental Justice Existing Conditions Report.

Equity and Environmental Justice

Equity is about ensuring that people have access to the same opportunities and have what they need to thrive and succeed. It is when demographic and environmental factors can no longer be used to predict health, social, or economic outcomes.

Although the City of Petaluma has many programs and policies to advance social equity (see next slide), this analysis is specifically focused on the health equity impacts of the physical environment; otherwise known as environmental justice.

Environmental Justice is "…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." (US EPA)



Petaluma's Equity Initiatives

- Black Lives Matter art installation
- Climate Action Framework
- Ad Hoc Community Advisory Committee
- Various Police Department programs
  - Community policing model
  - Mobile crisis intervention team
  - Trainings on de-escalation, implicit bias, and diversity, equity, and inclusion
- Equity will also be woven through the General Plan Update work

Sources: City of Petaluma

Discussion Questions

- Please carefully review the data and keep note of any trends you identify in advance of the upcoming GPAC meeting.
- During the GPAC meeting, we will discuss the following questions:
  - What are Petaluma's health and environmental justice strengths and weaknesses?
  - Are any topics or issues missing from the analysis?
  - What geographic areas may have unique or compounded health risks?
  - What City initiatives or initiatives run by other organizations exist to address the issues identified in the environmental justice analysis?

What is a “Disadvantaged Community”?

- **According to State law, a “disadvantaged community” (DAC) is defined as**: “An area identified by the California Environmental Protection Agency (CalEPA) pursuant to Section 39711 of the Health and Safety Code or an area that is **a low-income area that is disproportionately affected by environmental pollution and other hazards** that can lead to negative health effects, exposure, or environmental degradation.”
- For the first half of the definition (Health and Safety Code Section 39711), CalEPA designates a census tract that scores at or above 75 percent on the agency’s CalEnviroScreen tool as a “disadvantaged community”.
- The second half of the definition allows local governments to identify DACs using their own methods and local data.

Environmental Justice Element (SB 1000)

- Senate Bill 1000 (2016) requires jurisdictions that with disadvantaged communities develop an environmental justice element with goals, policies, and actions that:
  - Reduce unique and compounded health risks in disadvantaged communities
  - Promote transparency and public engagement in the public decision-making process
  - Directly engage with and prioritize needs identified by disadvantaged communities
- This meeting will help the General Plan Team identify potential DACs in Petaluma and serve as the launching point for community engagement on health and EJ.

What are the priority topic areas of SB 1000?

SB 1000 specifies five topic areas that must be addressed, at a minimum, in the EJ Element or through integrated EJ goals, policies, or actions:

- **Reduce Pollution Exposure, including Air Quality Improvement**
- **Promote Public Facilities**
- **Promote Food Access**
- **Promote Safe and Sanitary Homes**
- **Promote Physical Activity**

SB1000 Process

There are three steps to developing an Environmental Justice (EJ) Element. **This report only focuses on the Step 1 of Analysis**.

Analysis

Identify disadvantaged communities (DACs), including unique or compounded risks

Engagement

Engagement with the community, especially in DACs, on a minimum of five topic areas related to health and environmental justice

Policy Development

Integration of goals, policies, and programs into the GPU to address DAC priorities

Disadvantaged Community Screening Analysis

- **Within the Step 1 of Analysis**, the State's Office of Planning and Research (OPR) recommends **a combination of three sequential methods** for the disadvantaged community screening analysis:
  - **Method 1:** Determine whether any census tracts have a score in the 75th percentile or higher on the CalEnviroScreen index.
  - **Method 2:** Determine whether any areas are low-income areas, defined as having a median household income at or below the statewide median income or the county's area median income. Then, determine whether any of these identified low-income areas face a disproportionate pollution burden that can lead to negative health effects.
  - **Method 3:** Analyze community-specific data and examine for additional health risk factors and disproportionate burden from pollution or other hazards that can also lead to negative health effects, exposure, or environmental degradation.
- **The geographic areas identified in all three methods combined are considered potential "disadvantaged communities."** These must be verified through community engagement, such as with the GPAC.
- The following graphic shows this methodology.

Disadvantaged Community Screening Analysis

Method 1
CalEnviroScreen 4.0

CalEnviroScreen score

Areas with top 25% CalEnviroScreen score

Method 2
Low-income communities with disproportionate pollution burden

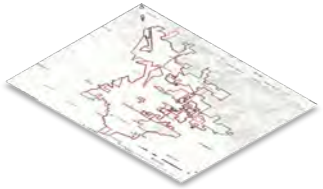
Median Household Income

Areas at or below 80% of State and County AMI

PM2.5 percentile

Diesel percentile

Other pollution factors



Low Income Communities Disproportionately Affected by Environmental Pollution

Method 3
Community-specific data and groundtruthing

Review Community-Specific Data

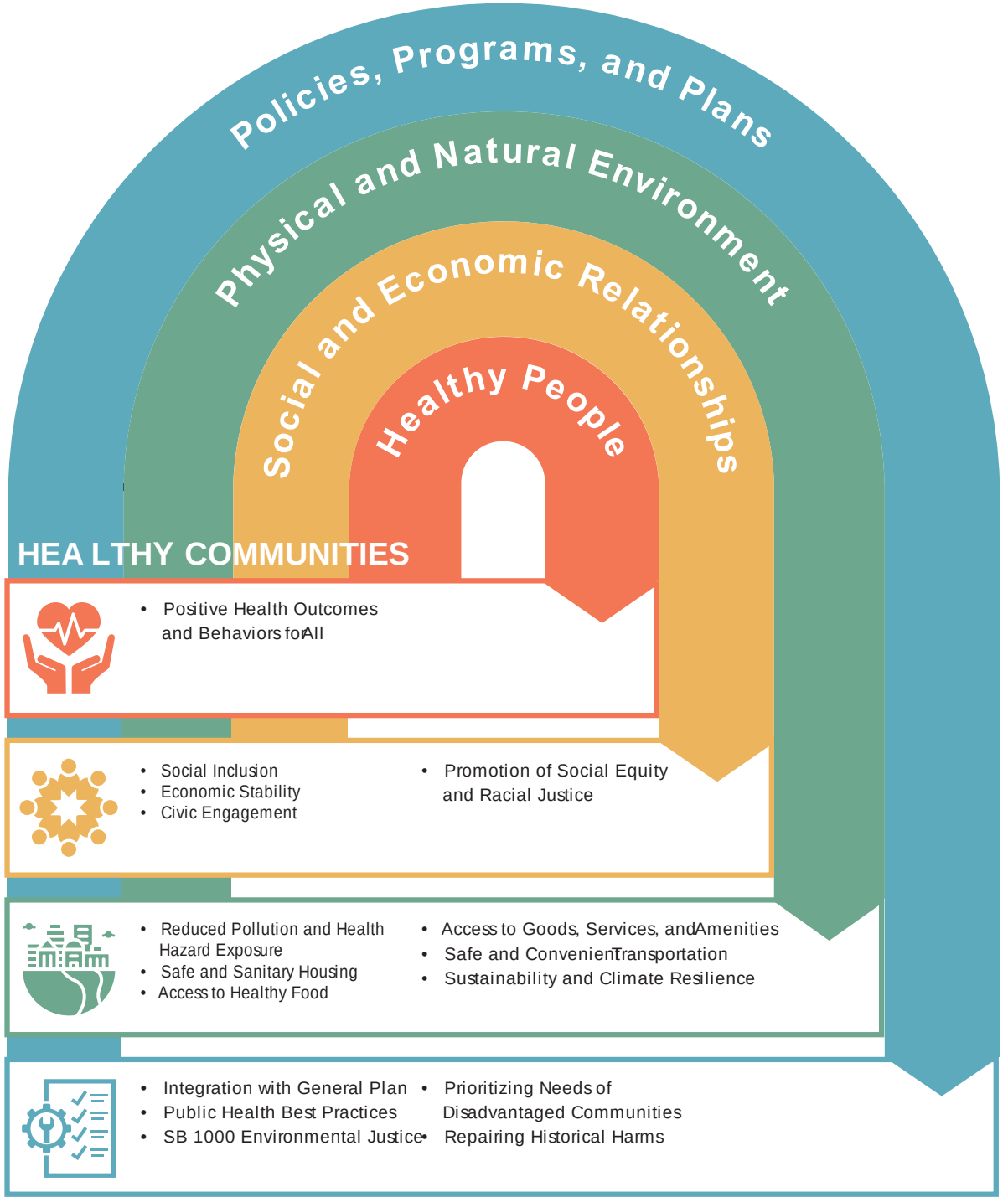
Verification through Community Engagement

Identified Disadvantaged Communities (DACs)

Sources: Raimi + Associates.

Healthy Communities

- Environmental justice is part of a larger concept known as “healthy communities.” These are places that foster positive health outcomes for all who live, work, or play in them.
- Research in multiple fields over many years has demonstrated strong associations between population health and a range of factors impacted by city policy and design interventions in the physical environment.
- The figure on the right shows the Healthy Communities framework used by the General Plan Team.



Healthy Communities Framework

- Healthy People – At the center of the framework is the evaluation of population health outcomes and behaviors overall and for different groups or geographic sub-areas within a community.
- Social and Economic Relationships – Social and economic conditions, which reflect the relationships of groups in society, are strong influencers of health outcomes. Examining social and economic relationships and health outcomes is critical to understanding conditions that may be contributing to inequities in health outcomes.
- Physical and Natural Environment – Physical and natural environment characteristics, including land uses, pollution sources, access to open space, safety of the transportation system, climate change, among others, impact an individual's health outcomes. The framework includes an analysis of select physical environment characteristics known to impact health outcomes.
- Policies, Programs, and Plans - Policies, programs, and plans reflect social and economic relationships and have guided the historical development of a city's physical environment. Because they are created by people, they can be revised to redirect a city's evolution. This context is established at the federal, state, county, and local level. As a city's "constitution" and blueprint for the future, the General Plan is an important local component of that context.

DAC Analysis: Method 1

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Section Overview

- Method 1 seeks to determine whether any census tracts have a score in the 75th percentile or higher on the CalEnviroScreen (CES) index.
- The following slides provide:
  - The specific data points/indicators that are part of CES 4.0 divided into two categories: 1) Pollution Burden and 2) Population Characteristics.
  - A map of Petaluma's census tracts and the CES 4.0 percentile score of each for both categories (Pollution Burden and Population Characteristics) and the overall index.
- Conclusion:
  - There are no census tracts in Petaluma that score in the 75th percentile in CES 4.0.
  - Therefore, no DACs are identified from this method.
- Note: The General Plan Team is using CES 4.0, which is currently in draft form. Like CES 4.0, CES 3.0 does not identify any census tracts as DACs.

CalEnviroScreen 4.0 Indicators

Pollution Burden × **Population Characteristics** = **CalEnviroScreen 4.0 Score**

Pollution Exposures

- Air Quality: Ozone
- Air Quality: Particulate Matter 2.5
- Children's Lead Risk from Housing
- Diesel Particulate Matter
- Drinking Water Contaminants
- Pesticide Use
- Toxic Releases from Facilities
- Traffic Impacts

Environmental Effects

- Cleanup Sites
- Groundwater Threats
- Hazardous Waste Generators and Facilities
- Impaired Water Bodies
- Solid Waste Sites and Facilities

Sensitive Populations

- Asthma
- Cardiovascular Disease
- Low Birth Weight Infants

Socioeconomic Factors

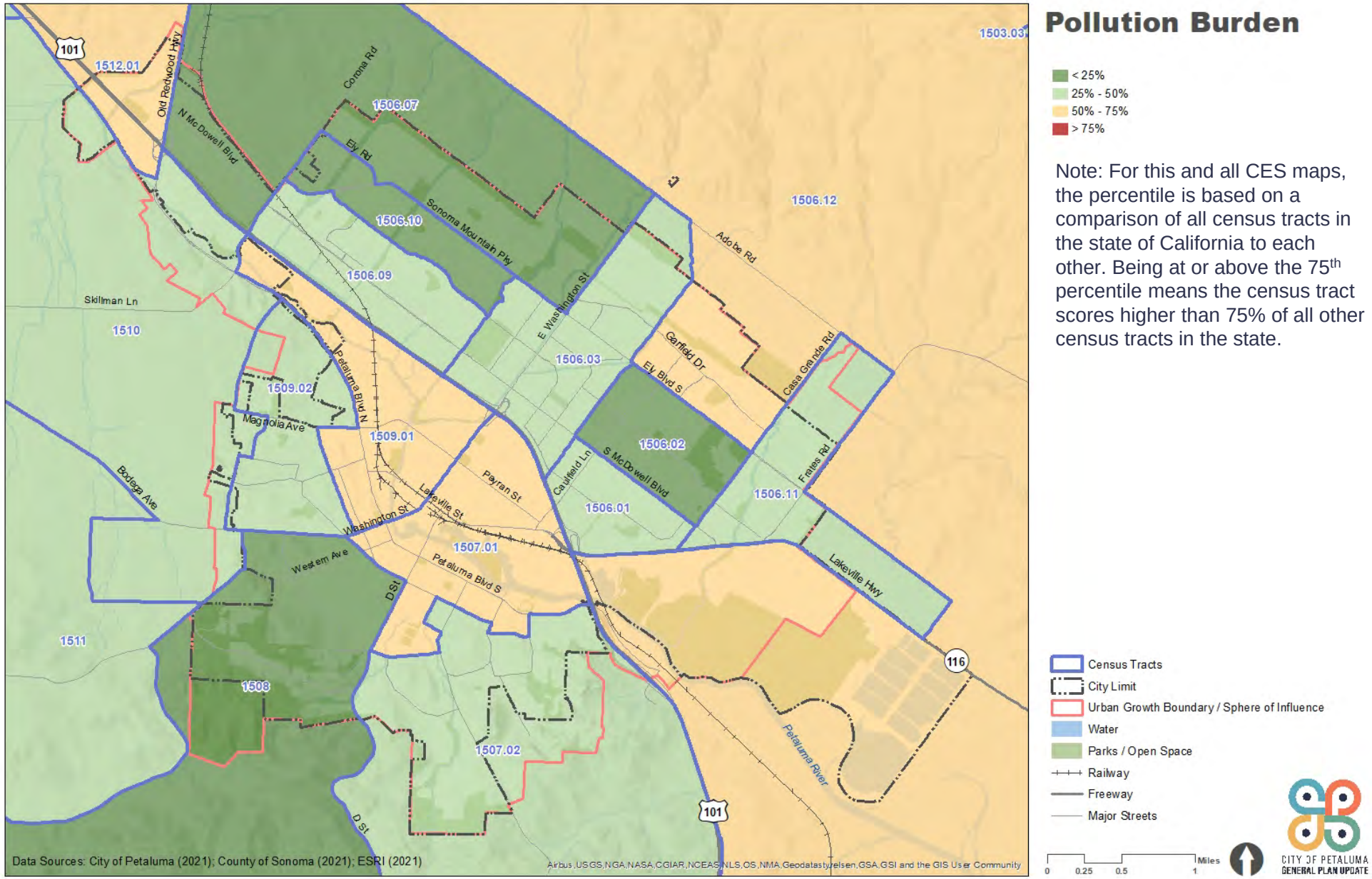
- Educational Attainment
- Housing Burden
- Linguistic Isolation
- Poverty
- Unemployment

Sources: Raimi + Associates. Graphic Elements adapted from California Office of Environmental Health Hazard Assessment CalEnviroScreen 3.0 Webpage and Report.

Pollution Burden Score

Measures overall pollution burden for the combined 8 pollution exposures and 5 environmental effects indicators in CES 4.0.

No census tract has a pollution burden score at or above the 75th percentile.



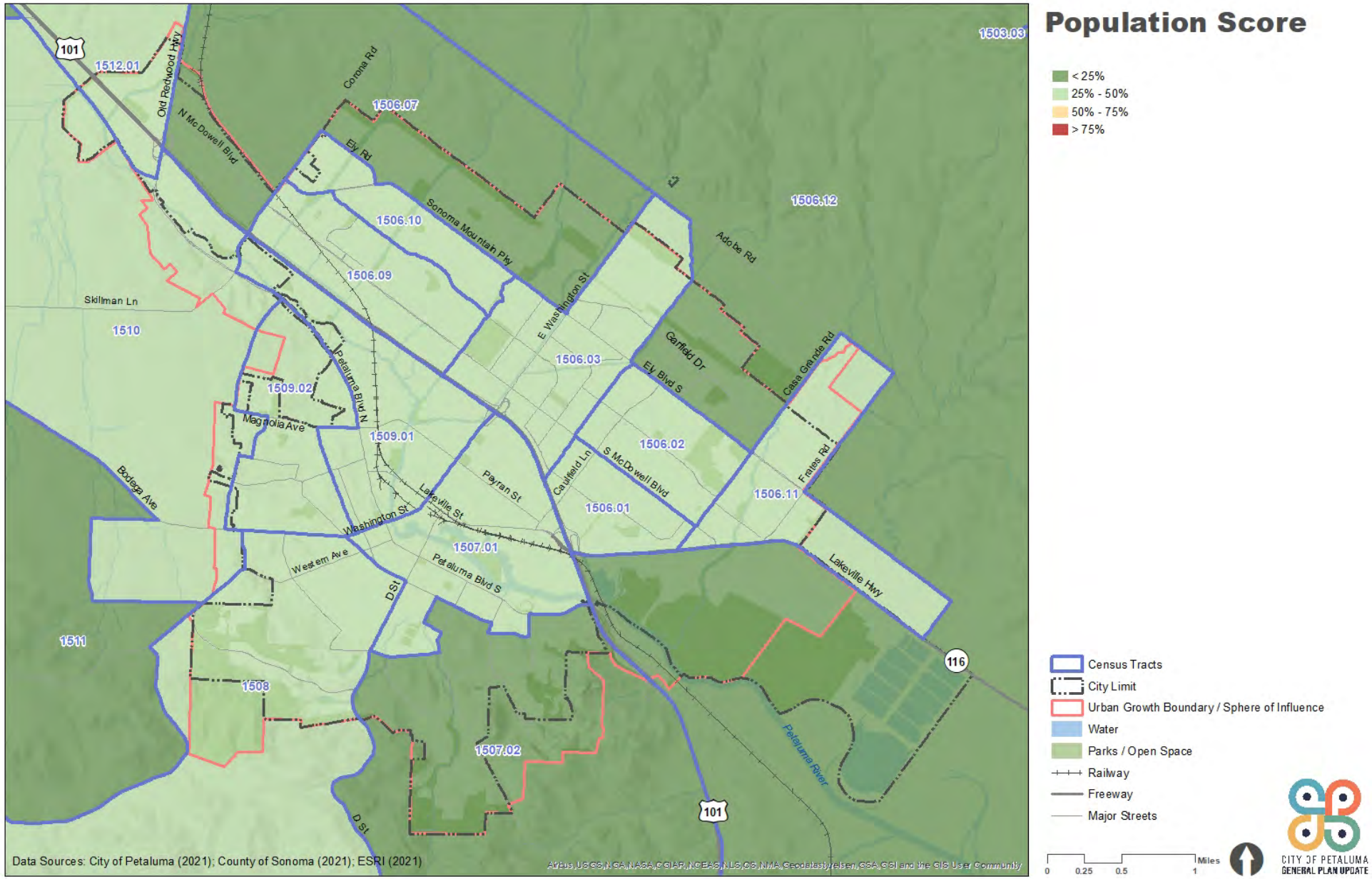
Note: For this and all CES maps, the percentile is based on a comparison of all census tracts in the state of California to each other. Being at or above the 75th percentile means the census tract scores higher than 75% of all other census tracts in the state.

Sources: CalEnviroScreen, 2021

Population Characteristics Score

Measures overall population characteristics for combined 3 sensitive population indicators and 5 socioeconomic factors in CES 4.0.

No census tract has a population characteristics score at or above the 75th percentile.

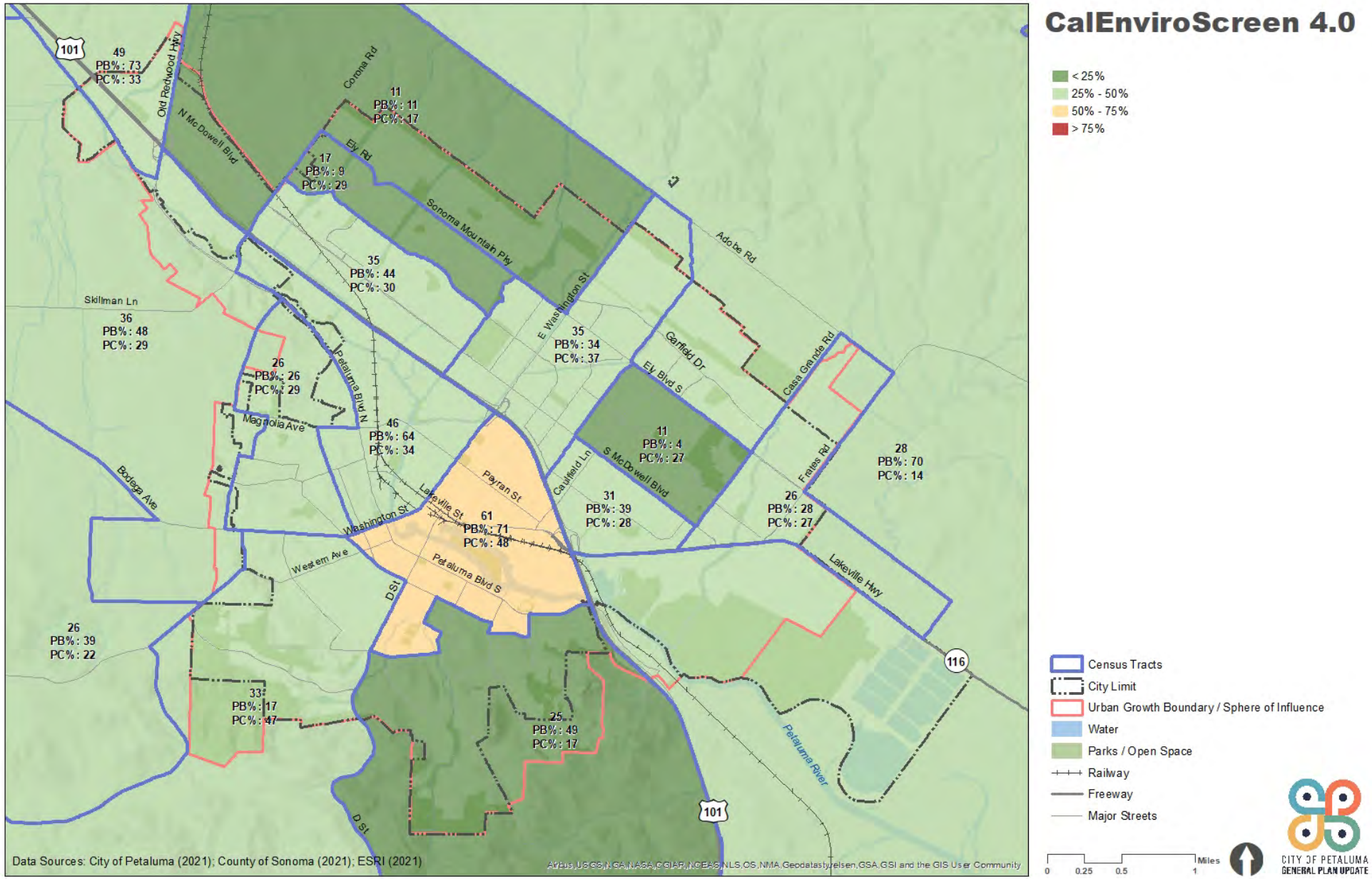


Sources: CalEnviroScreen, 2021

CalEnviroScreen 4.0 Index Results

Combines pollution burden (13) and population characteristics (8) into an index of 21 indicators.

No census tract has a CES 4.0 Index Score at or above the 75th percentile.



Sources: CalEnviroScreen, 2021

Considerations

- CalEnviroScreen is an index of census tract level data from several verified sources of information on potential pollutant exposures and environmental effects.
  - It compares each census tract to all others in the state. It does not compare census tracts within a jurisdiction but can be modified to do so.
  - It only has limited information on health effects because it was designed to prioritize effects, such as asthma, with known relationships to air quality pollutants.
- Because of these limitations, advocates and elected representatives have long pushed for other approaches to identify disadvantaged communities.

DAC Analysis: Method 2

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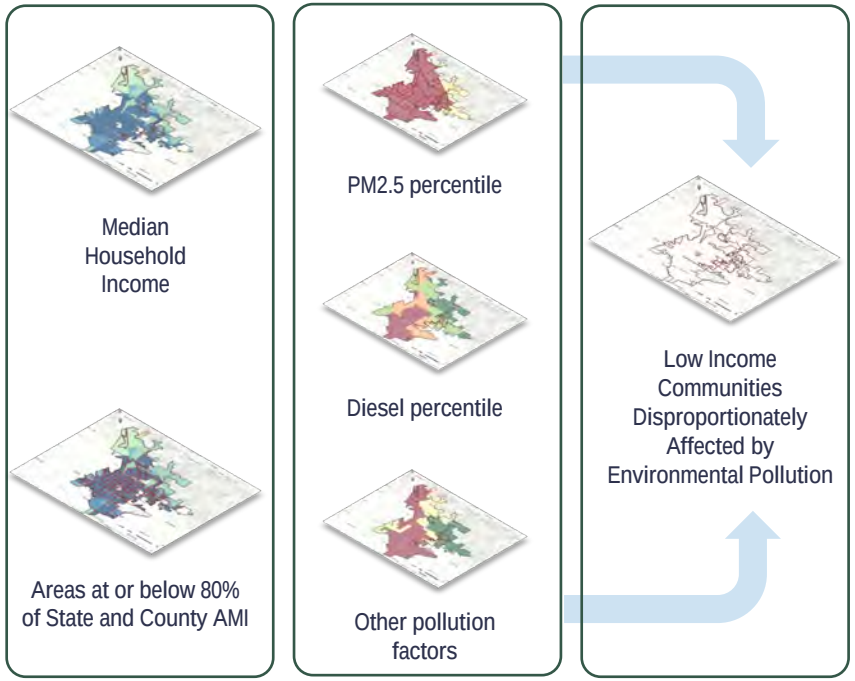
Section Overview

- Method 2 seeks to determine whether any areas are low-income areas. Then, to determine whether any of these areas face disproportionate pollution burdens that can negatively affect health.
- The following slides provide:
  - Determination of the low-income thresholds
  - Maps and tables for low-income areas
  - Maps and tables for pollution burden indicators
- Conclusion:
  - Two census tracts are low-income areas
  - Ten census block groups are low-income areas
  - More than half of all low-income areas face some sort of disproportionate pollution burden
  - Therefore, DACs can be identified through this method

Method 2

Low-income communities with disproportionate pollution burden



Note: Method 2 is split into two geographic scales: census tract and block group. Pollution burden and most other data is only identified at the census tract scale. However, the block group analysis allows for a more refined identification of low-income areas, it is recommended that jurisdictions review this finer scale data if possible.

Low-Income Thresholds

- California's Department of Housing and Community Development (HCD) releases annual state income data to determine low-income thresholds at a statewide and county level.
- Since the Census Bureau's 2015-2019 American Community Survey is the most recently available income data, this analysis references the 2019 HCD State Income Limits.
- For the Method 2 analysis, **the General Plan Team is identifying census tracts and block groups at or below 80% of Sonoma County AMI, which is $74,640** and just slightly higher than the 80% of Petaluma AMI of $73,222 and the 80% of the statewide median income of $65,760.

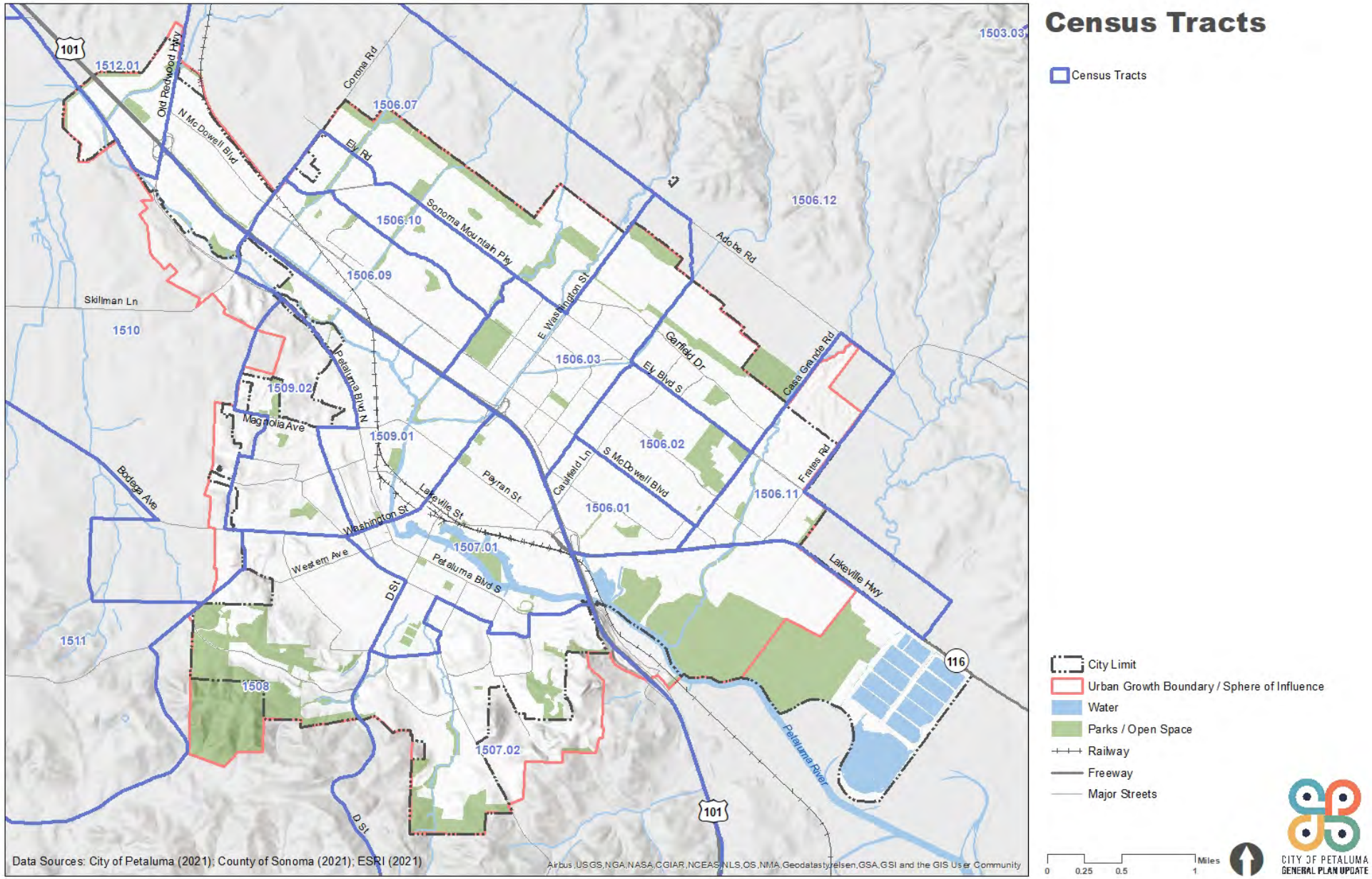
	California	Sonoma County	Petaluma
Area Median Income (AMI)	$82,200	$93,300	$91,528
80% of AMI	**$65,760**	**$74,640**	**$73,222**

2019 HCD State Income Limits

Sources: California HCD; ACS, 2015-2019

Petaluma Planning Area Census Tracts

The Petaluma GPU Planning Area includes all census tracts (15) completely within or with any portion within the urban growth boundary.

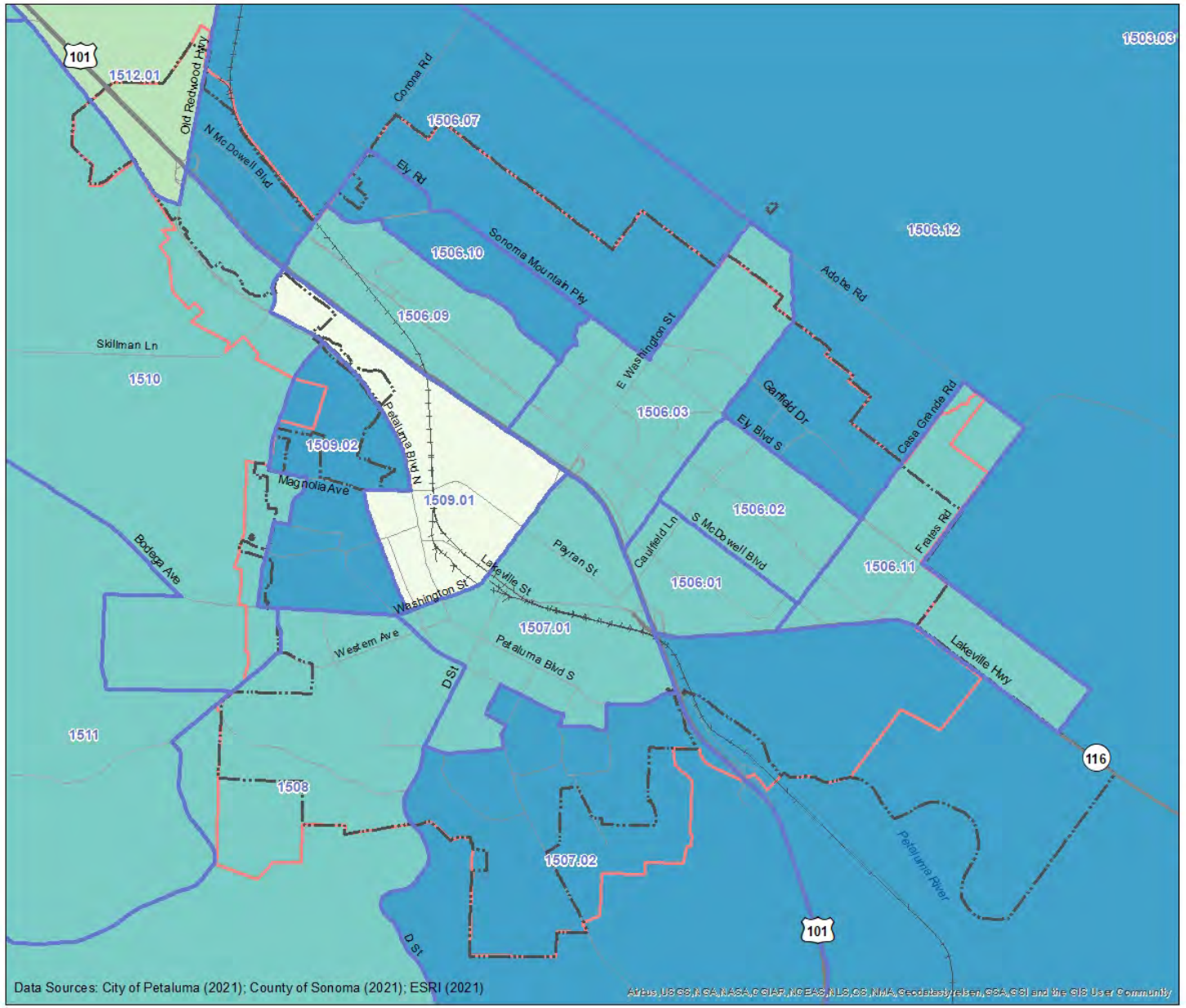


Median Household Income (Census Tracts)

Two census tracts are below 80% of the county's AMI of $74,640.

The two tracts are: 1509.1 (median income of $64,772) and 1512.01 (median income of $72,985)

Note that only a small portion of 1512.01 is in the Petaluma City Limit.



Median Income

- 50059 - 65760
- 65761 - 74640
- 74641 - 100000
- 100001 - 125000
- 125001 - 145147

Note: The median income distribution is broken up into categories that reflect the low-income thresholds.

- Census Tracts
- City Limit
- Urban Growth Boundary / Sphere of Influence
- Water
- Parks / Open Space
- Railway
- Freeway
- Major Streets

0 0.25 0.5 1 Miles

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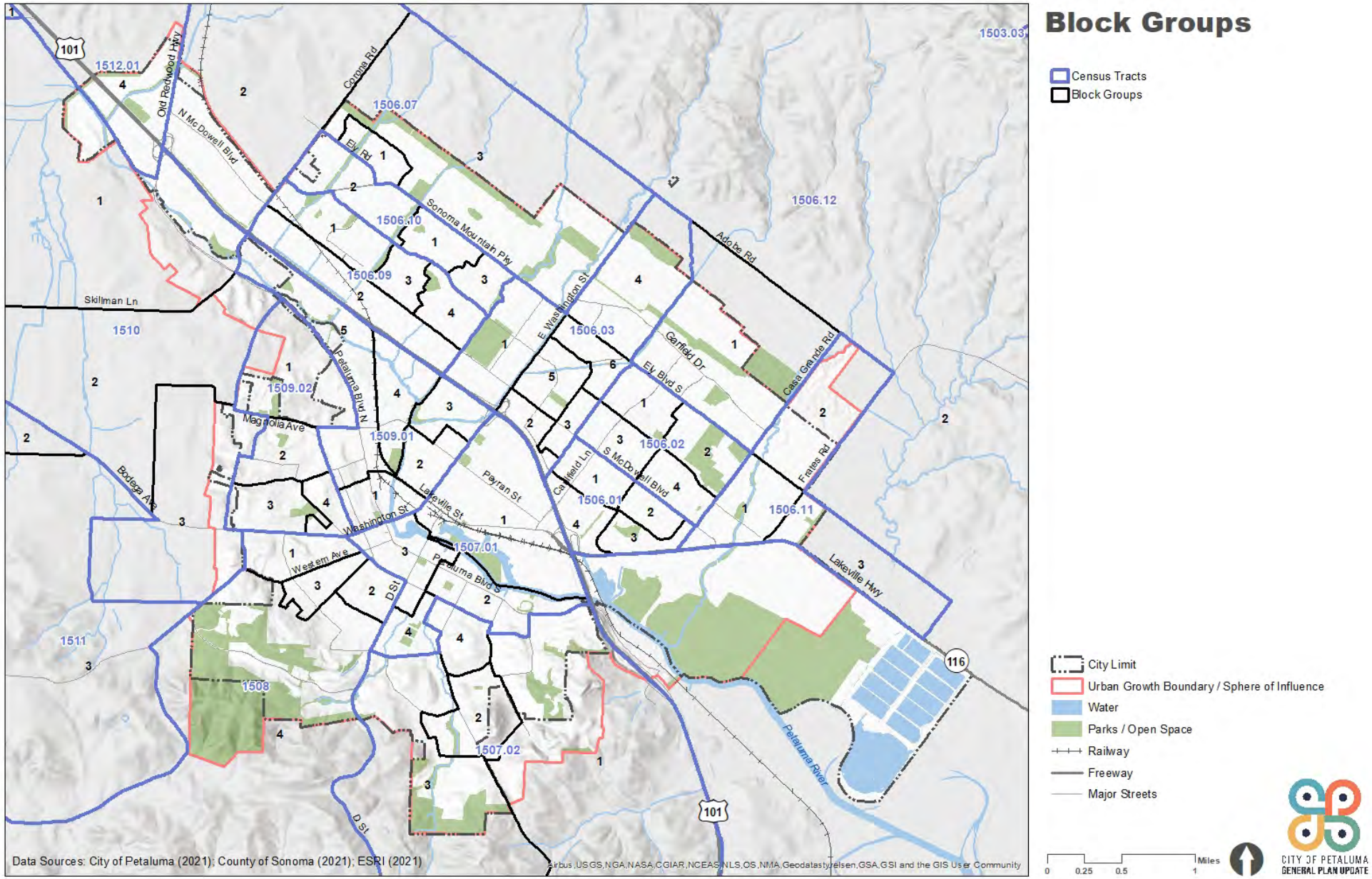
Sources: ACS, 2015-2019

Petaluma Planning Area Census Block Groups

The Petaluma GPU Planning Area includes all block groups (54) completely within or with any portion within the urban growth boundary.

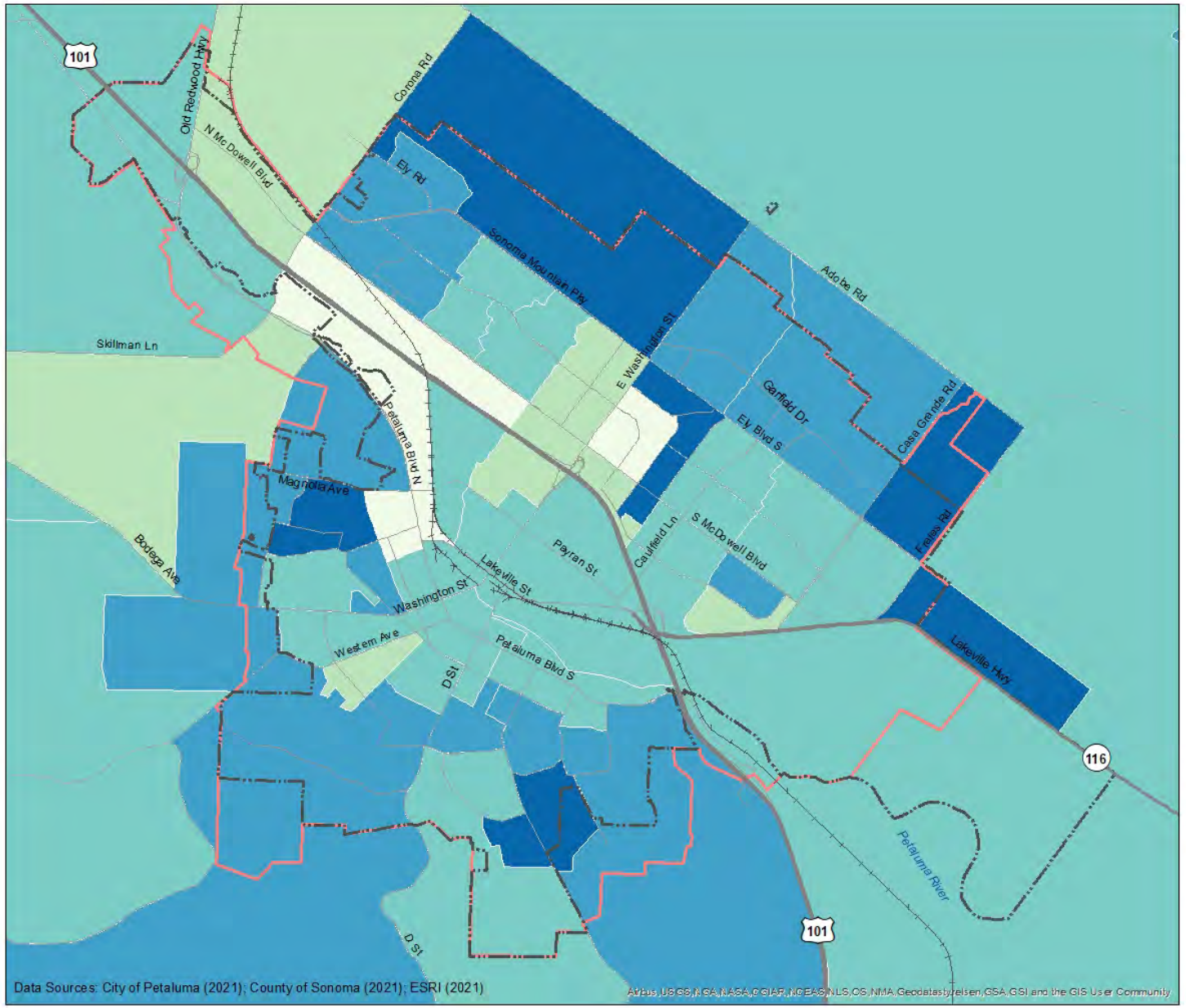
Block groups are used as a secondary method to identify if there are more localized low-income areas within a given census tract.



Median Household Income (Block Groups)

Ten block groups were below 80% of the county's AMI of $74,640.

Therefore, a total of 10 block groups were identified as low income.



Median Income

- 33214 - 65760
- 65761 - 74640
- 74641 - 100000
- 100001 - 125000
- 125001 - 199844

Note: The median income distribution is broken up into categories that reflect the low-income thresholds.

- City Limit
- Urban Growth Boundary / Sphere of Influence
- Water
- Parks / Open Space
- Railway
- Freeway
- Major Streets

0 0.25 0.5 1 Miles

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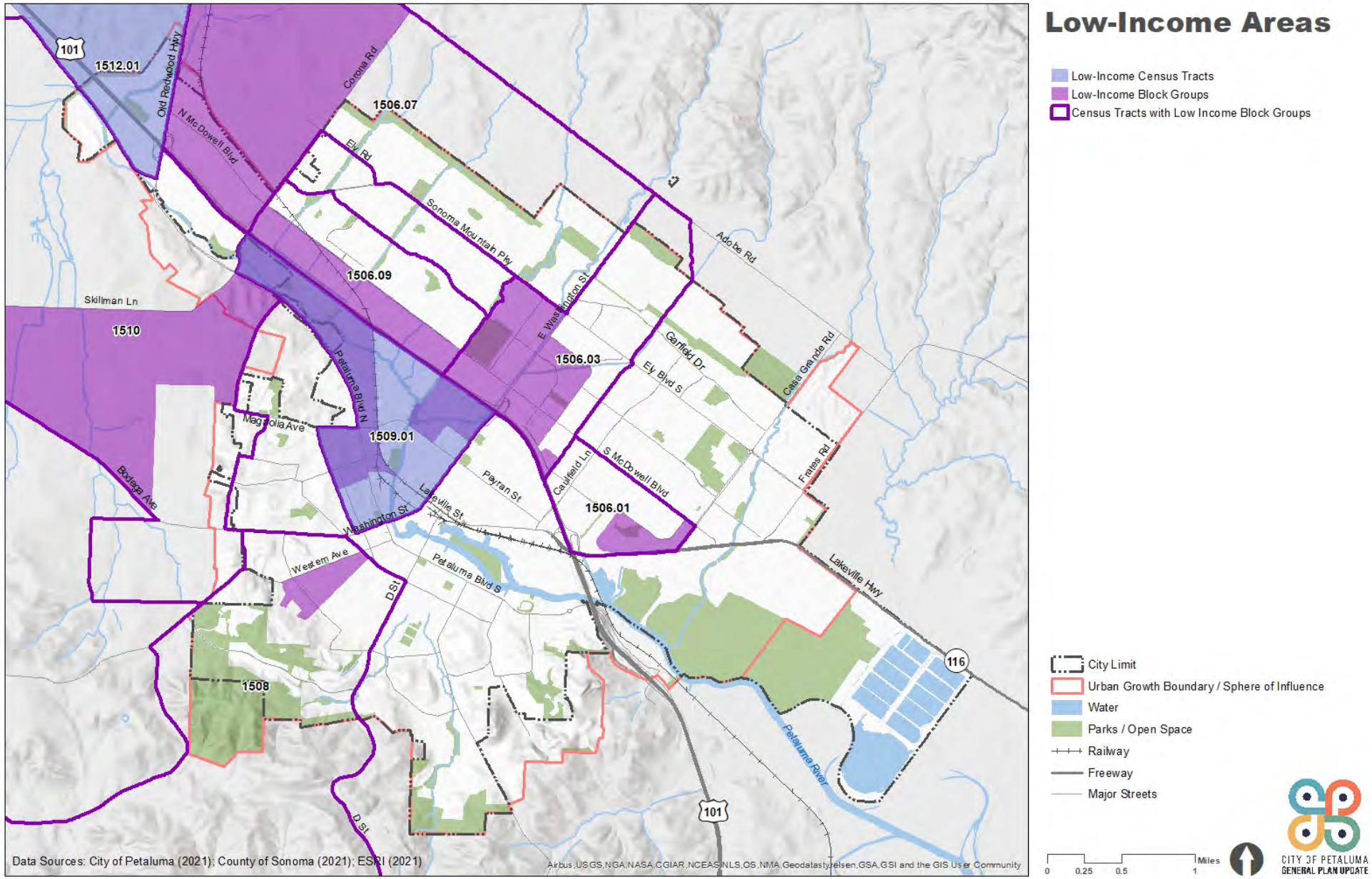
Sources: ACS, 2015-2019

Low Income Areas in Petaluma

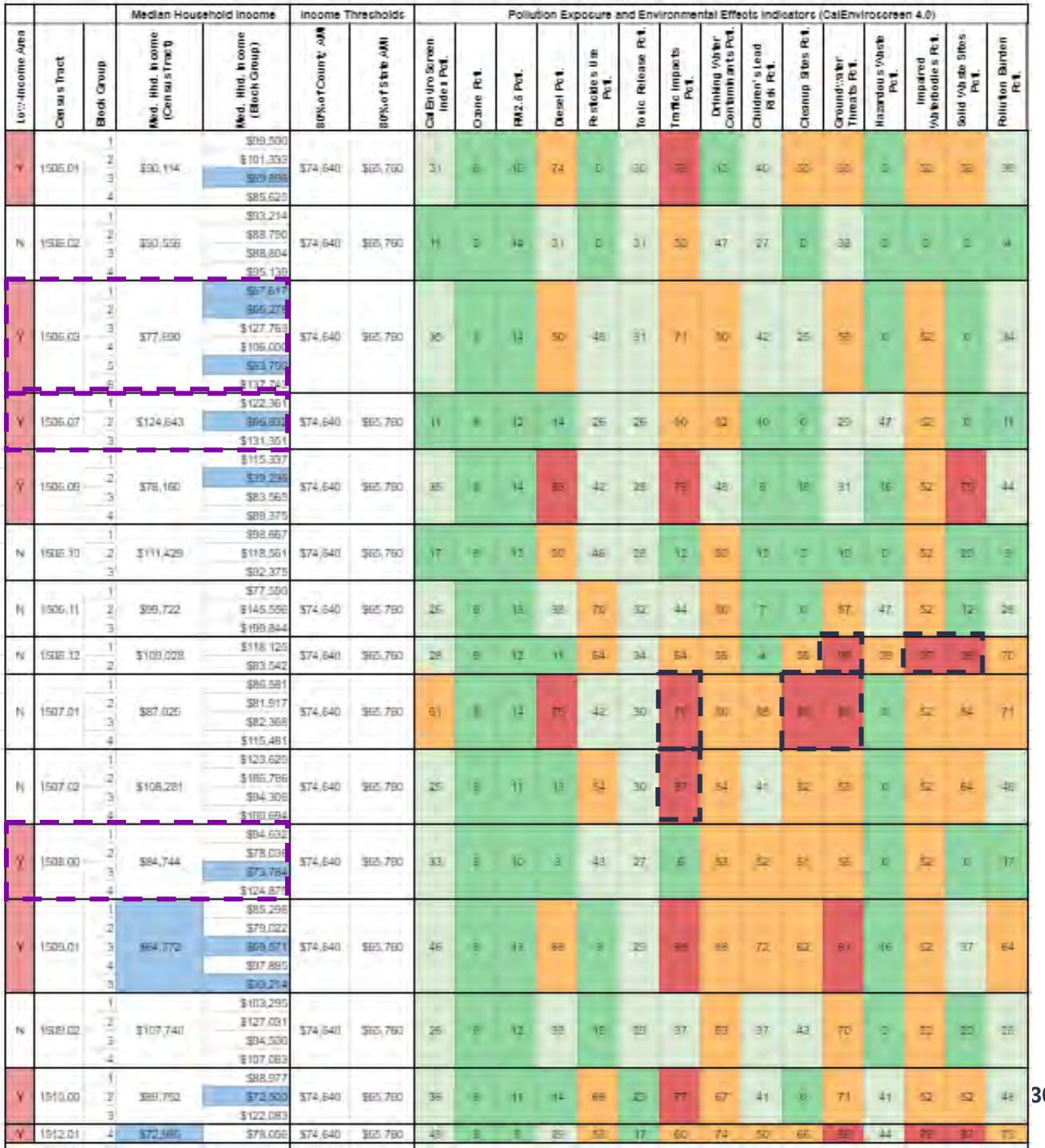
8 census tracts in Petaluma are either low-income areas or have block groups within them that are low-income areas.

The next part of Method 2 is to identify which areas also have unique or compounded pollution burdens. We do this by cross-referencing low-income areas with individual indicators in the pollution burden category of indicators of CES.



Identifying Low-Income Areas with Pollution Burdens

- All of Petaluma's block groups were then associated with their related census tract.
- All of Petaluma's census tracts were then individually compared to each of the Pollution Burden indicators found within CalEnviroScreen 4.0. Pollution Burden scores at or above the 75th percentile of all census tracts in the State are shown in RED.
- The 2 low-income census tracts are identified with BLUE shading (4th column).
- The 10 low-income block groups are identified with BLUE shading (5th column).
- Some census tracts are not low-income areas but have high pollution burden. They are dotted in **BLACK**.
- Some census tracts have low-income block groups within them but do not have high pollution burden. They are dotted in PURPLE.



Sources: ACS, 2015-2019;
CalEnviroScreen, 2021

Findings from Identifying Low-Income Areas with Pollution Burdens

- **Low-Income Census Tracts**
  - Two census tracts were identified as below 80% of County AMI: 1509.1 and 1512.1.
  - Both of these have at least two indicators in the top 25% of scores in the state.
  - Several census tracts had high pollution burden scores but did not meet the low-income threshold.
- **Low-Income Block Groups**
  - Ten census block groups were identified as below 80% of County AMI: 1506.01.1, 1506.03.1, 1506.03.2, 1506.03.5, 1506.07.2, 1506.09.2, 1508.00.3, 1509.01.3, 1509.01.5, and 1510.00.2.
  - These ten census block groups are associated with seven census tracts, including one of the low-income census tracts (1509.01).
  - Three census tracts with low-income block groups (1506.03, 1506.07, and 1508.00) do not have high pollution burden scores. All four other tracts have at least one indicator in the top 25% of scores in the state.
- While many census tracts or block groups can be considered low-income DACs, a review of the pollution burden indicators shows that pollution exposure and environmental effects may be a citywide issue.
  - *Note that the data for the CES is from statewide data sources and may not reflect the actual pollution burden in a jurisdiction. Additional research will be needed to confirm local sources of pollution.*

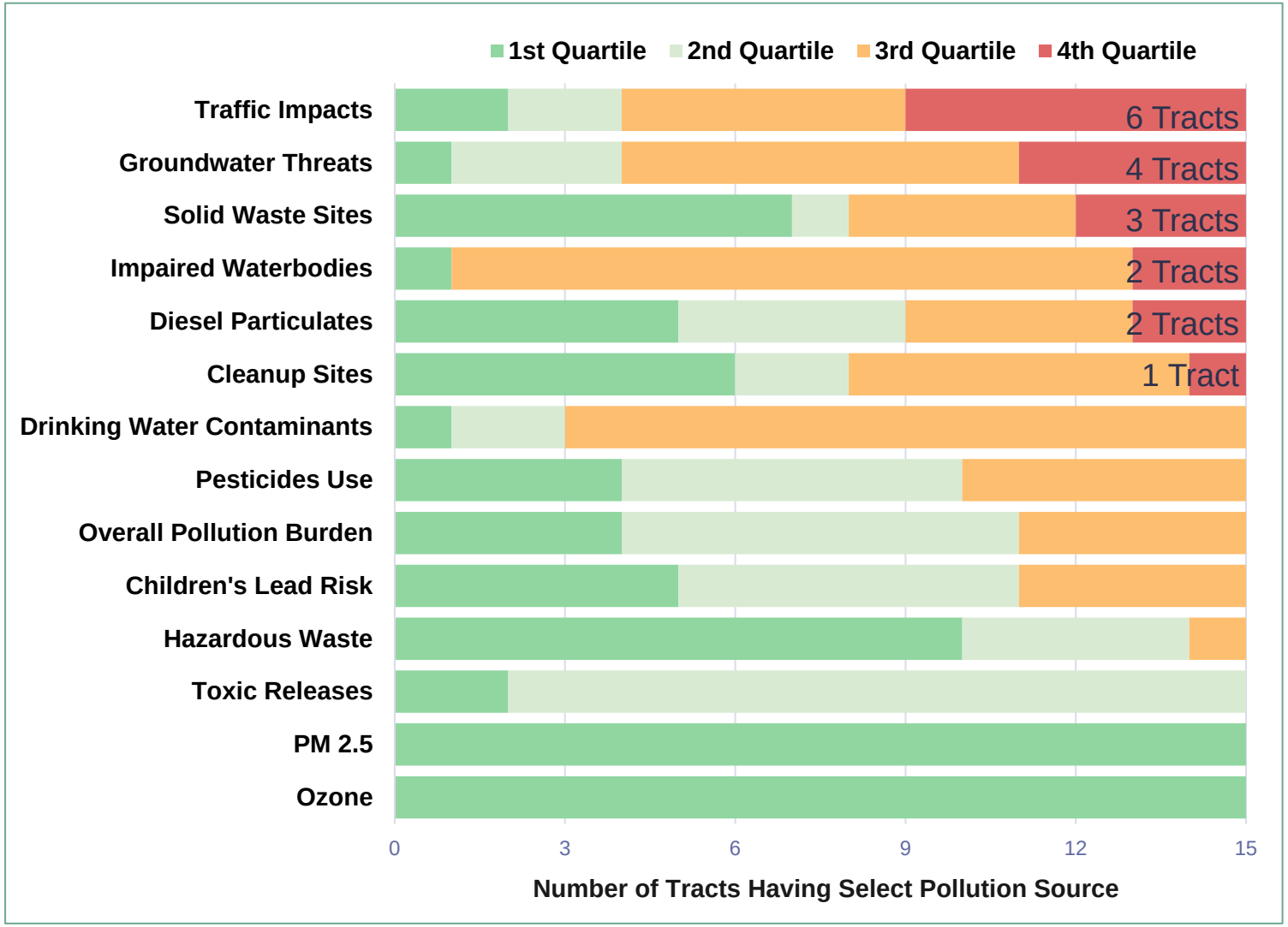
Sources: ACS, 2015-2019; CalEnviroScreen, 2021

Citywide Pollution Burden

- Petaluma scored within the top 25% of census tracts in the state for six pollution burden indicators (shown in RED in the table)

- The following are the number of tracts for each pollution burden indicator with a score at or above 75th percentile:
  - Traffic Impacts – 6 Tracts
  - Groundwater Threats – 4 Tracts
  - Solid Waste Sites – 3 Tracts
  - Impaired Waterbodies – 2 Tracts
  - Diesel Particulates – 2 Tracts
  - Cleanup Sites – 1 Tract

- The following set of maps spatially compare the identified low-income areas against each of these pollution indicators for a spatial representation of the table in page 27 and the chart to the right on this page.



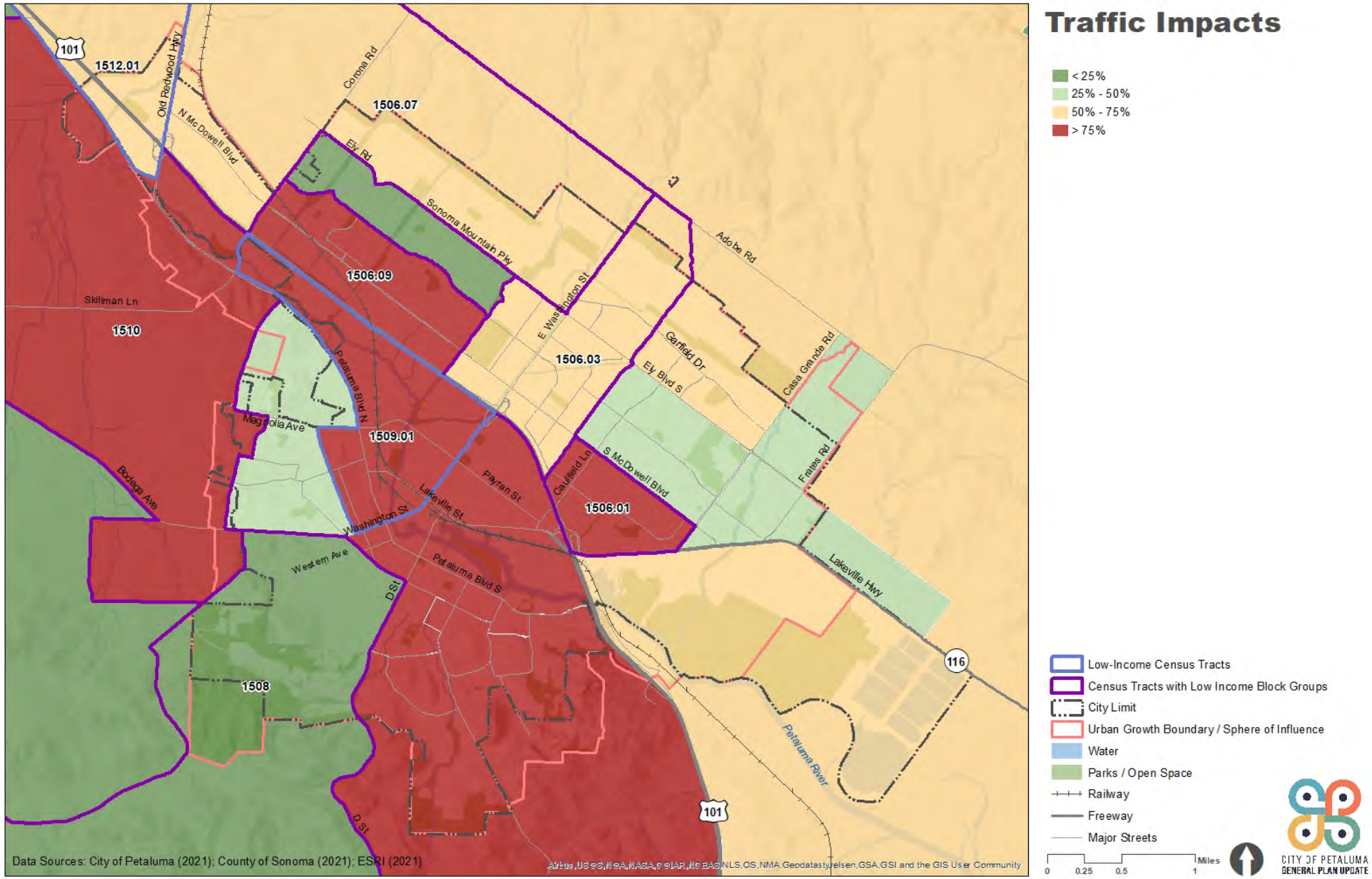
Sources: CalEnviroScreen, 2021

Traffic Impacts

Measures sum of traffic volumes adjusted by road segment length divided by total road length within 150 meters of a census tract boundary.

Six census tracts have a high pollution burden for traffic impacts. Four of these tracts (1506.01, 1506.09, 1509.01, and 1510) have low-income areas within them.

(Data from 2017.)



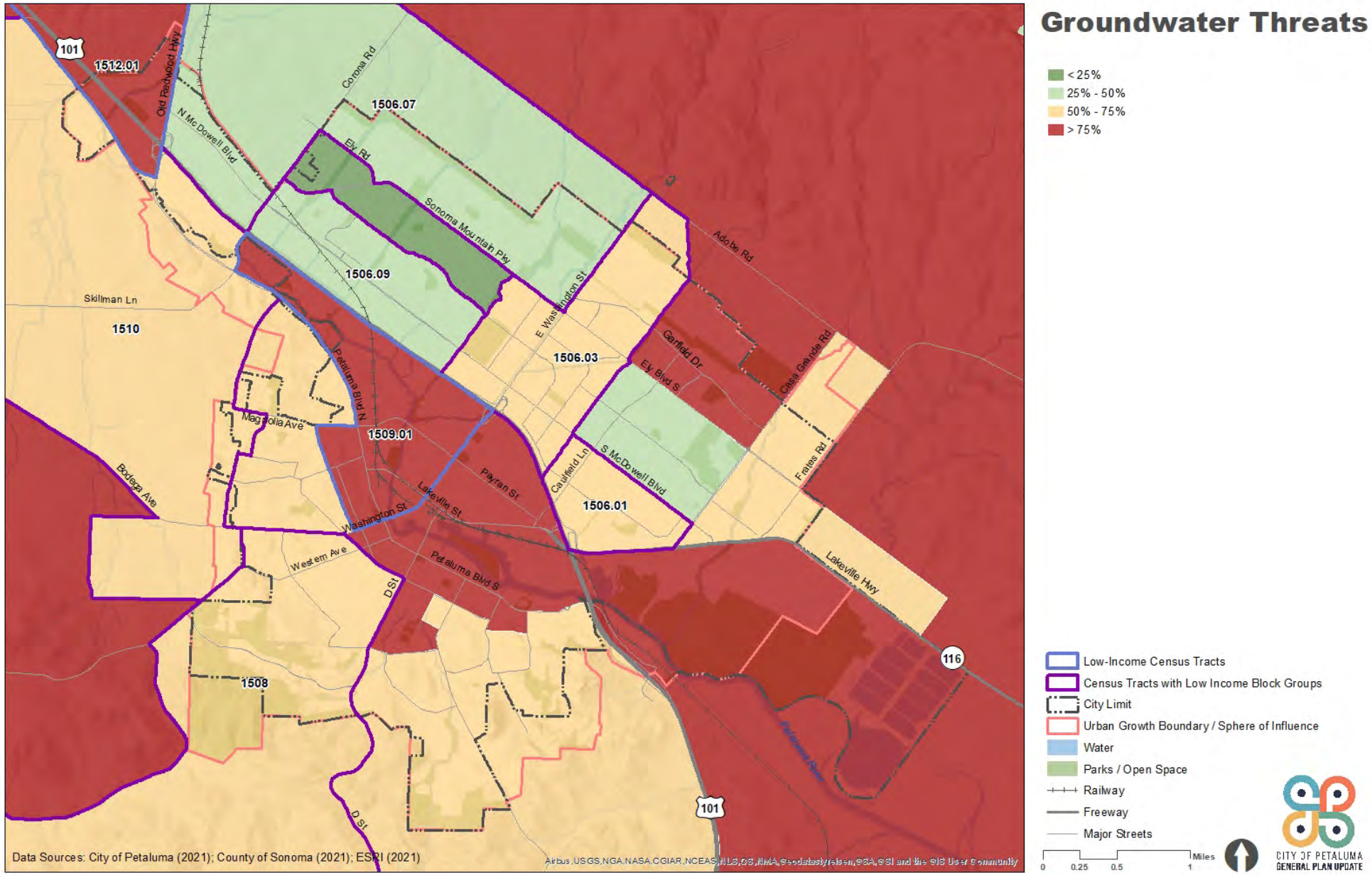
Sources: CalEnviroScreen, 2021

Groundwater Threats

Measures proximity to potential sources of groundwater contamination, such as leaking underground storage tanks (LUSTs) and certain industrial sites.

Four census tracts have a high pollution burden for groundwater threats. Two of these (1509.01 and 1512.01) have low-income areas within them.

(Data from March 2020.)



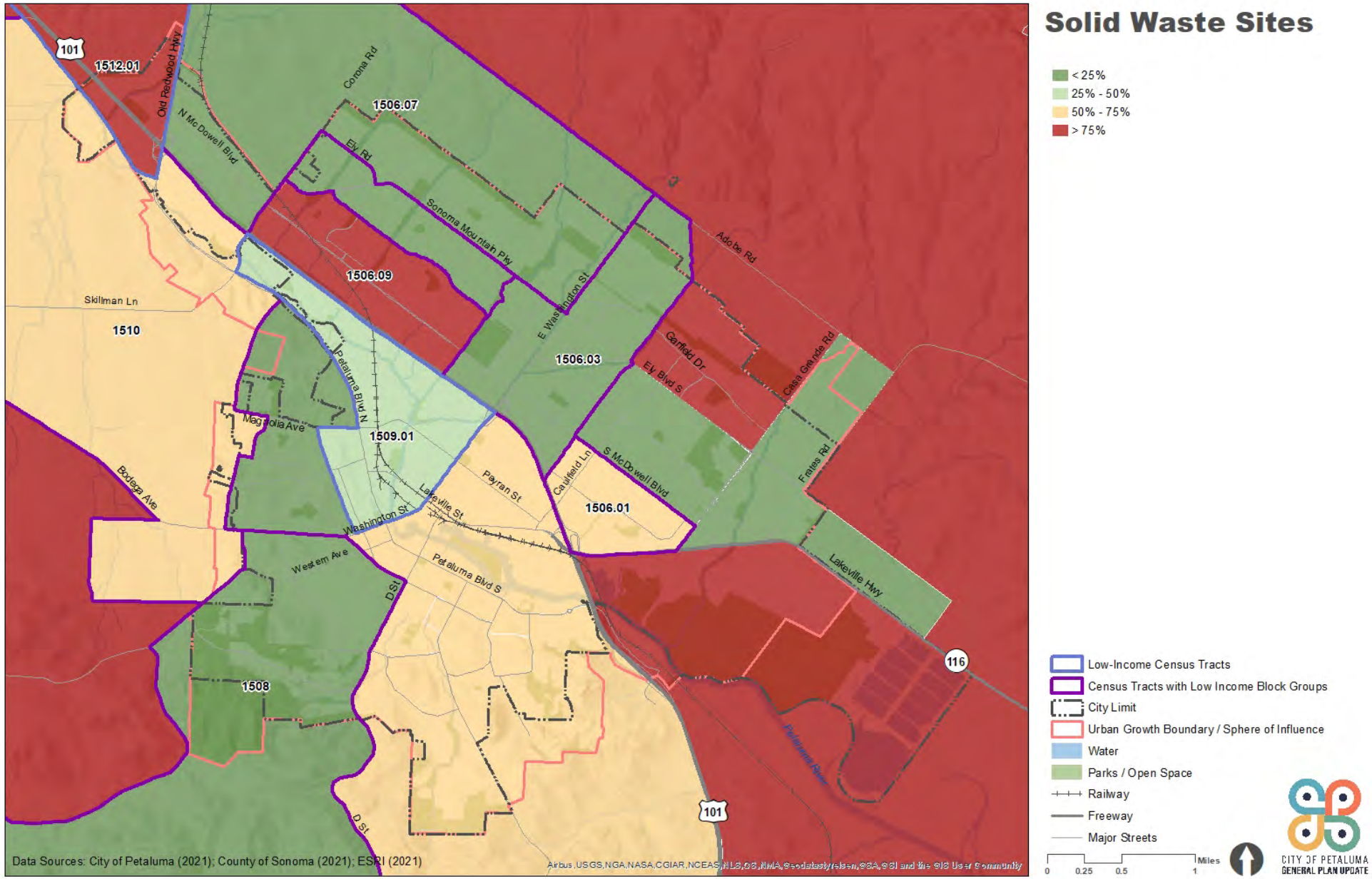
Sources: CalEnviroScreen, 2021

Solid Waste Sites

Measures proximity to solid waste sites and facilities.

Three census tracts have a high pollution burden for solid waste sites. Two of these (1512.01 and 1506.09) have low-income areas.

(Data from March 2020.)



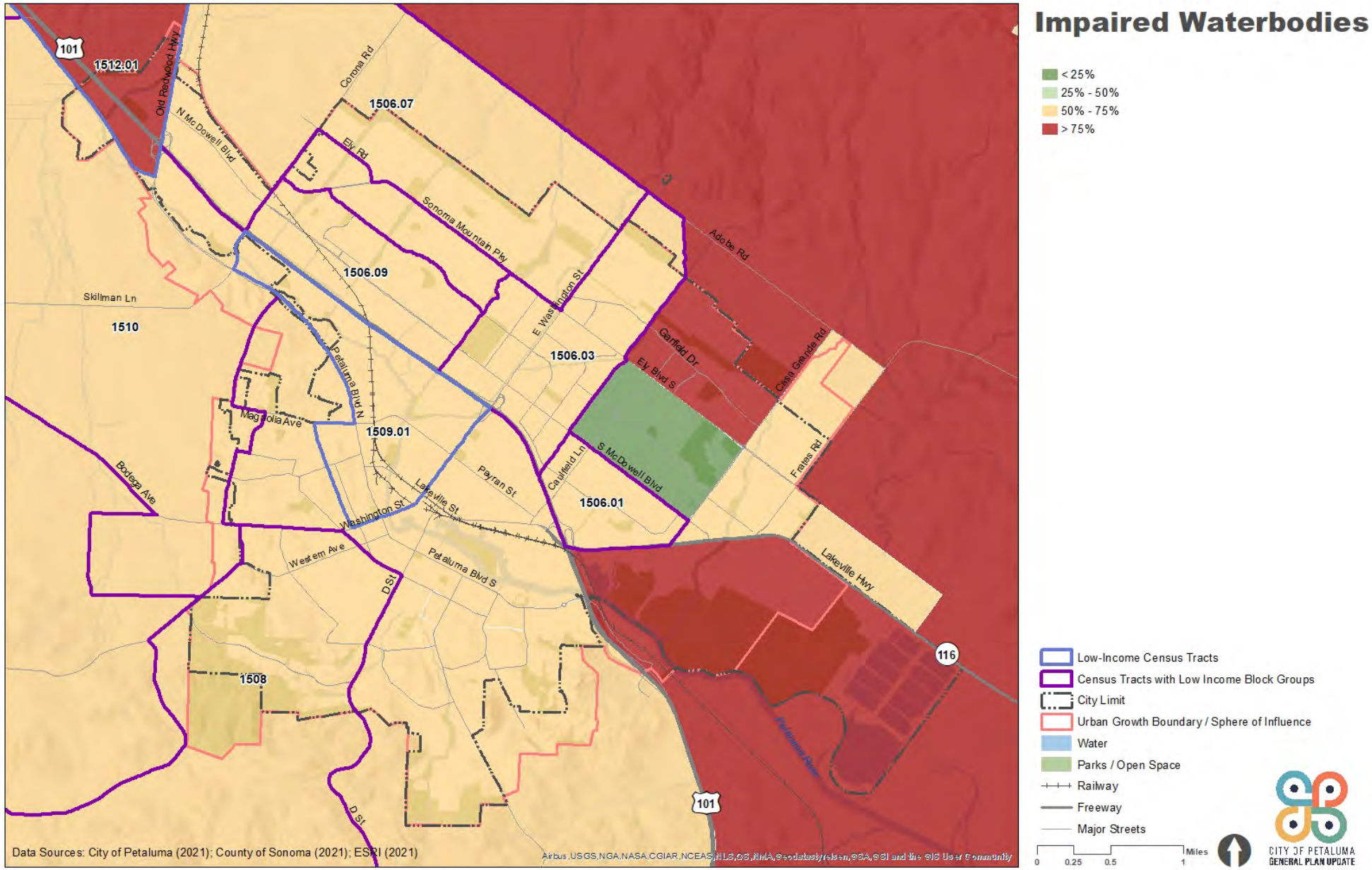
Sources: CalEnviroScreen, 2021

Impaired Waterbodies

Measures number of pollutants across all water bodies.

Two census tracts have a high pollution burden for impaired waterbodies. One of these (1512.01) is a low-income area.

(Data from 2014 and 2016.)



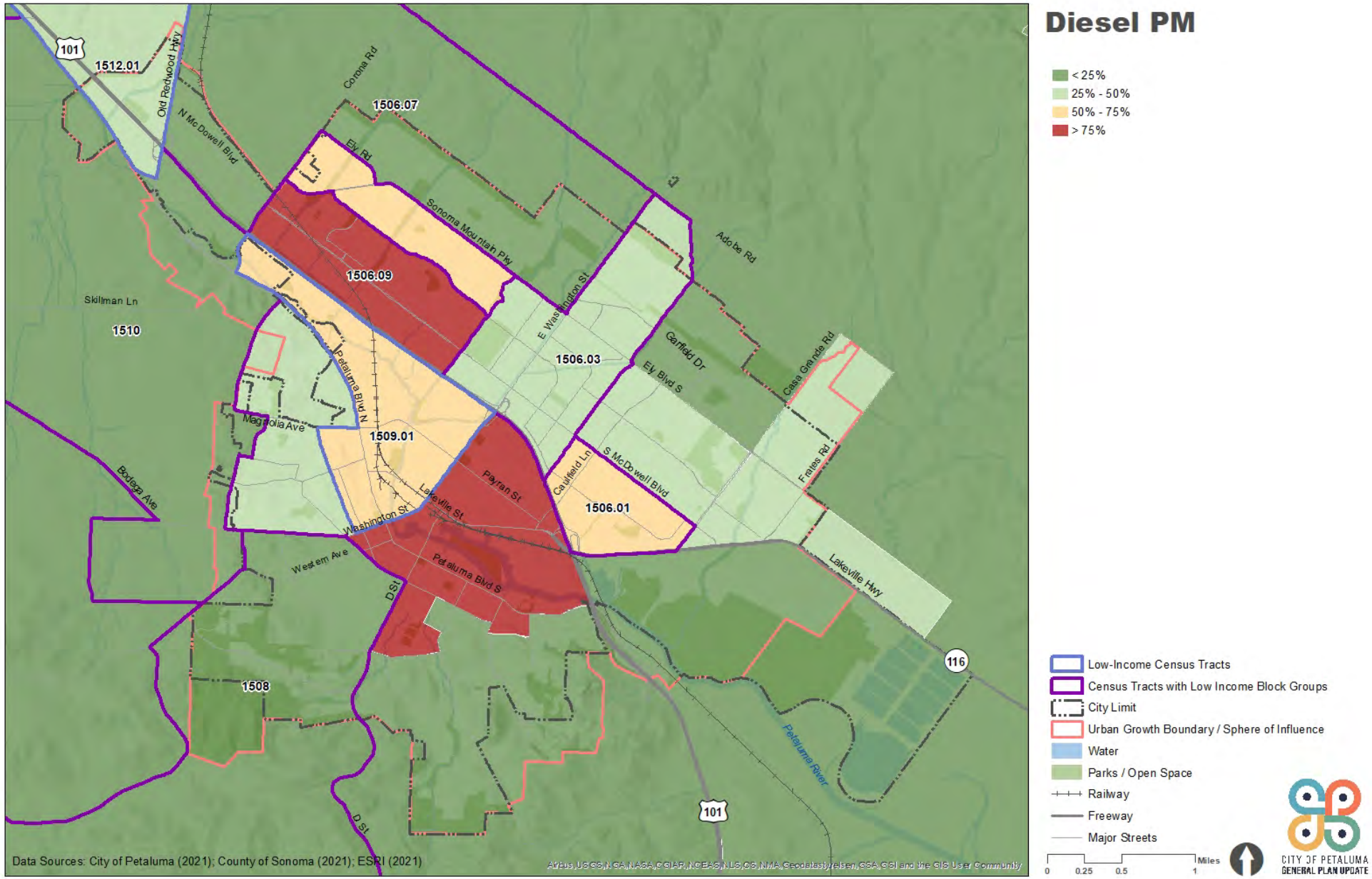
Sources: CalEnviroScreen, 2021

Diesel Particulate Matter (PM)

Identifies spatial distribution of diesel PM emissions from on-road and non-road sources.

Two census tracts have a high pollution burden for diesel PM emissions. One of these (1506.09) is a low-income area.

(Data from 2016)



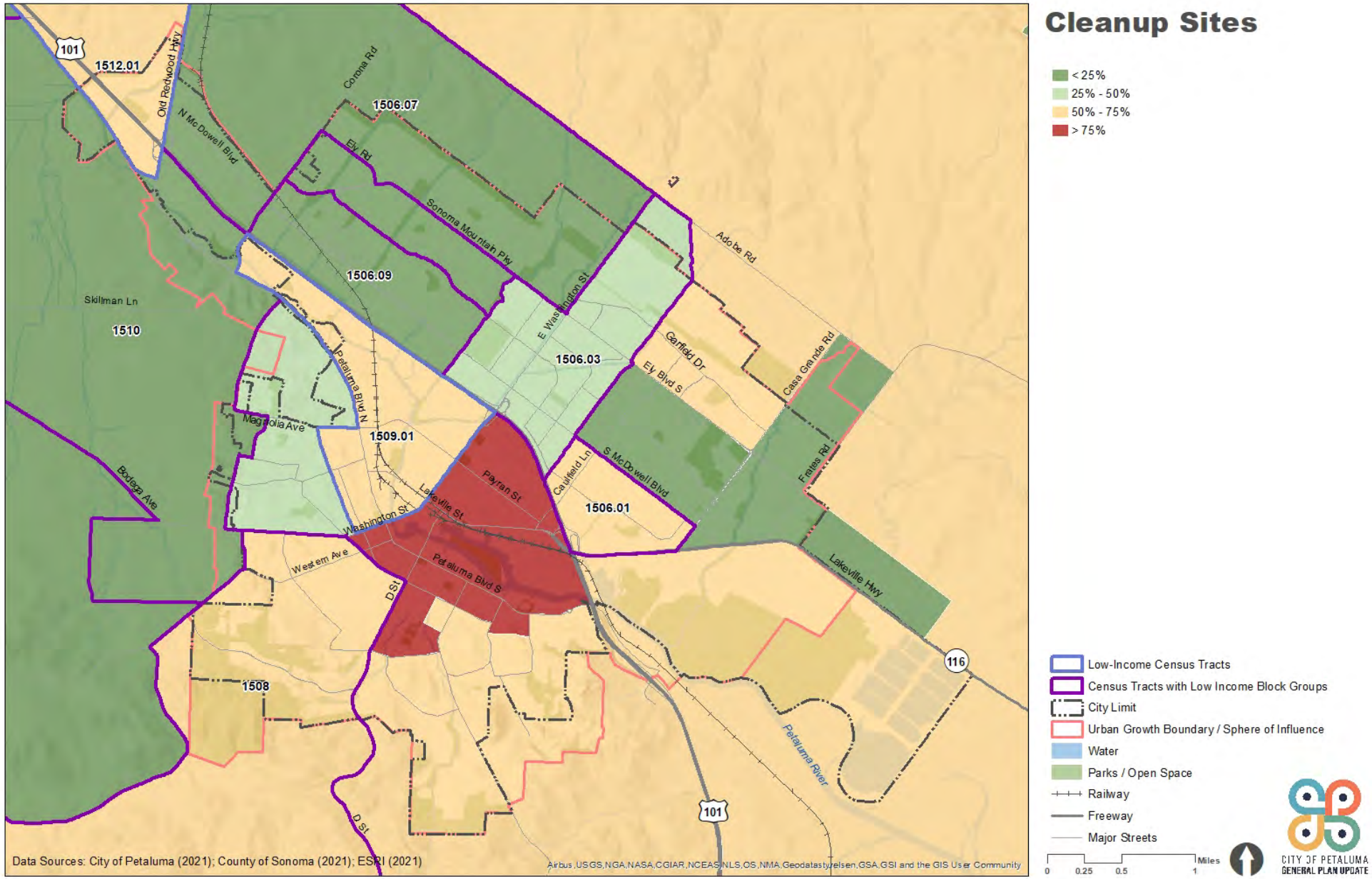
Sources: CalEnviroScreen, 2021

Cleanup Sites

Identifies environmental pollution sites and measures sum of weighted sites within each census tract.

No low-income census tract has a high pollution burden for cleanup sites, but one census tract has a high pollution burden.

(Data from March 2020)



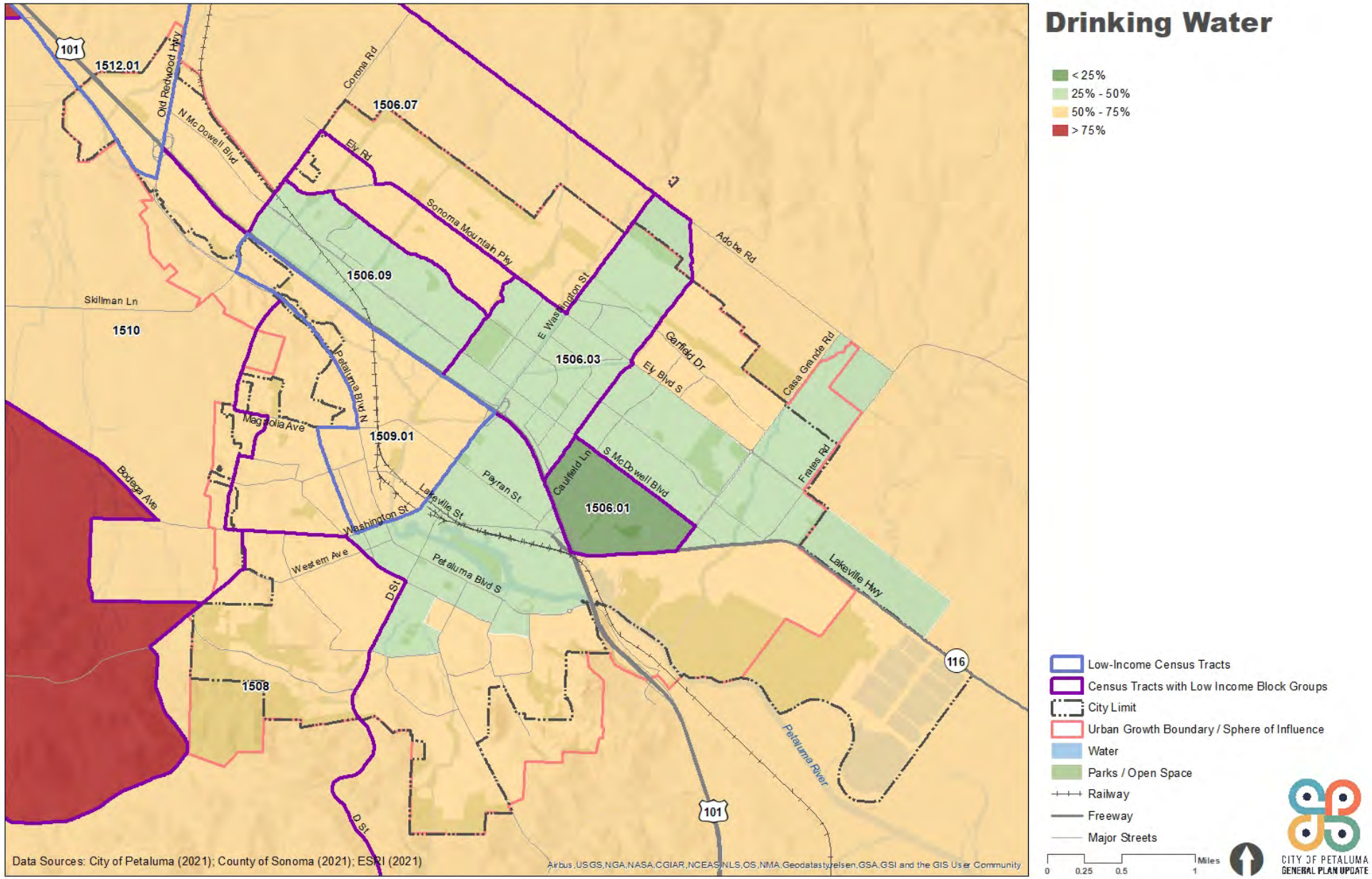
Sources: CalEnviroScreen, 2021

Drinking Water Contaminants

Measures drinking water contaminants for selected contaminants.

No census tract has a high pollution burden for drinking water contaminants.

(Data from 2011-2019)



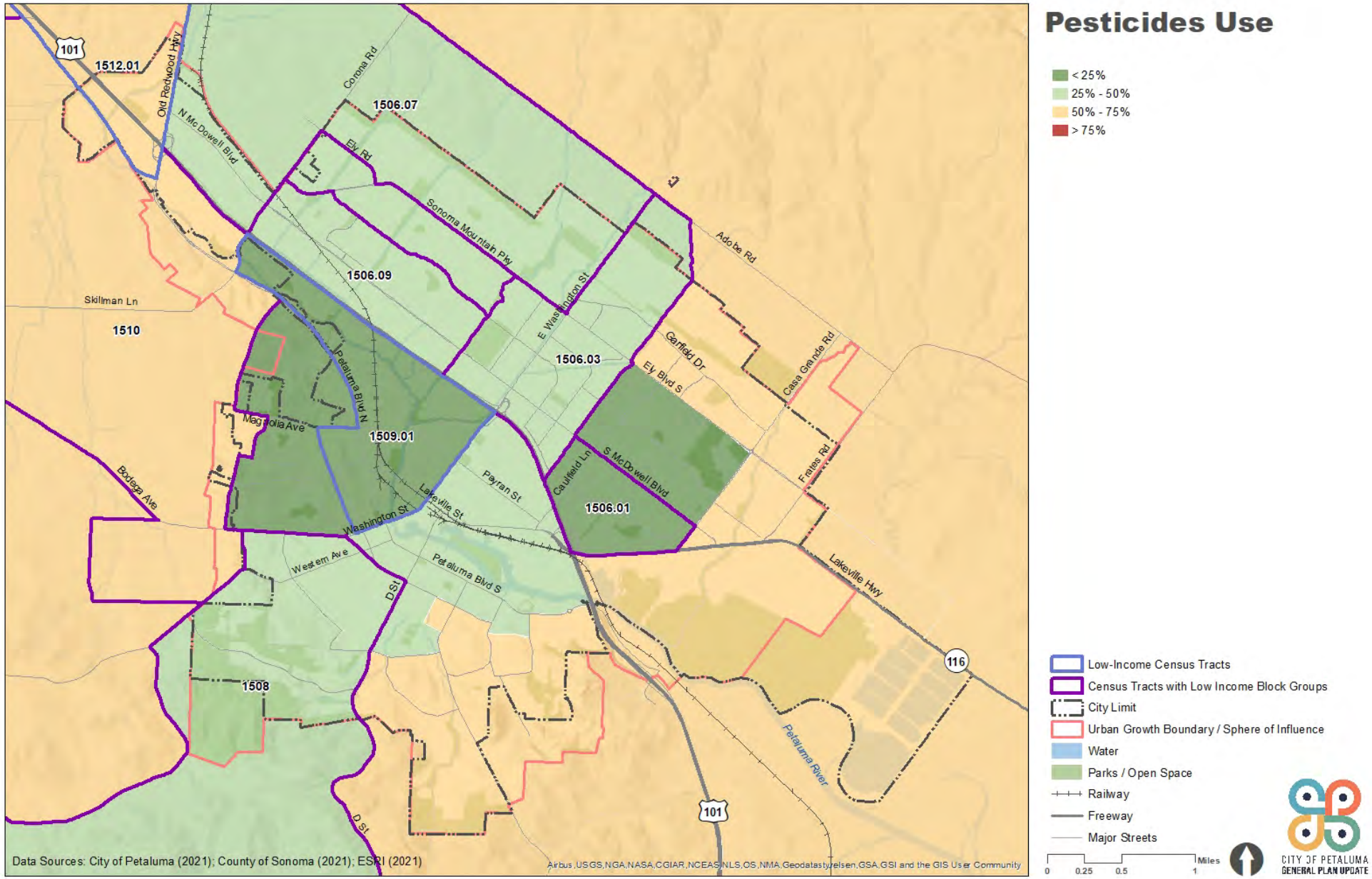
Sources: CalEnviroScreen, 2021

Pesticides Use

Measures total pounds of 83 selected active pesticide ingredients (filtered for hazard and volatility) used in production-agriculture per square mile, averaged over three years.

No census tract has a high pollution burden for pesticides.

(Data from 2016-2018)



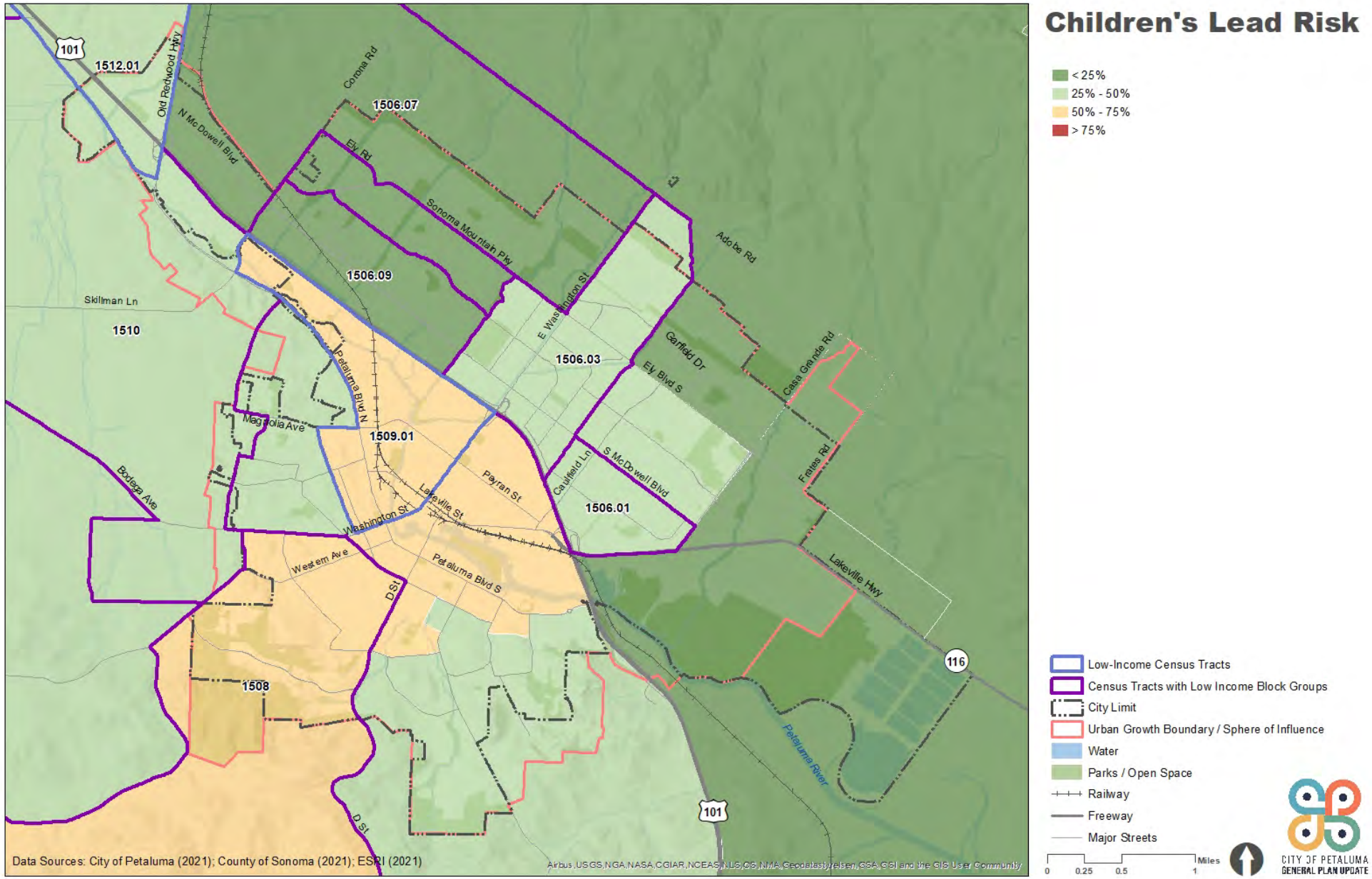
Sources: CalEnviroScreen, 2021

Children's Lead Risk

Measures potential risk for lead exposure in children living in low-income communities with older housing.

No census tract has a high pollution burden for children's lead risk.

(Data from 2012-2018)



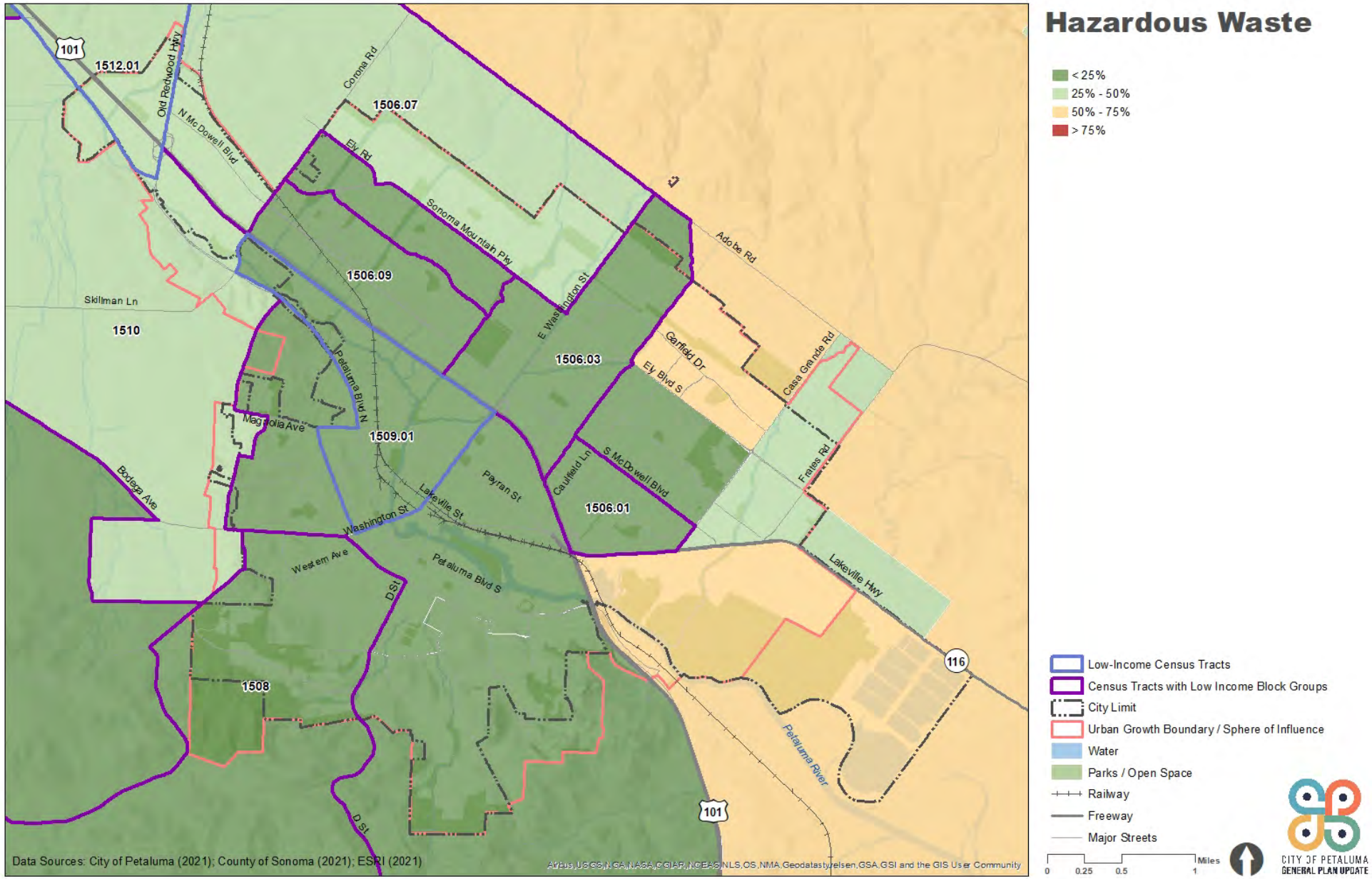
Sources: CalEnviroScreen, 2021

Hazardous Waste

Measures sum of weighted permitted hazardous waste facilities, hazardous waste generators, and chrome plating facilities within each census tract.

No census tract has a high pollution burden for hazardous waste.

(Data from 2017-2019)



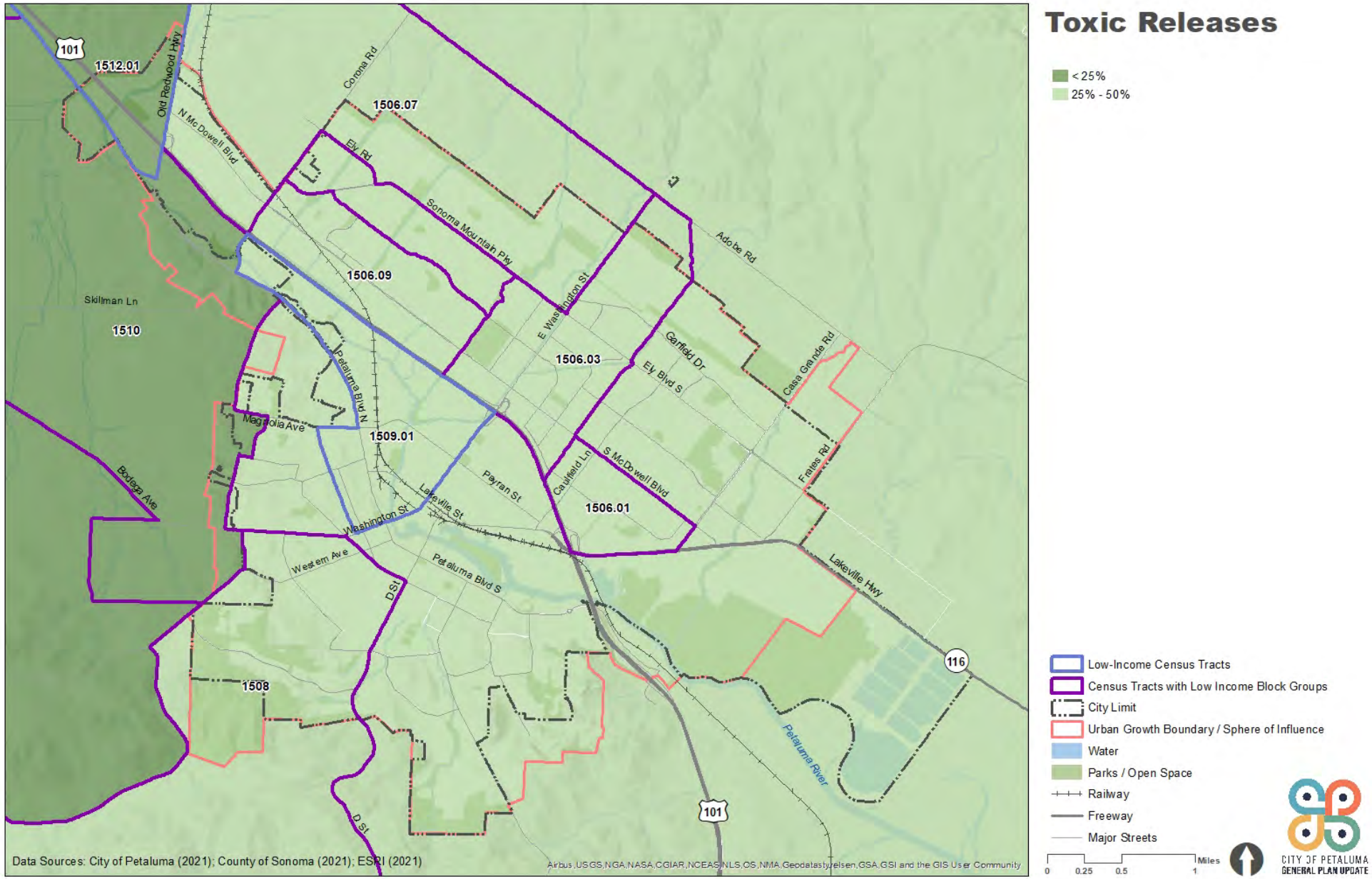
Sources: CalEnviroScreen, 2021

Toxic Releases from Facilities

Measures toxicity-weighted concentrations of modeled chemical releases to air from facility emissions and off-site incineration.

No census tract has a high pollution burden for toxic releases from facilities.

(Data from 2014-2016)



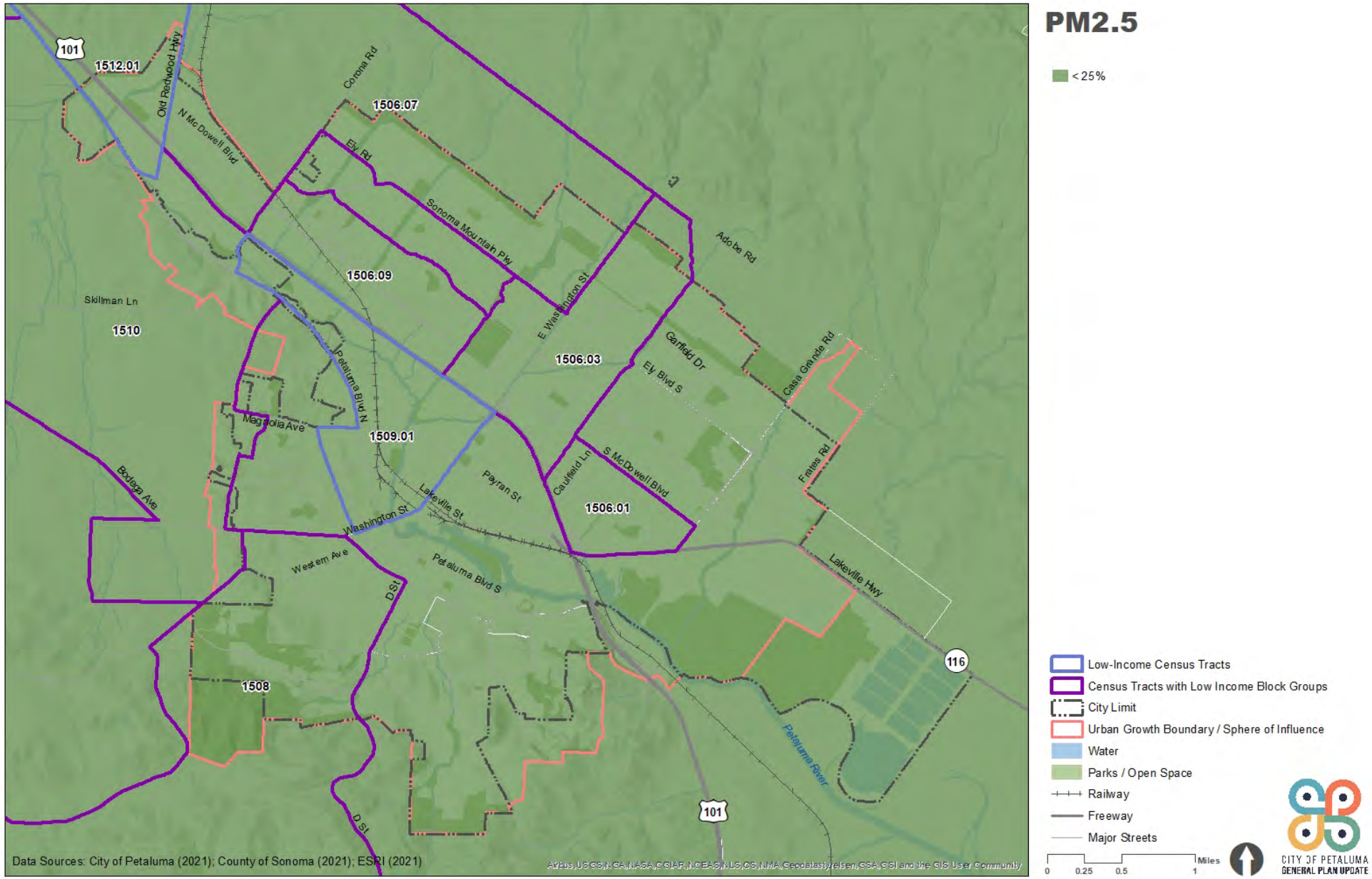
Sources: CalEnviroScreen, 2021

Particulate Matter 2.5

Measures annual mean concentration of PM2.5 over three years.

No census tract has a high pollution burden for PM2.5.

(Data from 2015-2017)



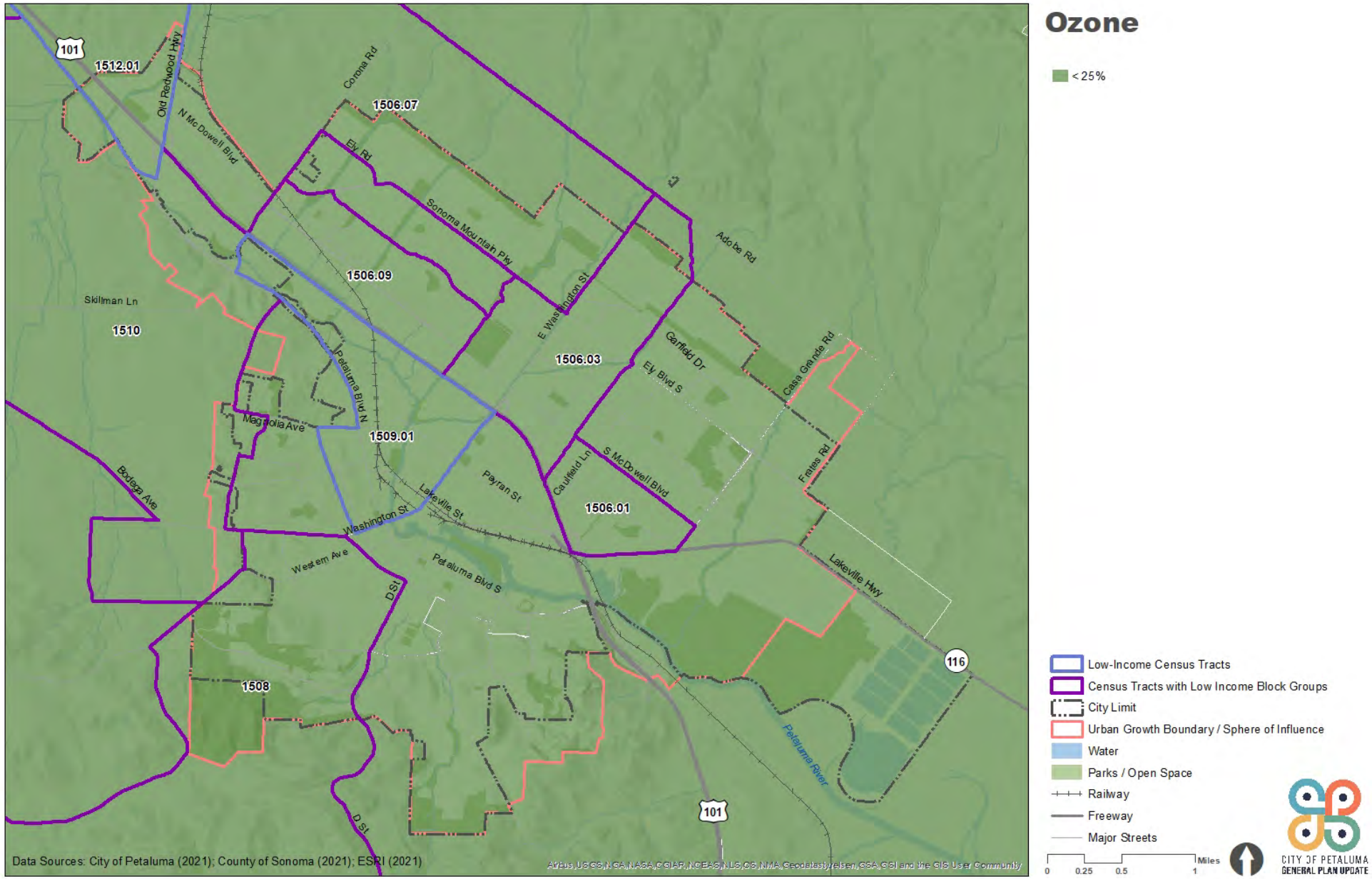
Sources: CalEnviroScreen, 2021

Ozone

Measures mean of summer months (May-October) of the daily maximum 8-hour ozone concentration averaged over three years.

No census tract has a high pollution burden for ozone.

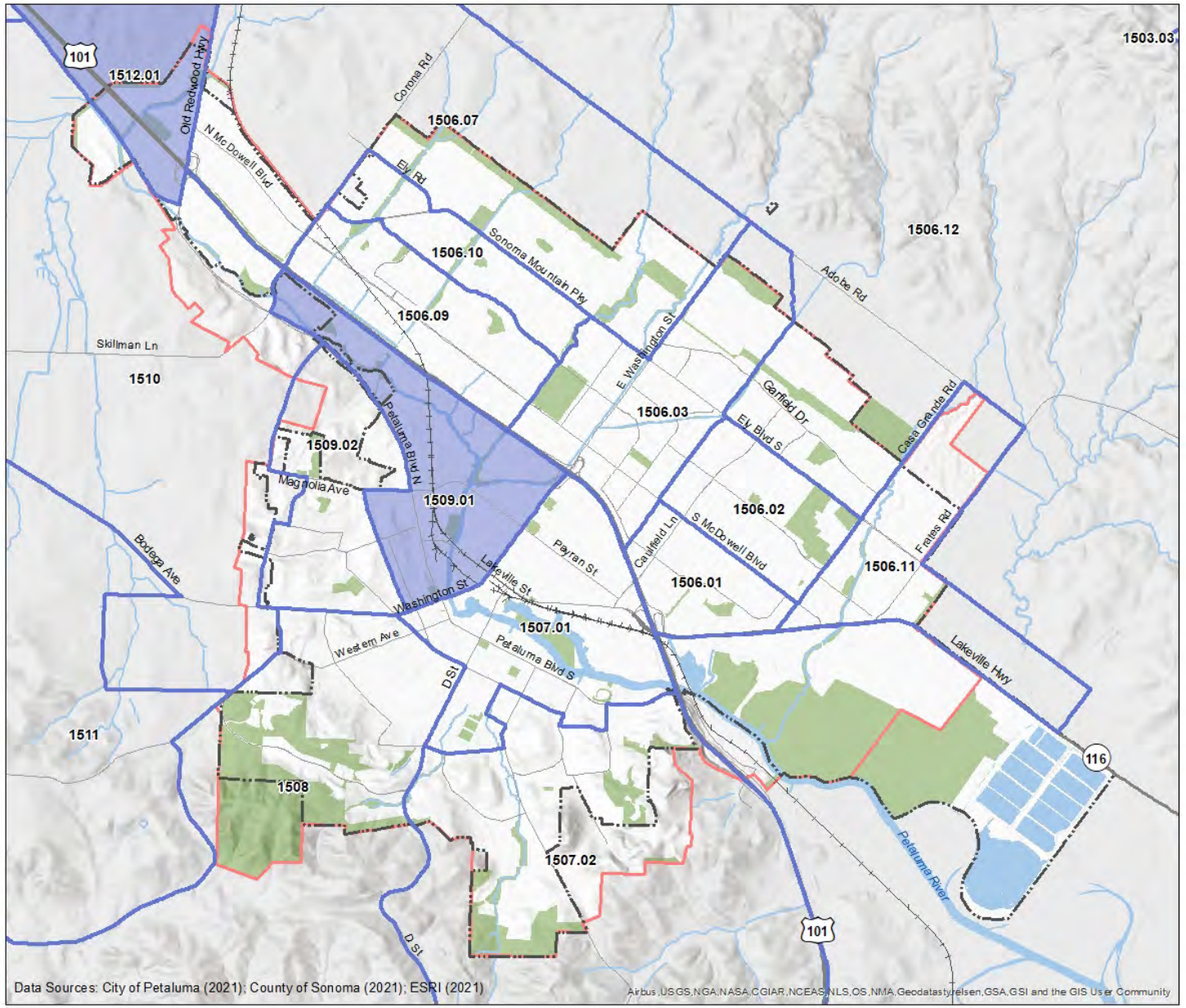
(Data from 2016-2018)



Sources: CalEnviroScreen, 2021

Conclusion: Method 2 Results (Tracts)

- Two census tracts were identified as below 80% of County AMI: 1509.1 and 1512.1.
- **Both identified low-income census tracts had a high pollution burden for at least 1 indicator**.
  - 1509.1: Traffic Impacts and Groundwater Threats
  - 1512.1: Groundwater Threats, Impaired Water Bodies, and Solid Waste Sites



Method 2 (Tracts)

Disadvantaged Communities

Census Tracts
City Limit
Urban Growth Boundary / Sphere of Influence
Water
Parks / Open Space
Railway
Freeway
Major Streets

0 0.25 0.5 1 Miles

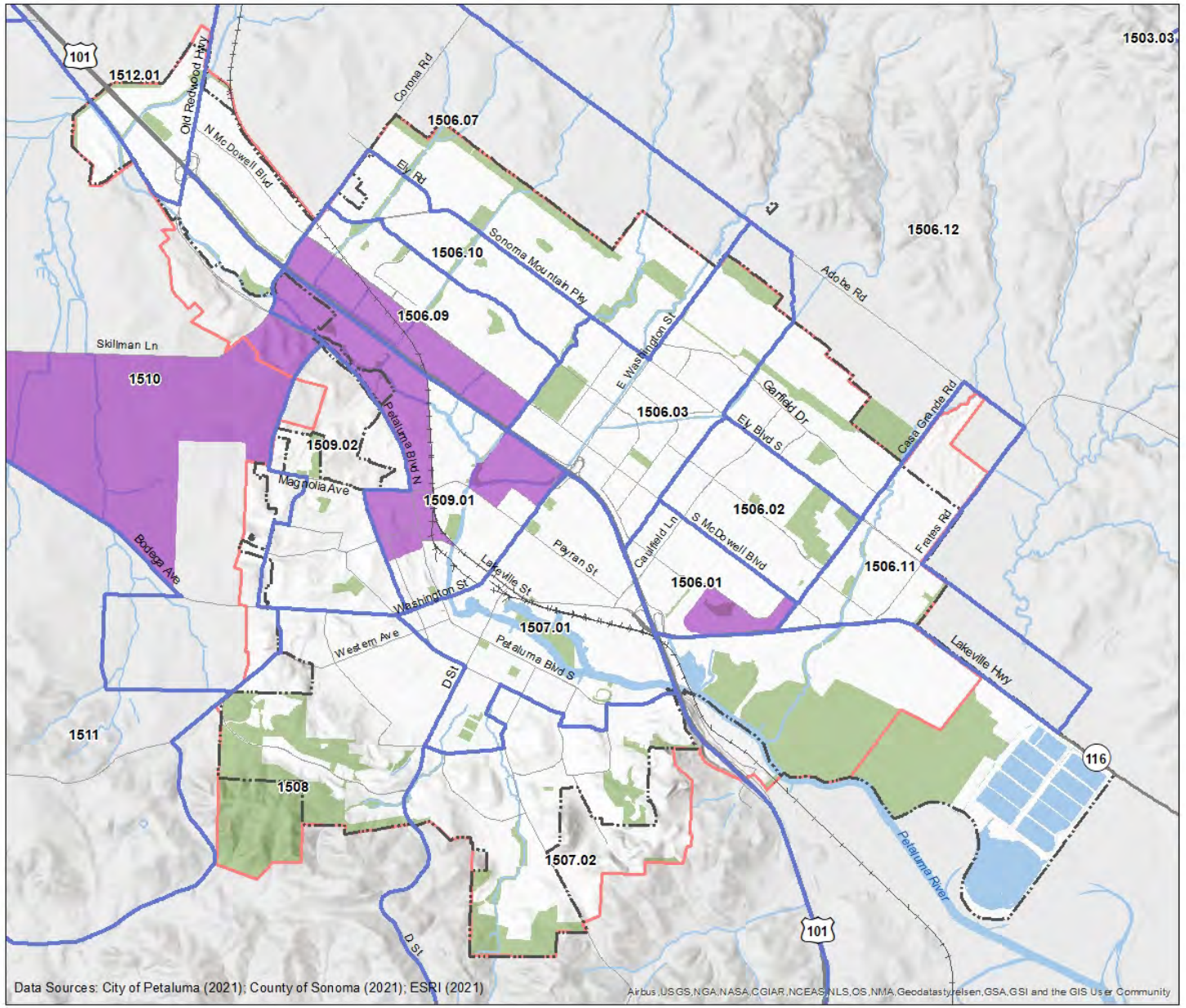
CITY OF PETALUMA GENERAL PLAN UPDATE

Method 2 Results (Block Groups)

Of the 10 low-income block groups, five had a high pollution burden. These five block groups are associated with four census tracts (1506.09, 1506.01, 1509.02, and 1510).

The following are the pollution burdens and the number of block groups per burden:

- Traffic Impacts – 5 block groups
- Groundwater Threats – 2 block groups
- Diesel Particulate Matter – 1 block group
- Solid Waste Sites – 1 block group



Method 2 (Blocks)

Disadvantaged Communities

Census Tracts
City Limit
Urban Growth Boundary / Sphere of Influence
Water
Parks / Open Space
Railway
Freeway
Major Streets

0 0.25 0.5 1 Miles

CITY OF PETALUMA GENERAL PLAN UPDATE

DAC Analysis: Method 3

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Section Overview

State guidance allows flexible approaches for Method 3, which is an analysis of community-specific data for additional health risk factors and disproportionate burden from pollution or other hazards.

The Method 3 analysis for Petaluma has two parts:

- Method 3A identifies high social vulnerability areas using the CDC Social Vulnerability Index and then compares them to each of the CalEnviroScreen (CES) pollution indicators. High social vulnerability areas with CES scores for individual indicators in the 75th percentile or above are considered DACs.
- Method 3B combines all the identified low-income areas (using both the block group and census tract analysis) and high social vulnerability areas, then compares them to additional health and environmental datasets. Areas with high health or environmental burden plus either low income or high social vulnerability are considered DACs.

(Note: "Social vulnerability" is defined using the Social Vulnerability Index developed by the CDC. This index is described below.)

Method 3

Community-Specific Data and Groundtruthing

Review Community-Specific Data

Verification through Community Engagement

Method 3A

The following few slides display Part A of Method 3. This analysis first identifies areas that have a high level of social vulnerability. High social vulnerability areas are then compared to the individual pollution indicators from CES 4.0. DACs are areas with pollution burden above the 75th percentile and high social vulnerability.

Social Vulnerability Index

- The Index was developed by the Centers for Disease Control and Prevention and it includes fifteen indicators at a census tract level.
- It is used because research has found that other socioeconomic and demographic indicators besides income are strongly correlated with health burdens. The indicators include the following: race/ethnicity, educational attainment, language barriers, and age.
- The Index is also used to help identify communities that will most likely need support before, during, or after natural disasters and public health emergencies.
- **The Index was recalibrated for Sonoma County. High social vulnerability areas are identified as those in the highest 25% in the County.**

Socioeconomic Status

- Below Poverty
- Unemployed
- Income
- No High School Diploma

Household Composition & Disability

- Aged 65 or Older
- Aged 17 or Younger
- Older than Age 5 with a Disability
- Single-Parent Households

Minority Status & Language

- Minority
- Speaks English “Less than Well”

Housing Type & Transportation

- Multi-Unit Structures
- Mobile Homes
- Crowding
- No Vehicle
- Group Quarters

Social Vulnerability Index (2018)

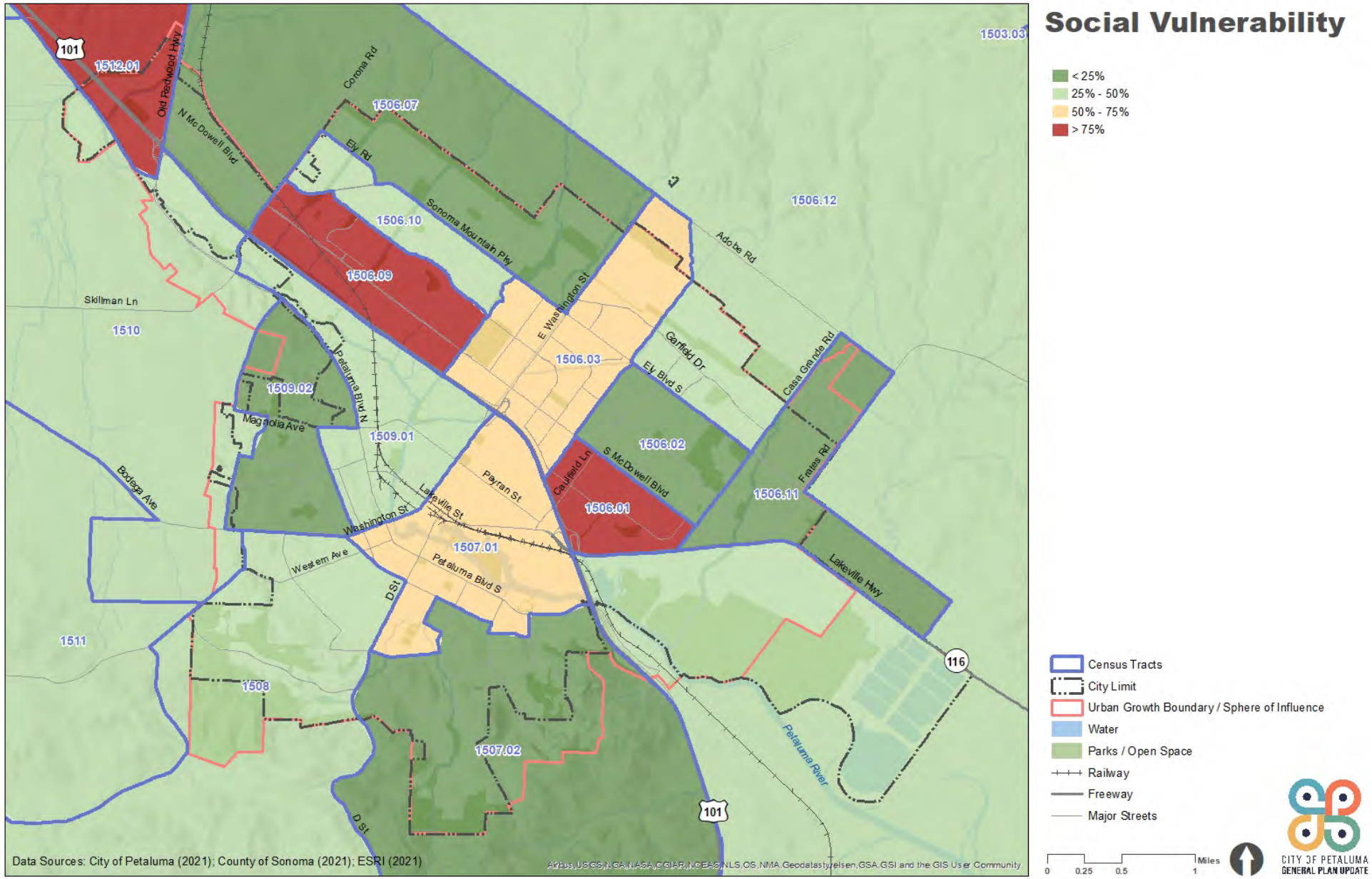
Three census tracts scored within the top 25% for highest vulnerability in Sonoma County.

These tracts scored high for each of the following indicators

- 1506.01: single-parent households, mobile homes
- 1506.09: aged 65 or older, with a disability, mobile homes
- 1512.1: mobile homes

Note that these three census tracts were also screened as low-income areas in Method 2.

Sources: CDC, 2018



DACs Using Social Vulnerability Index

All of Petaluma's census tracts were then individually compared to each of the pollution indicators found within CalEnviroScreen 4.0.

All three identified high social vulnerability census tracts had a high pollution burden. They scored within the top 25% of census tracts in the state for the following pollution exposures: diesel PM (2 tracts), traffic impacts (3 tracts), groundwater threats (1 tract), impaired waterbodies (1 tract), and solid waste sites (2 tracts).

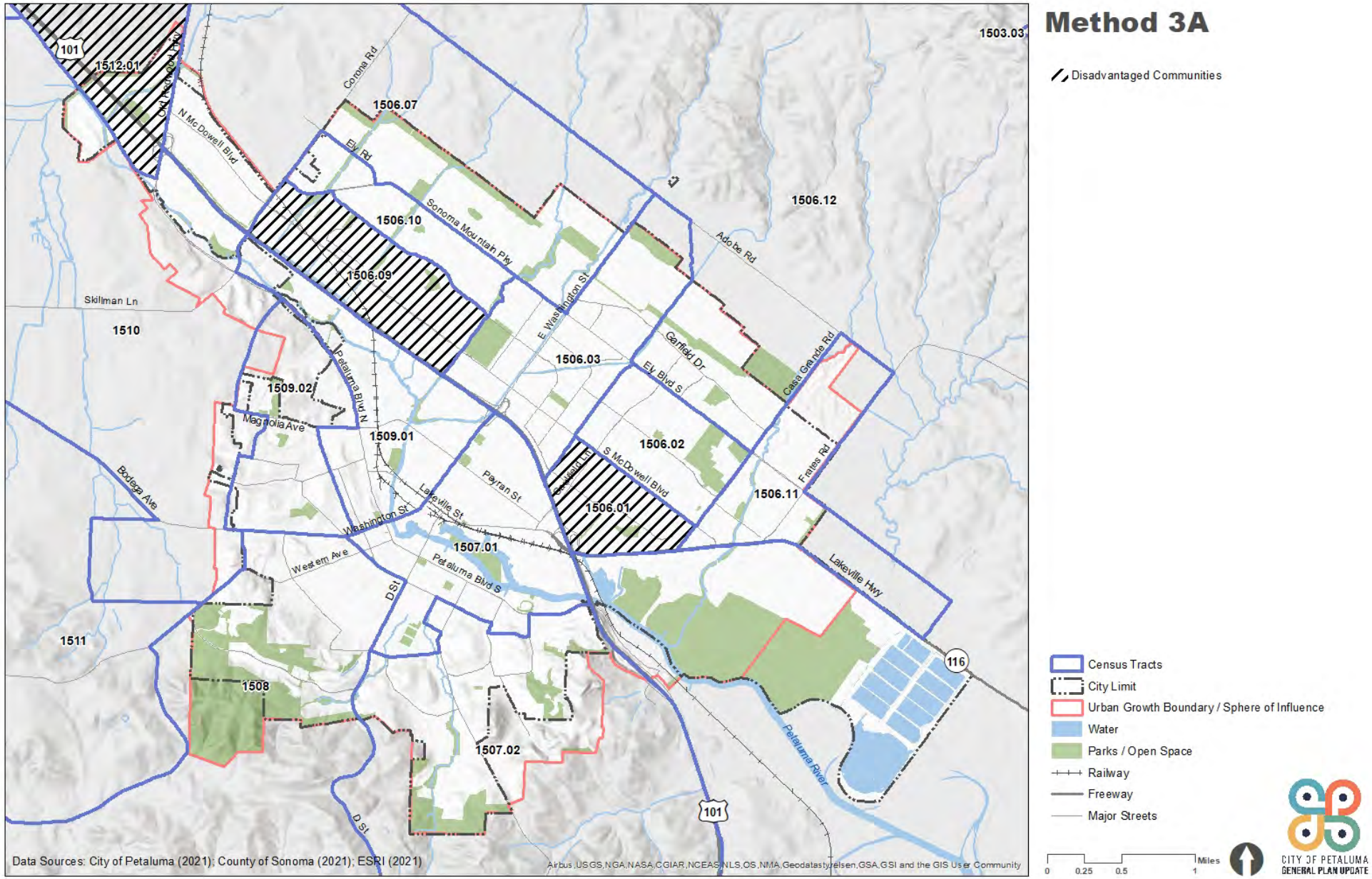
Census Tract	SVI Composite Index	Ozone Pctl.	PM2.5 Pctl.	Diesel Pctl.	Pesticides Use Pctl.	Toxic Release Pctl.	Traffic Impacts Pctl.	Drinking Water Contaminants Pctl.	Children's Lead Risk Pctl.	Cleanup Sites Pctl.	Groundwater Threats Pctl.	Hazardous Waste Pctl.	Impaired Waterbodies Pctl.	Solid Waste Sites Pctl.	Pollution Burden Pctl.
1506.01	78	8	16	74	0	30	78	15	40	55	65	0	52	59	39
1506.02	2	9	14	31	0	31	50	47	27	0	38	0	0	2	4
1506.03	64	8	14	50	49	31	71	50	42	25	59	0	52	0	34
1506.07	12	8	12	14	26	26	50	52	10	0	29	47	52	0	11
1506.09	85	8	14	83	42	28	78	49	9	19	31	16	52	75	44
1506.10	32	8	13	50	46	28	12	50	13	5	10	0	52	20	9
1506.11	18	9	13	38	70	32	44	50	7	0	57	47	52	12	28
1506.12	31	9	12	11	64	34	64	56	4	56	90	59	97	98	70
1507.01	71	8	14	75	42	30	79	50	58	85	89	0	52	54	71
1507.02	0	8	11	13	54	30	87	54	41	62	53	0	52	64	49
1508	46	8	10	3	43	27	6	53	52	61	56	0	52	0	17
1509.01	43	8	13	68	9	29	85	58	72	62	91	16	52	37	64
1509.02	4	8	12	38	16	29	37	63	37	43	70	0	52	20	26
1510	35	8	11	14	68	23	77	67	41	0	71	41	52	52	48
1512.01	80	8	9	29	53	17	60	74	50	66	86	44	78	87	73

Sources: ACS, 2015-2019; CalEnviroScreen, 2021

Method 3A Results

Three high social vulnerability census tracts with high pollution burden.

They scored within the top 25% of census tracts in the state for the following pollution exposures or environmental effects: diesel PM, traffic impacts, groundwater threats, impaired waterbodies, and solid waste sites.



Method 3B

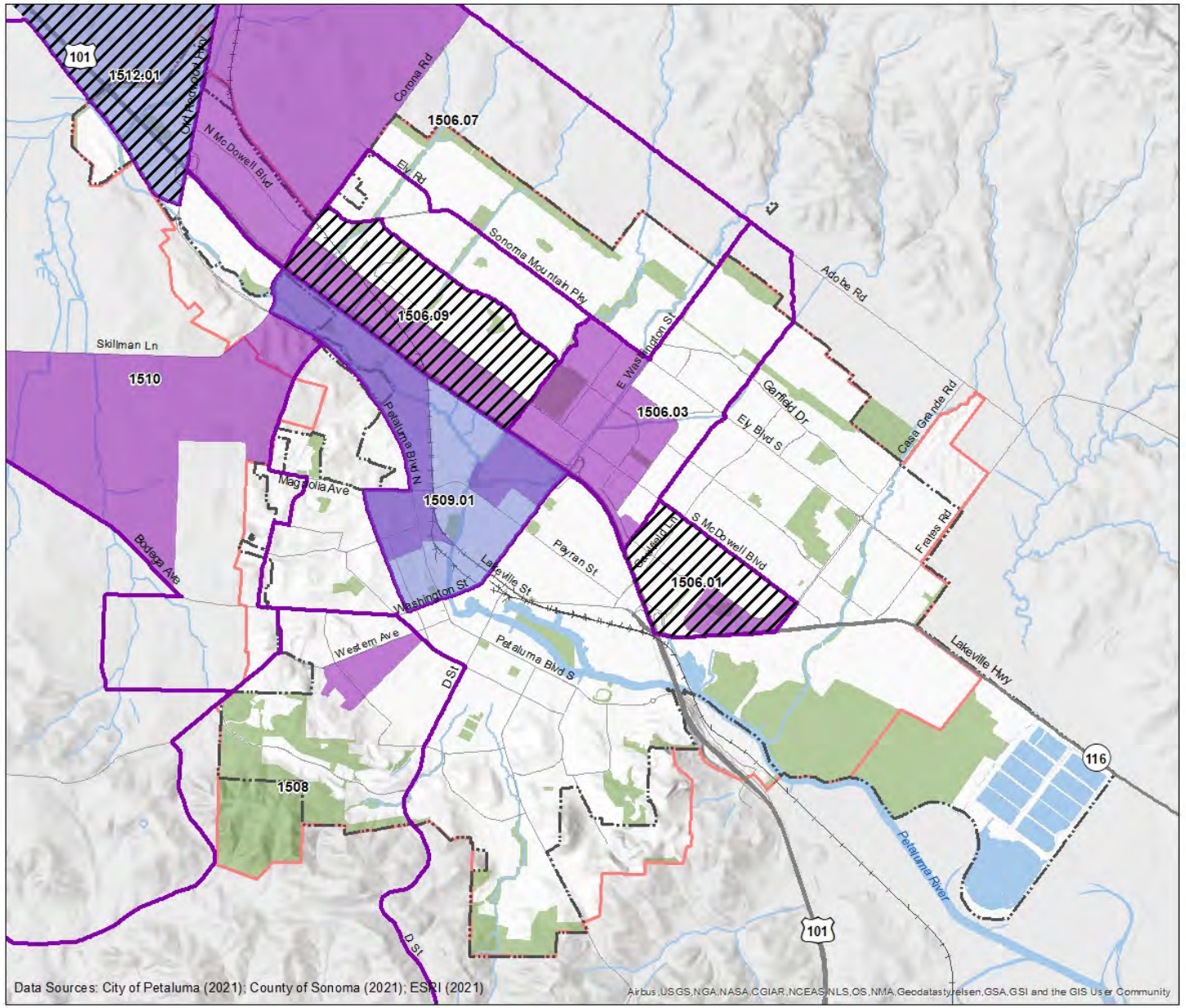
The following few slides display Part B of Method 3. This is an analysis of low-income areas and high social vulnerability areas in comparison to additional health and environmental data.

Low Income and/or High Social Vulnerability Areas

There are 8 census tracts that are either low-income areas, have block groups within them that are low-income areas, or are high social vulnerability areas. Several areas are both low-income and scored high for social vulnerability.

The next step in the process is to compare these areas with additional indicators of health and environmental justice.

The following maps only show the outlines of census tracts that are low-income, have high social vulnerability, and/or have block groups within them that are low-income areas. The individual block groups are not outlined, because most of the data is at the census tract level.



Potential DACs

- Low-Income Census Tracts
- Low-Income Block Groups
- Census Tracts with Low Income Block Groups
- High Social Vulnerability Areas

- City Limit
- Urban Growth Boundary / Sphere of Influence
- Water
- Parks / Open Space
- Railway
- Freeway
- Major Streets

0 0.25 0.5 1 Miles

CITY OF PETALUMA
GENERAL PLAN UPDATE

Additional Health & EJ Data

State guidance recommends analysis for each of the following EJ policy areas: Pollution Exposure, Food Access, Physical Activity, Public Facilities, and Housing. The Petaluma General Plan Update Team recommends adding Health Outcomes as a policy area and recommends the indicators listed below. These indicators are compared to low-income and/or high social vulnerability index areas in the slides following this one.

Health Outcomes

- Life expectancy at birth
- Adult asthma rate
- Asthma hospitalization rate
- Adult heart disease rate
- Heart disease hospitalization rate
- Infant low birth weight rate
- Adult obesity rate

Pollution Exposure

- Proximity to high-volume roadways

Food Access

- Access to healthy food
- Alcohol availability
- Food insecurity

Physical Activity

- Adult walking rates
- Active commuting rates

Public Facilities

- Access to high-quality transit
- Access to parks

Housing

- Cost-burdened households
- Overcrowded households

Method 3B Thresholds

For each Method 3B indicator, we identified a threshold for disproportionate health and environmental justice burden.

For many indicators, the top 25% was used as a threshold like in Methods 2 and 3A.

However, for data that was not available in percentile-rank form, one of either two approaches were used:

1. 95% confidence intervals of State averages. For a given health indicator, census tracts with values higher than the State's 95% confidence interval were considered disproportionately burdened for that health indicator.
2. Standards commonly used in the field of planning, such as 10-minute walksheds from parks and open space.

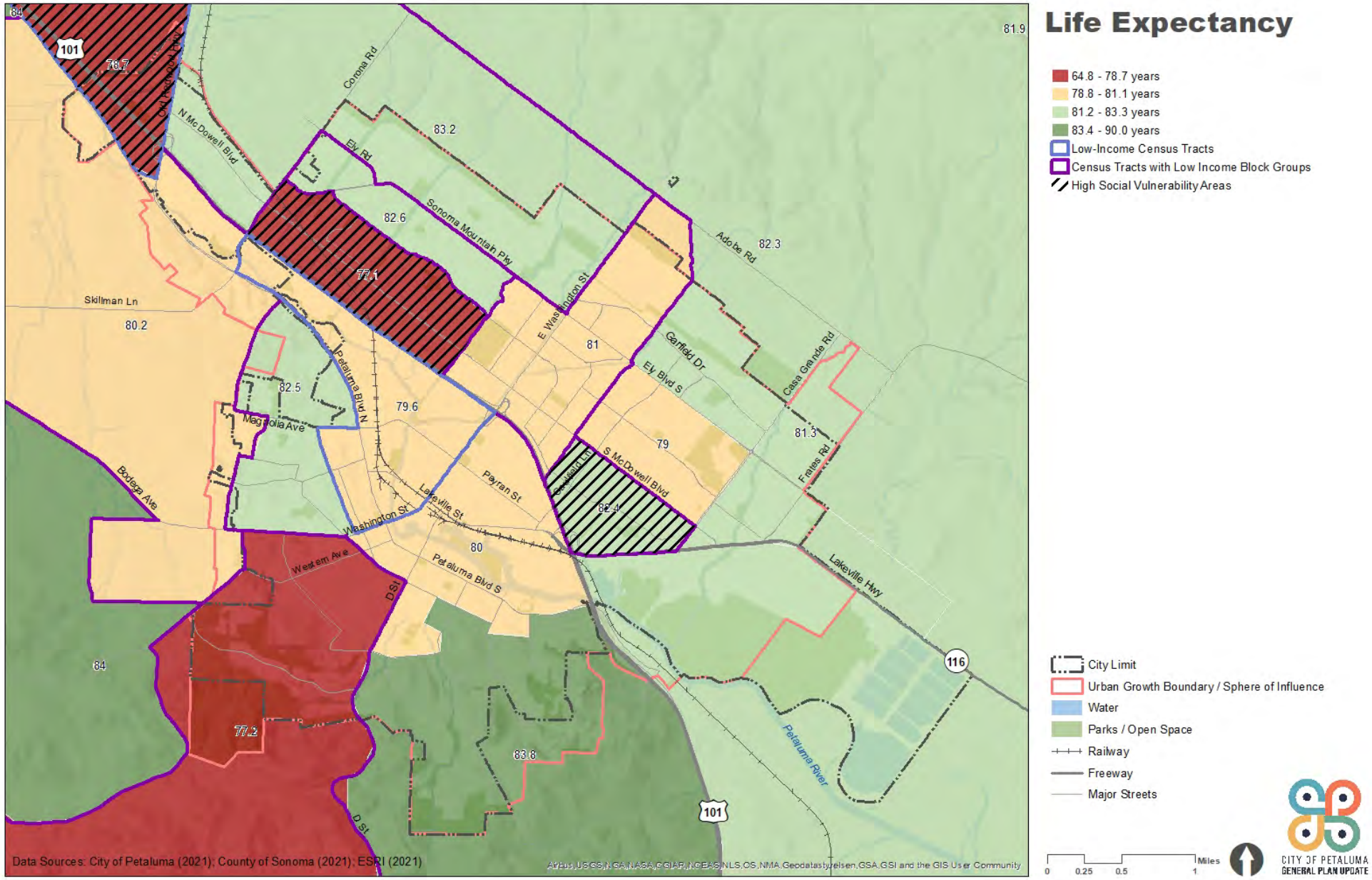
Health Outcomes: Life Expectancy

This map shows life expectancy at birth.

The statewide average life expectancy is equal to 80.9 years, while the Sonoma County average life expectancy is equal to 80.7 years.

Three low-income and high social vulnerability areas scored in the lowest quantile for life expectancy in comparison to the rest of the State. Thus, they have a high health burden for life expectancy.

(Data from 2010)



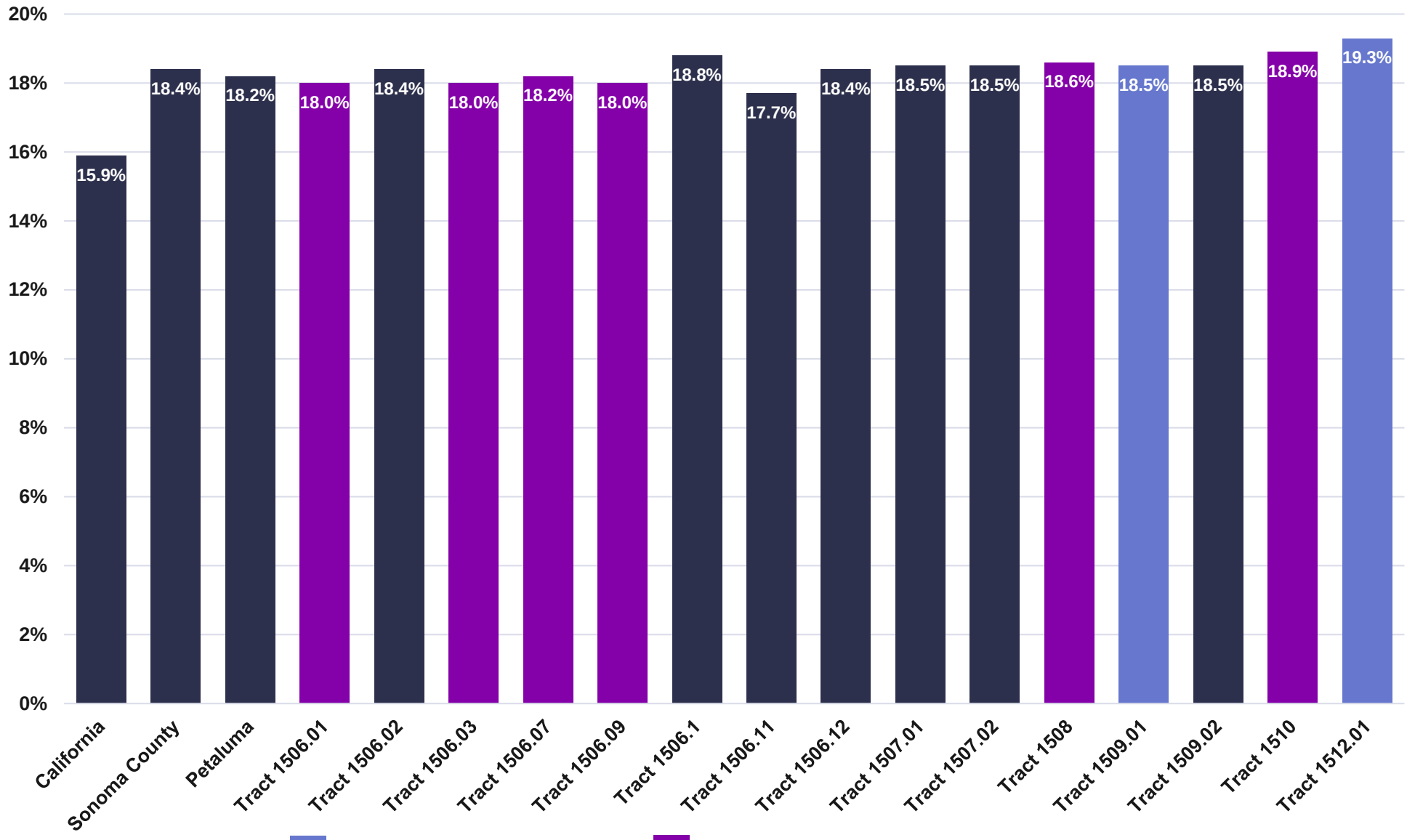
Sources: Healthy Places Index, 2021

Health Outcomes: Adult Asthma Diagnosis

This chart shows the percent of adults who have ever been diagnosed with asthma by a physician.

All census tracts in Petaluma, including the low-income and high social vulnerability areas, are well above the State average adult asthma rate of 15.9% (95% confidence interval: 15.3% - 16.4%). Since all census tracts are above the 95% confidence interval of 16.4%, they thus have a high health burden for adult asthma.

(Data from 2018)



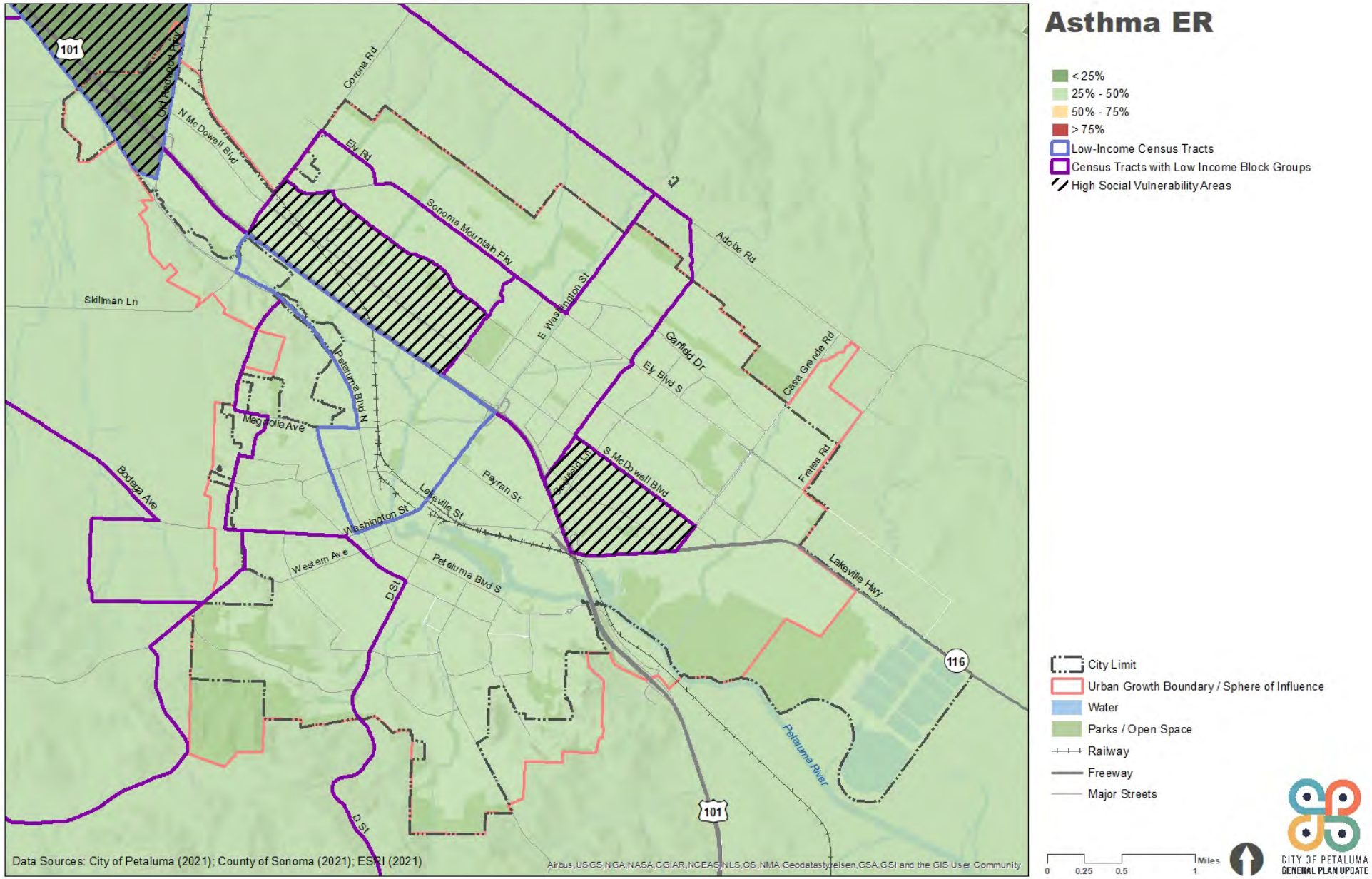
Sources: California Health Interview Survey

Health Outcomes: Asthma ER Admissions

This map shows the age-adjusted rate of emergency department visits for asthma per 10,000 (averaged over three years).

The majority of Petaluma has Asthma ER rates far below the 75th percentile for the State. Therefore, there are no areas with a high health burden for asthma ER visits.

(Data from 2015-2017)



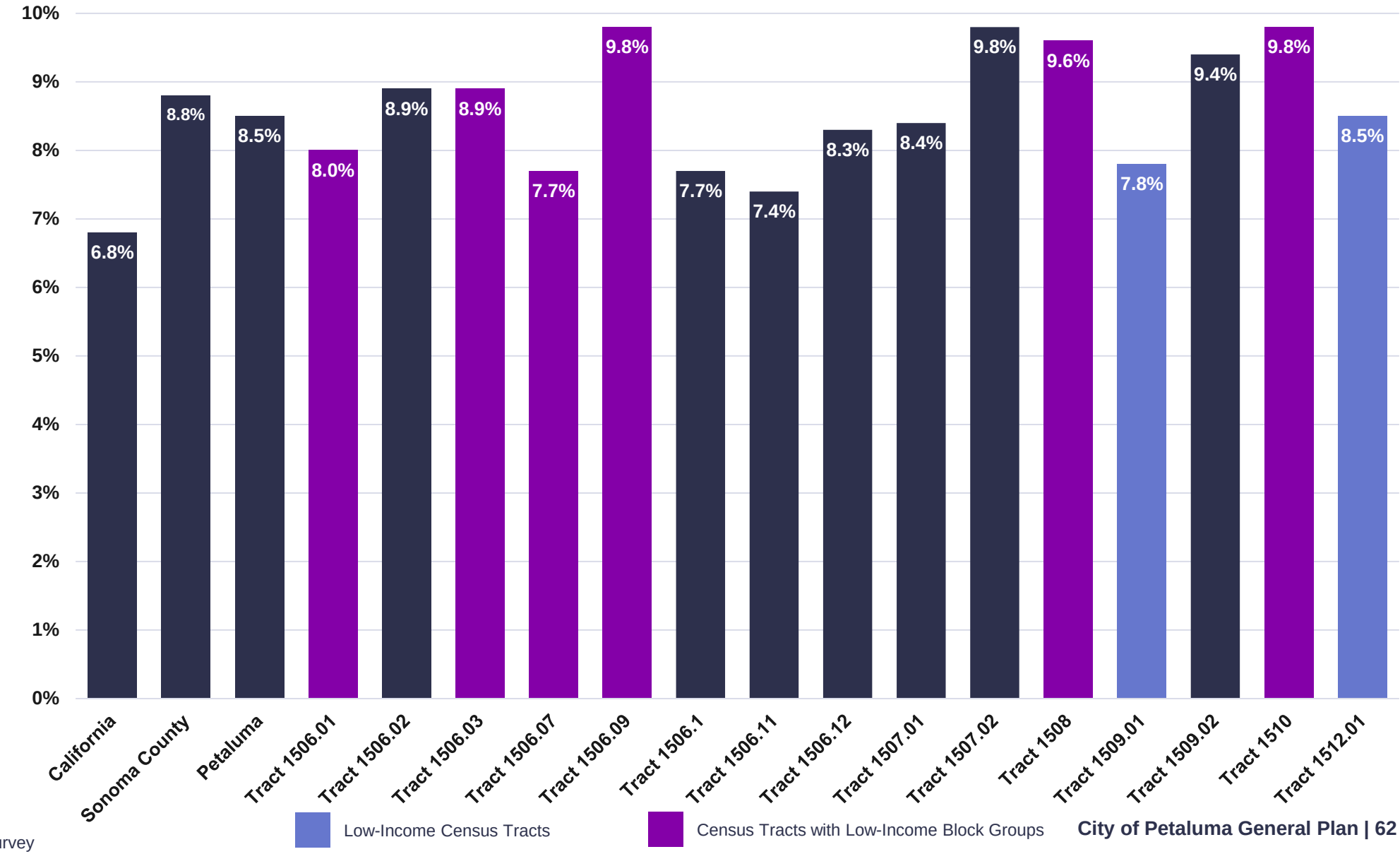
Sources: CalEnviroScreen, 2021

Health Outcomes: Heart Disease Diagnosis

This chart shows the percent of adults who have ever been diagnosed with heart disease by a physician.

All census tracts in Petaluma, including the low-income and high social vulnerability areas, are well above the state average adult heart disease rate of 6.8% (95% confidence interval: 6.3% - 7.2%). Since all census tracts are above the 95% confidence interval of 7.2%, they thus have a high health burden for heart disease.

(Data from 2018)



Sources: California Health Interview Survey

Health Outcomes: Heart Disease ER Admissions

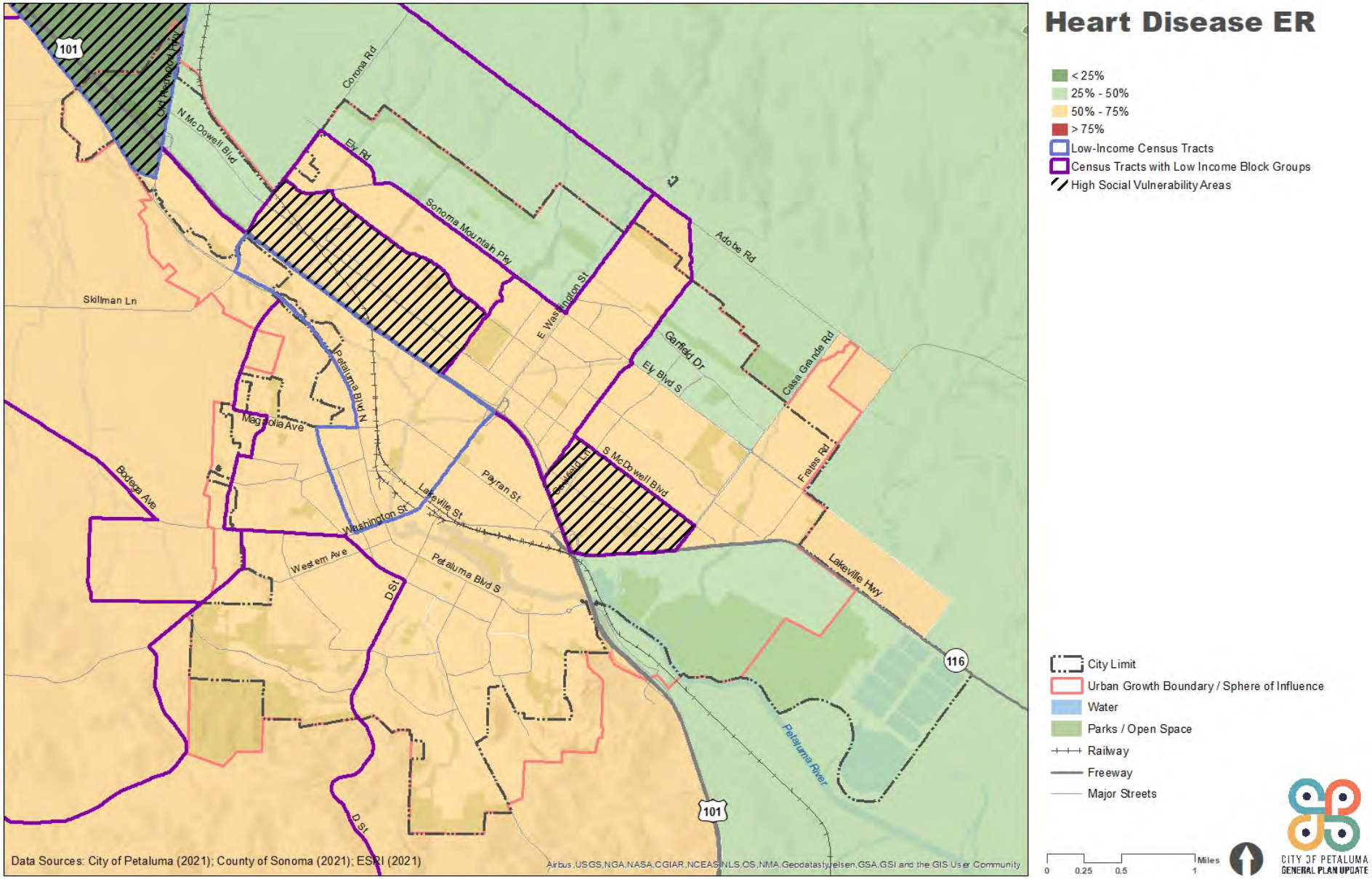
The map identifies the age-adjusted rate of emergency department visits for acute myocardial infarctions per 10,000 (averaged over three years).

The entire city is below the 75th percentile threshold for DACs. Therefore, there are no low-income and high social vulnerability areas that have a high health burden for heart disease ER visits.

While positive, the data indicates that the majority of Petaluma has higher than average ER admission rates than the State as a whole.

(Data from 2015-2017)

Sources: CalEnviroScreen, 2021



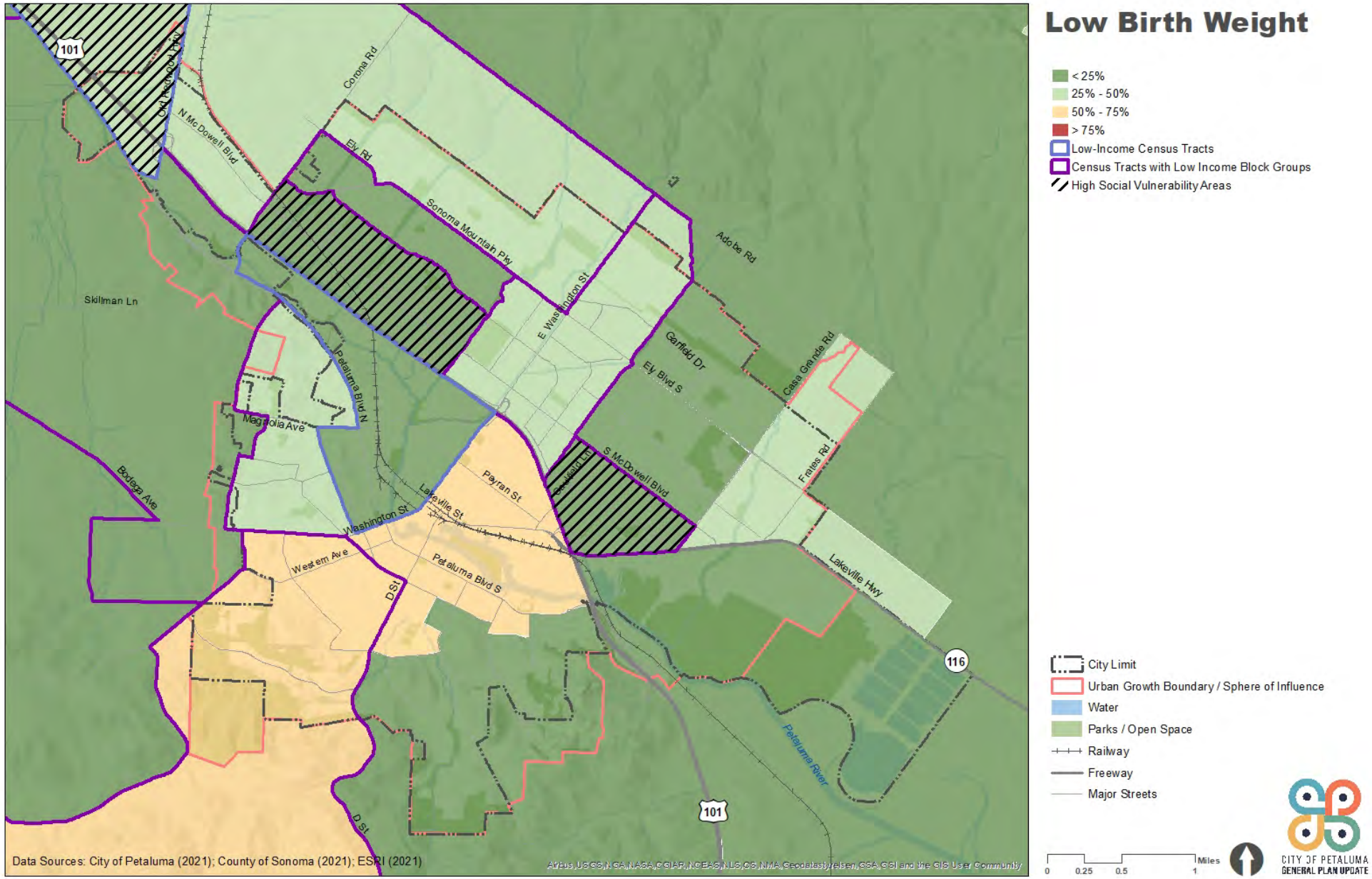
Health Outcomes: Low Birth Weight Infants

This map shows the percent of infants born weighing less than 2,500 grams (about 5.5 pounds).

The majority of the city is in the lowest 25th percentile in the State.

Therefore, there are no low-income or high social vulnerability areas that have a high health burden for low birth weight among infants.

(Data from 2009-2015)



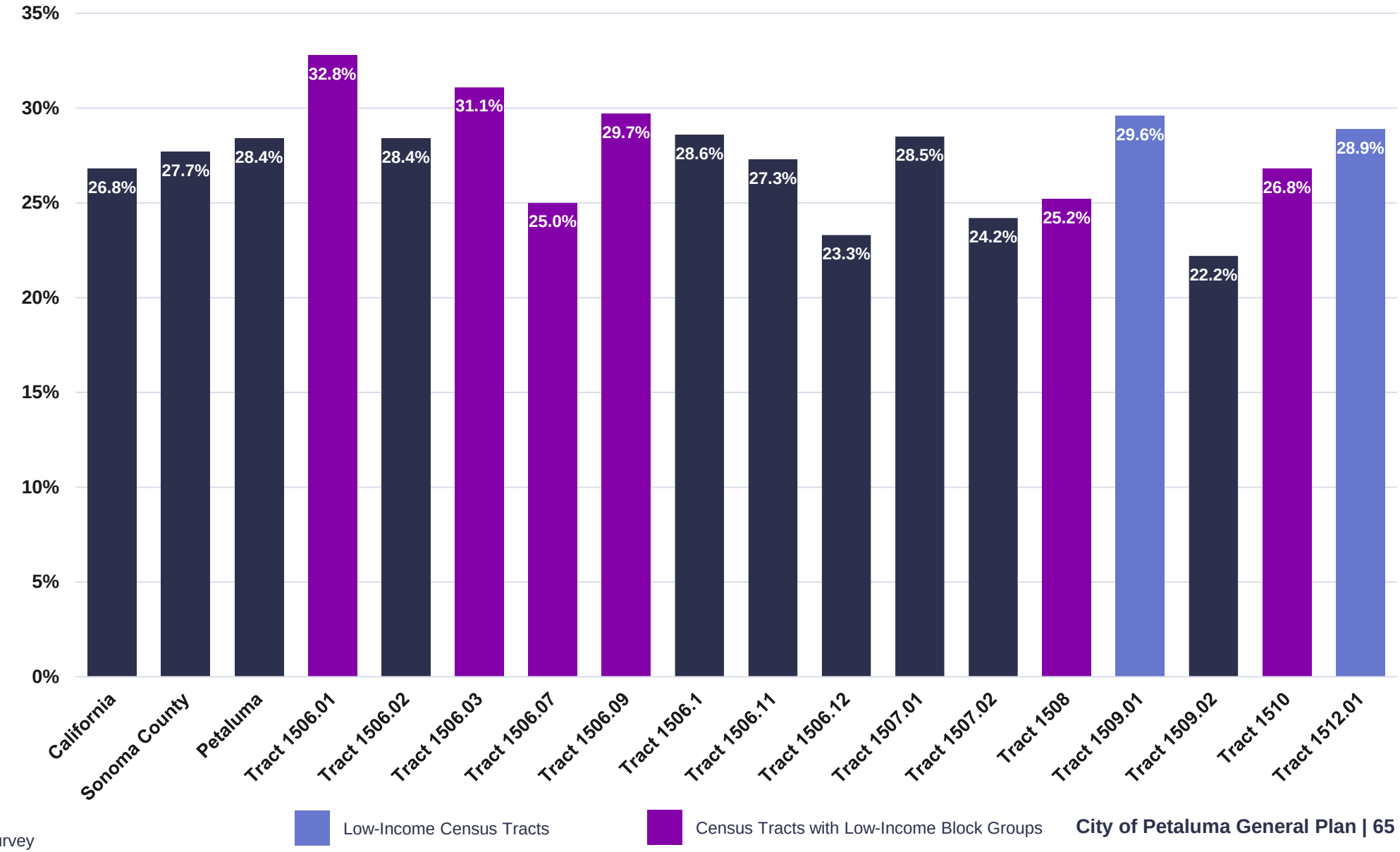
Sources: CalEnviroScreen, 2021

Health Outcomes: Obesity

This chart shows the percent of adults who had a body mass index (BMI) of 30.0 or above.

Five low-income and high social vulnerability areas are well above the state average adult obesity rate of 26.8% (95% confidence interval: 25.6% - 28.1%). Since these five census tracts are above the 95% confidence interval of 28.1%, they thus have a high health burden for obesity.

(Data from 2018)

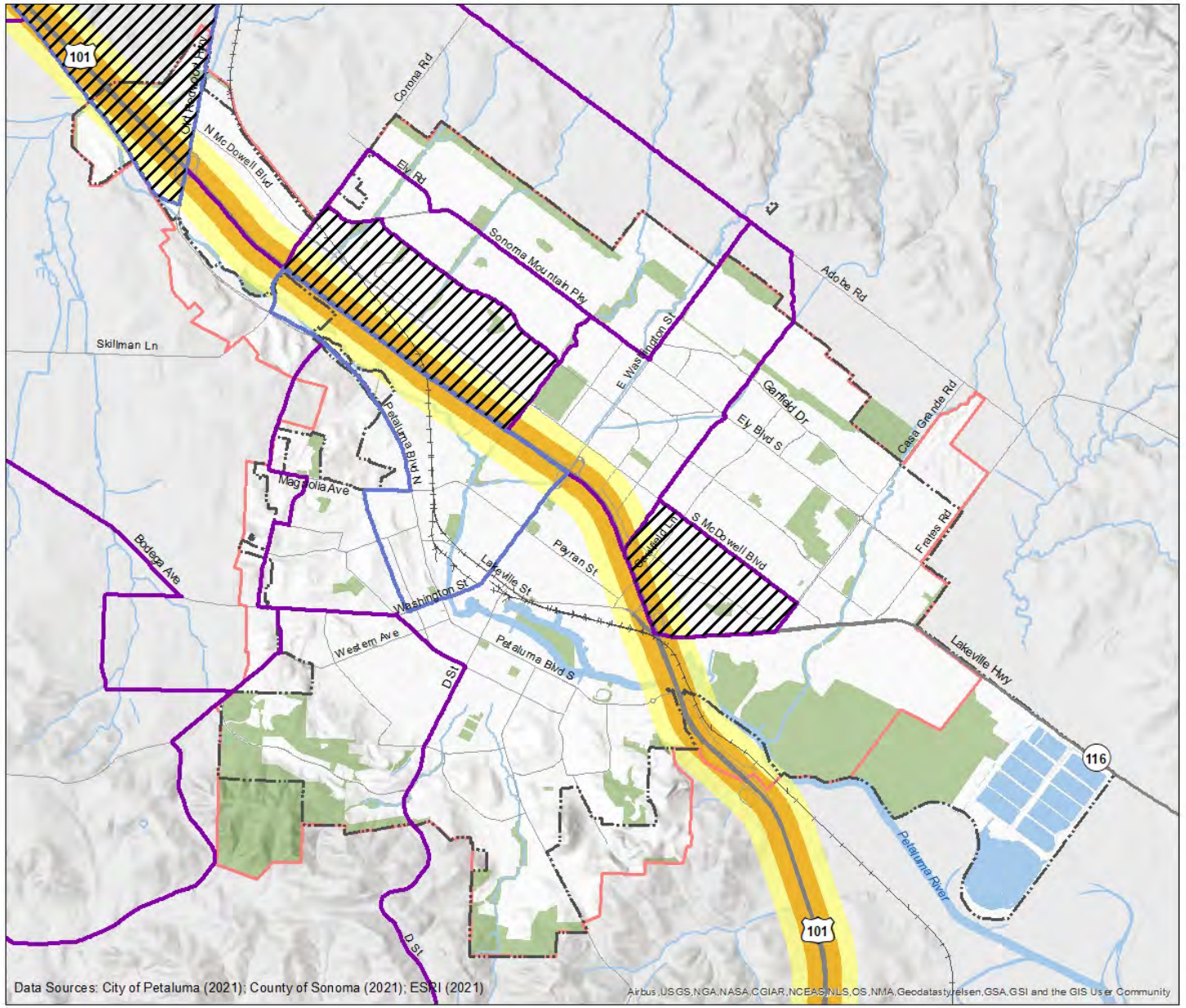


Sources: California Health Interview Survey

Pollution Exposure: High-Volume Roadways

Traffic-related air pollution is highest within 500 feet of a highway. If downwind, high pollution levels can reach up to 1,000 feet. Areas within 500 and 1,000 feet are shown on the map.

7 of the 8 low-income and high social vulnerability census tracts are located within 1,000 ft of Highway 101, which is the highest volume roadway in Petaluma.



Sources: Raimi + Associates

Food Access: Healthy Food Markets

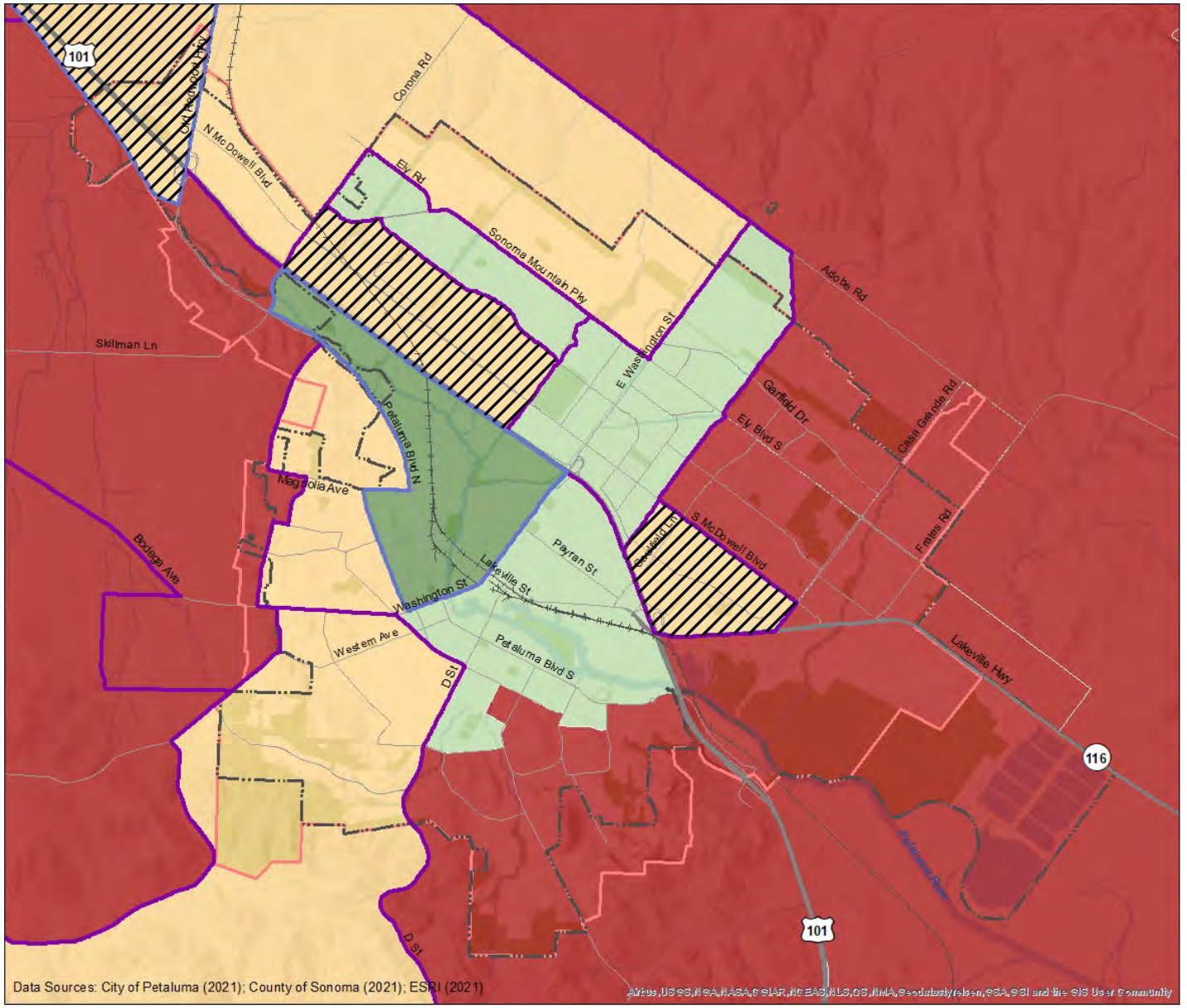
Access to a supermarket or grocery store is critical for a healthy community as areas without access tend to have poorer health outcomes.

This map shows an indexed value for the percent of residents living within a ½ mile from a supermarket or large grocery store, in comparison to the rest of the State. The higher the values, the greater the access to healthy food markets.

One low-income census tract was identified with low healthy food access.

(Note that this analysis may be redone with point source data for supermarkets.)

(Data from 2015)



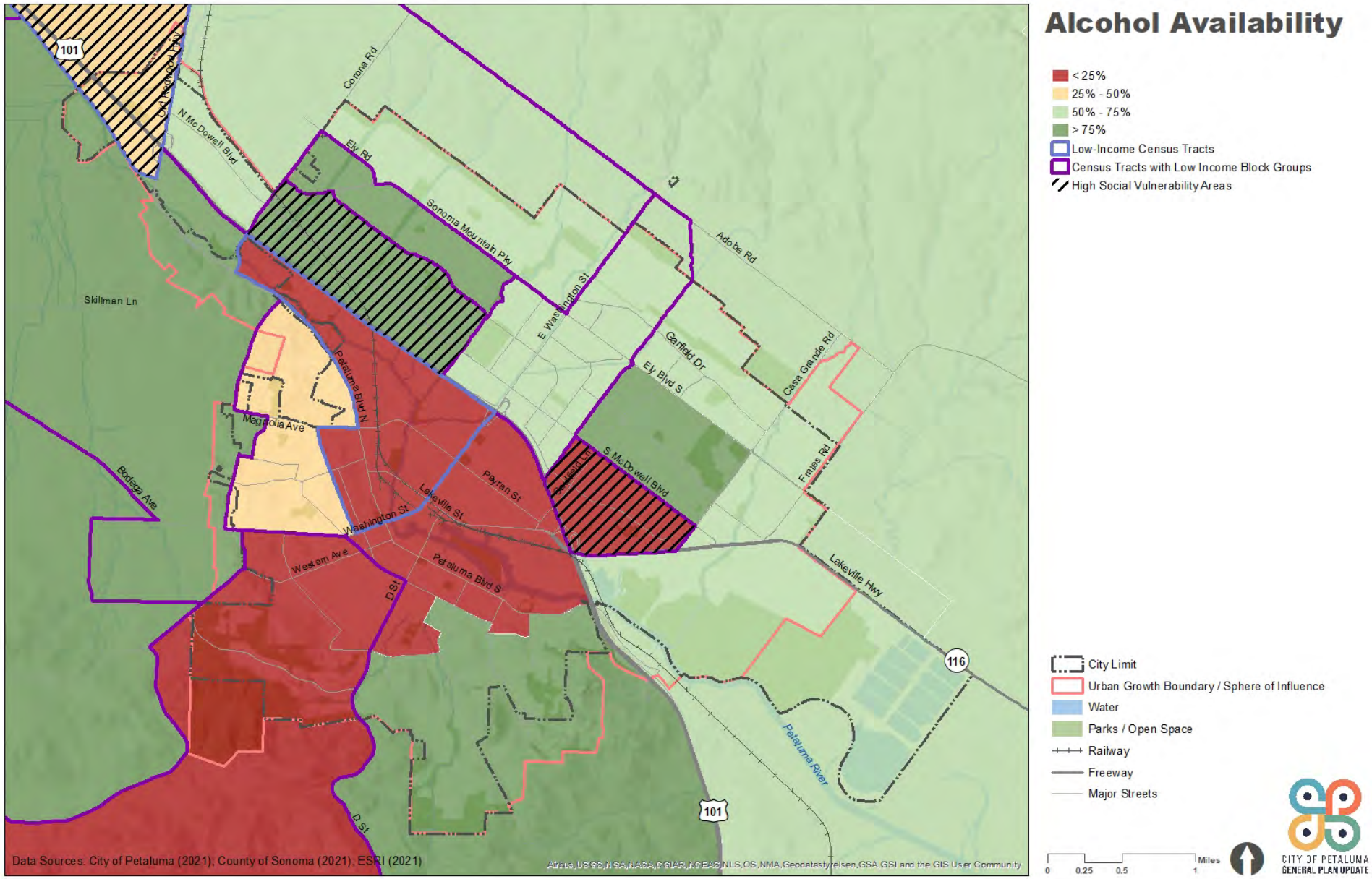
Sources: Healthy Places Index, 2021

Food Access: Alcohol Availability

Alcohol availability is tied to poorer health outcomes. This map shows an indexed value for the percent of residents living beyond a ¼ mile of an off-site sales alcohol outlet, in comparison to the rest of the state. The red on the map indicates that more than 75% of residents are living within ¼ mile of an alcohol outlet.

Three census tracts have high alcohol availability and are either low-income or have a high social vulnerability. These areas should be considered DACs.

(Data from 2011-2015)



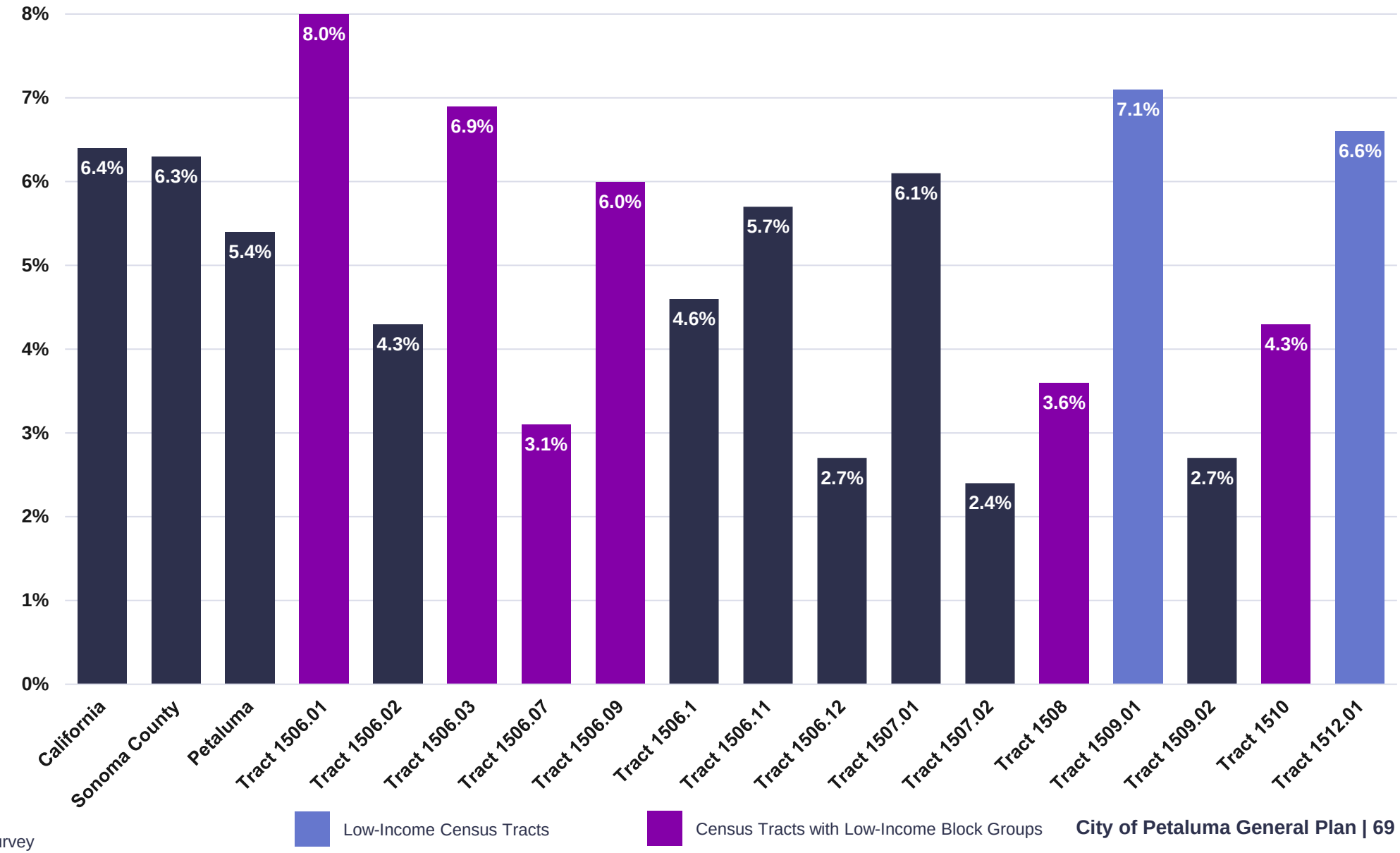
Sources: Healthy Places Index, 2021

Food Access: Food Insecurity

This chart shows the percent of adults who are low-income food insecure.

Two low-income and high social vulnerability areas are well above the state average adult food insecure rate of 6.4% (95% confidence interval: 5.8% - 7.0%). Since these two census tracts are above the 95% confidence interval of 7.0%, they thus have a high health burden for food insecurity.

(Data from 2018)



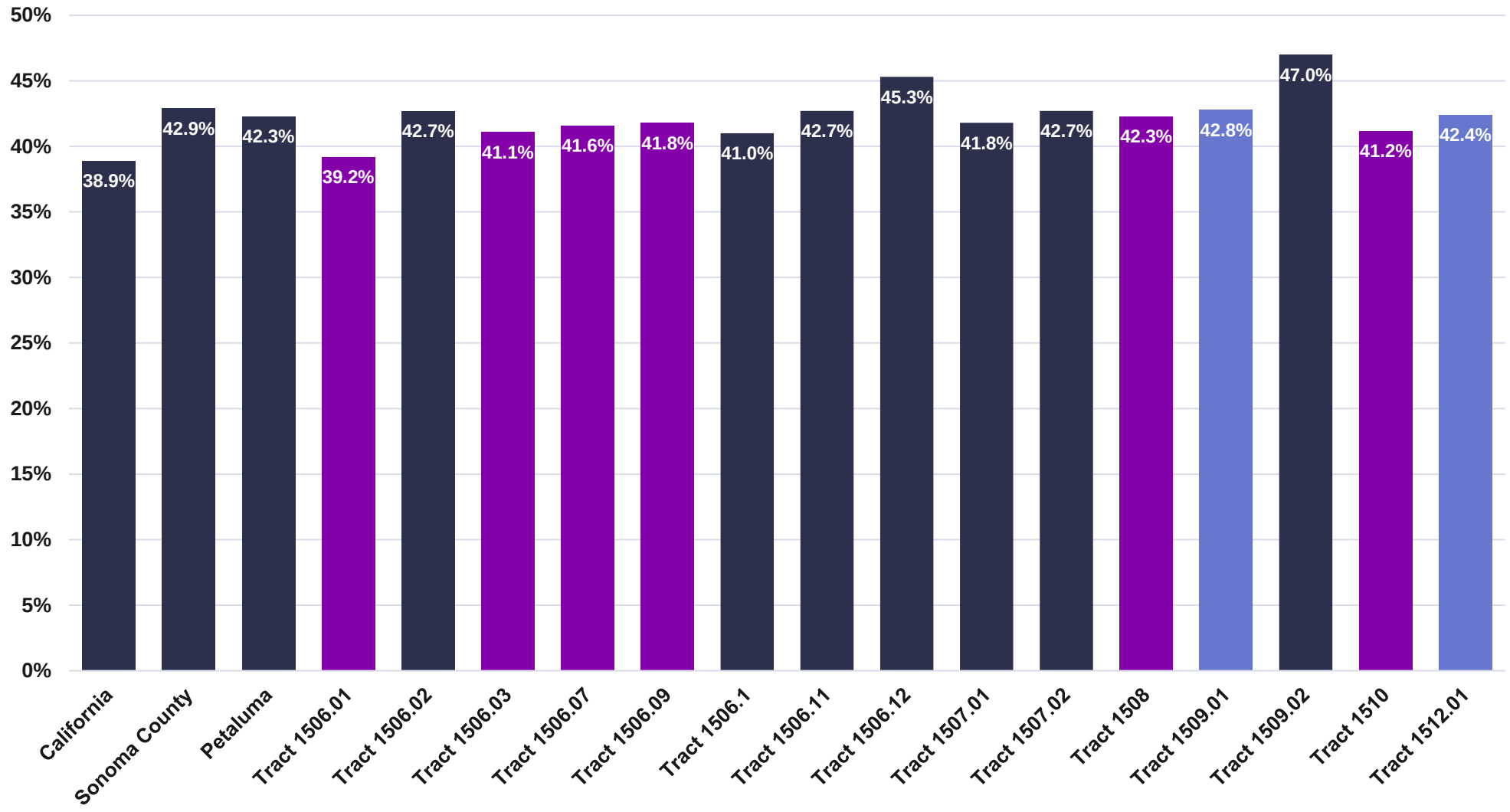
Sources: California Health Interview Survey

Physical Activity: Adult Walking

This chart shows the percent of adults who walked for transportation or leisure for at least 150 minutes in the past week.

No census tracts in Petaluma, including the low-income and high social vulnerability areas, are below the state average adult walking rate of 38.9% (95% confidence interval: 37.6% - 40.3%). Since all census tracts are above the 95% confidence interval of 37.6%, they thus are not disproportionately burdened.

(Data from 2016)



Sources: California Health Interview Survey

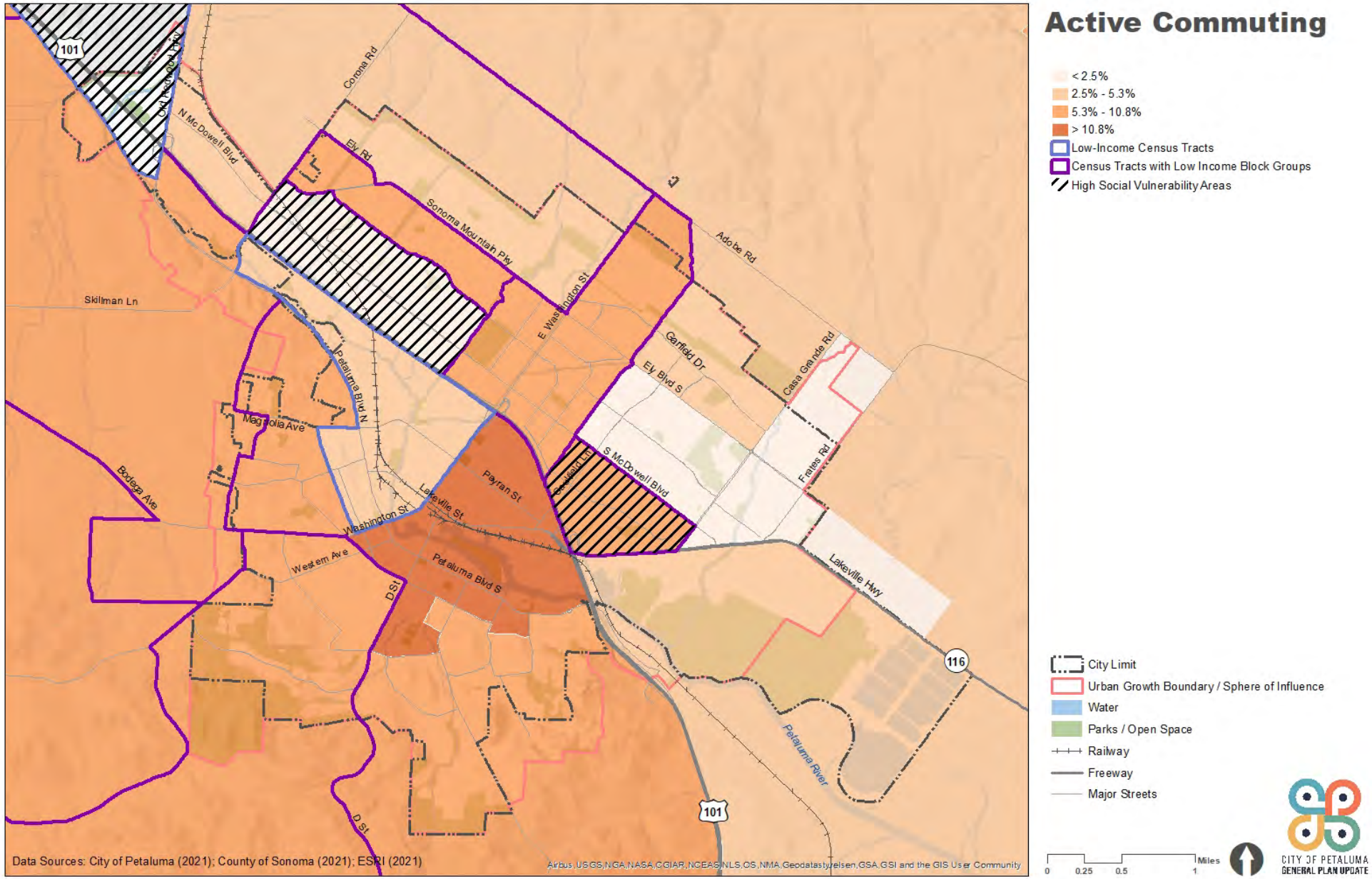
Physical Activity: Active Commuting

Regular physical activity through active commuting is tied to positive health outcomes. This map shows the percent of workers (age 16+) who walk, bike, or take transit to work in comparison to the rest of the state.

The statewide average active commuting rate is 8.9%, while the Sonoma County average active commuting rate is 5.6%.

Several low-income and high social vulnerability areas are in the two lowest quantiles for active commuting and below the County average.

(Data from 2015-2019)



Sources: ACS, 2015-2019

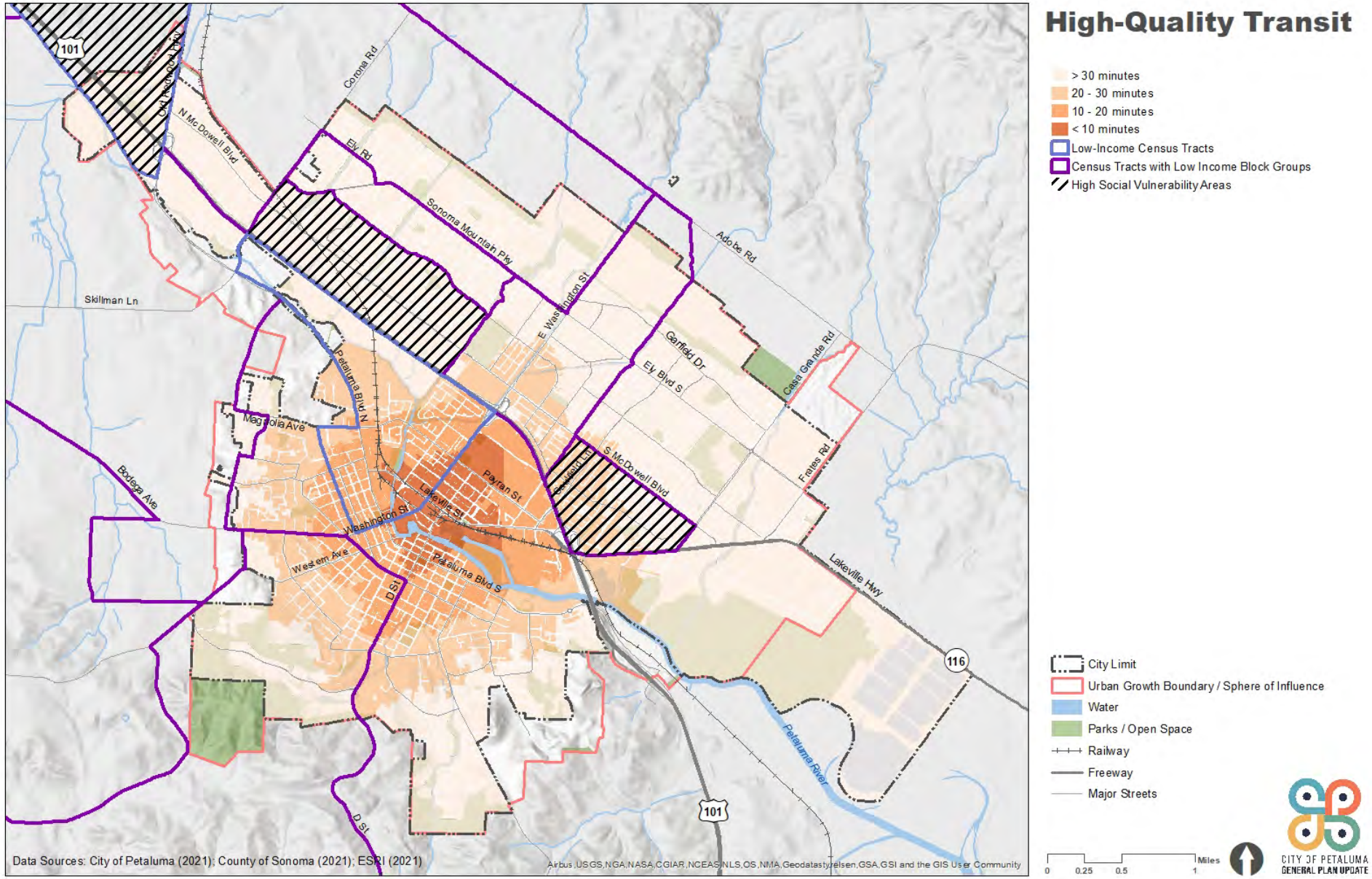
Public Facilities: Access to High-Quality Transit

This map shows the walking time to the nearest high-quality transit stop (service frequencies of 15 minutes of less).

Burden is identified as a walking distance of greater than 20 minutes to high quality transit service.

Most of the low-income and high social vulnerability areas are further than 20 minutes from high frequency transit service. Therefore, these areas have disproportionate burdens.

(Data from 2021)



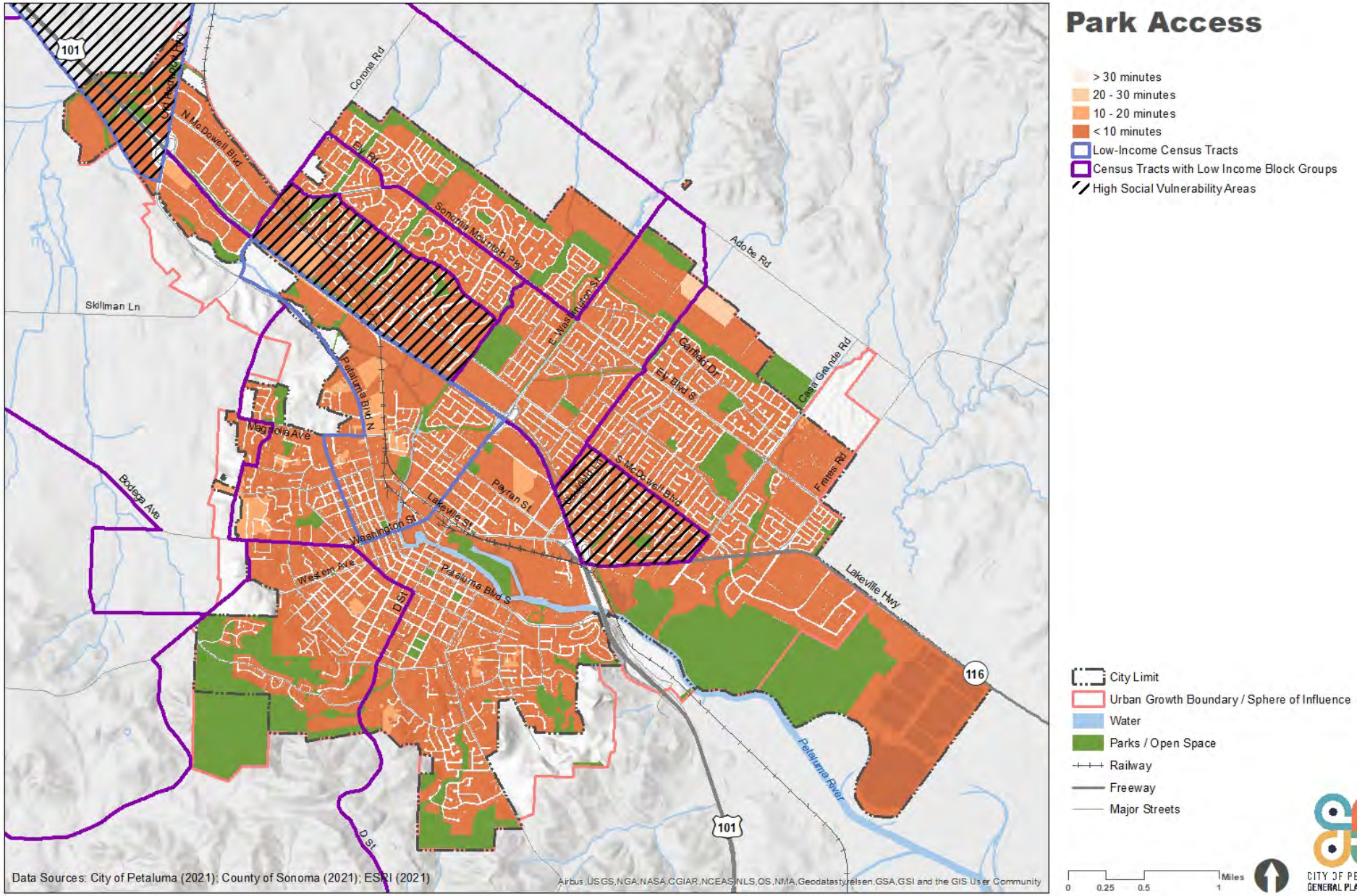
Sources: UrbanFootprint, 2021

Public Facilities: Access to Parks

Access to parks is an important indicator of the physical activity. This map shows the walk time to a park. All areas of Petaluma are within a 20-minute walk of a park, which is considered adequate park access

Therefore, no low-income or high social vulnerability areas have poor park access.

(Data from 2021)



Sources: Healthy Places Index, 2021

Housing: Cost-Burden

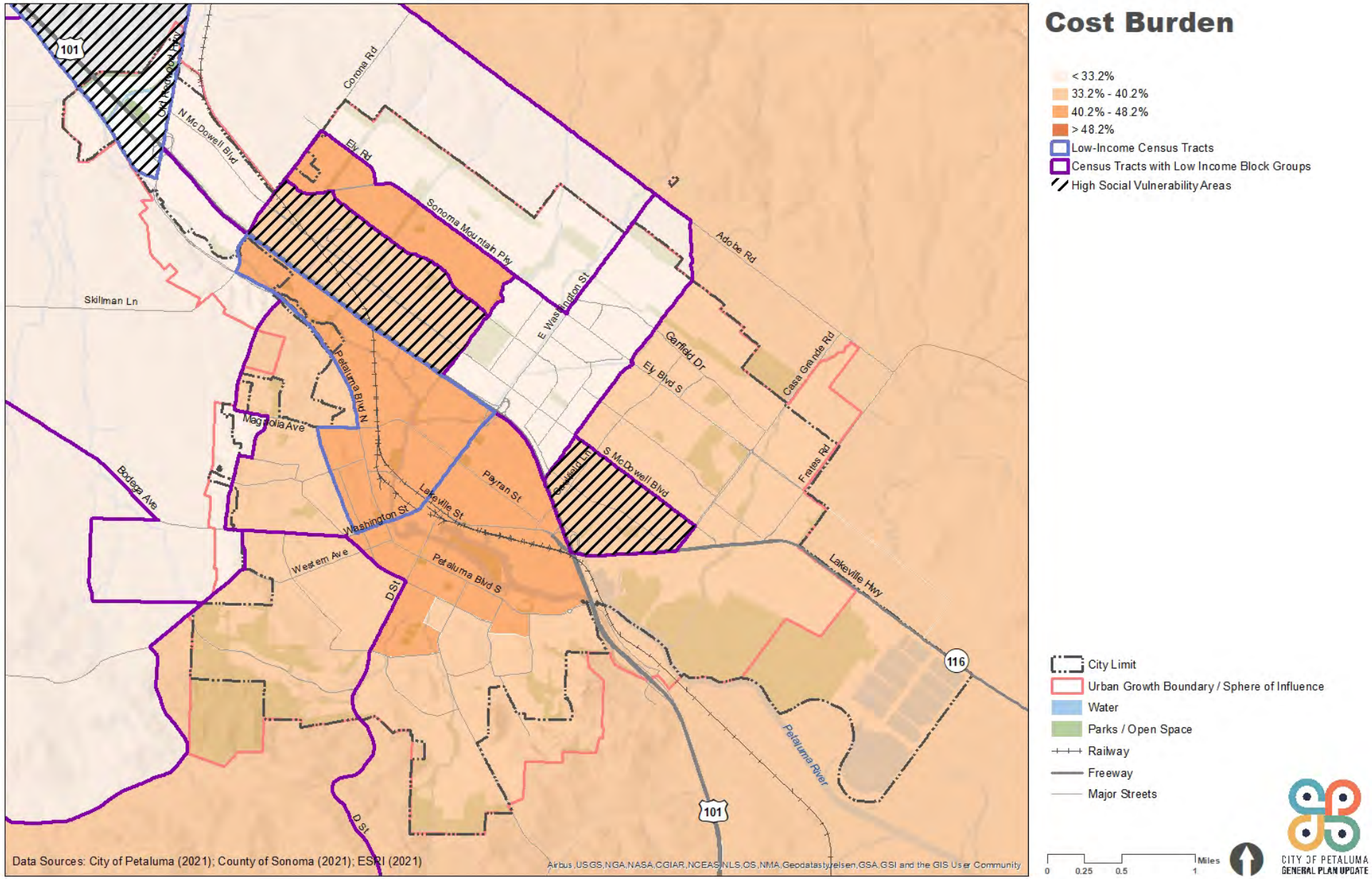
Households who are cost-burdened are less able to afford healthy foods, medicines, and other health-promoting products and behaviors. This map shows the percent of households paying more than 30% of income on housing in comparison to the rest of the state.

About 41% of households statewide and about 39% of households in Sonoma County are cost-burdened.

No low-income and high social vulnerability areas are in the highest quantile for cost-burden in the state, however, there are still high levels of cost-burden in these areas and throughout the city.

(Data from 2015-2019)

Sources: ACS, 2015-2019



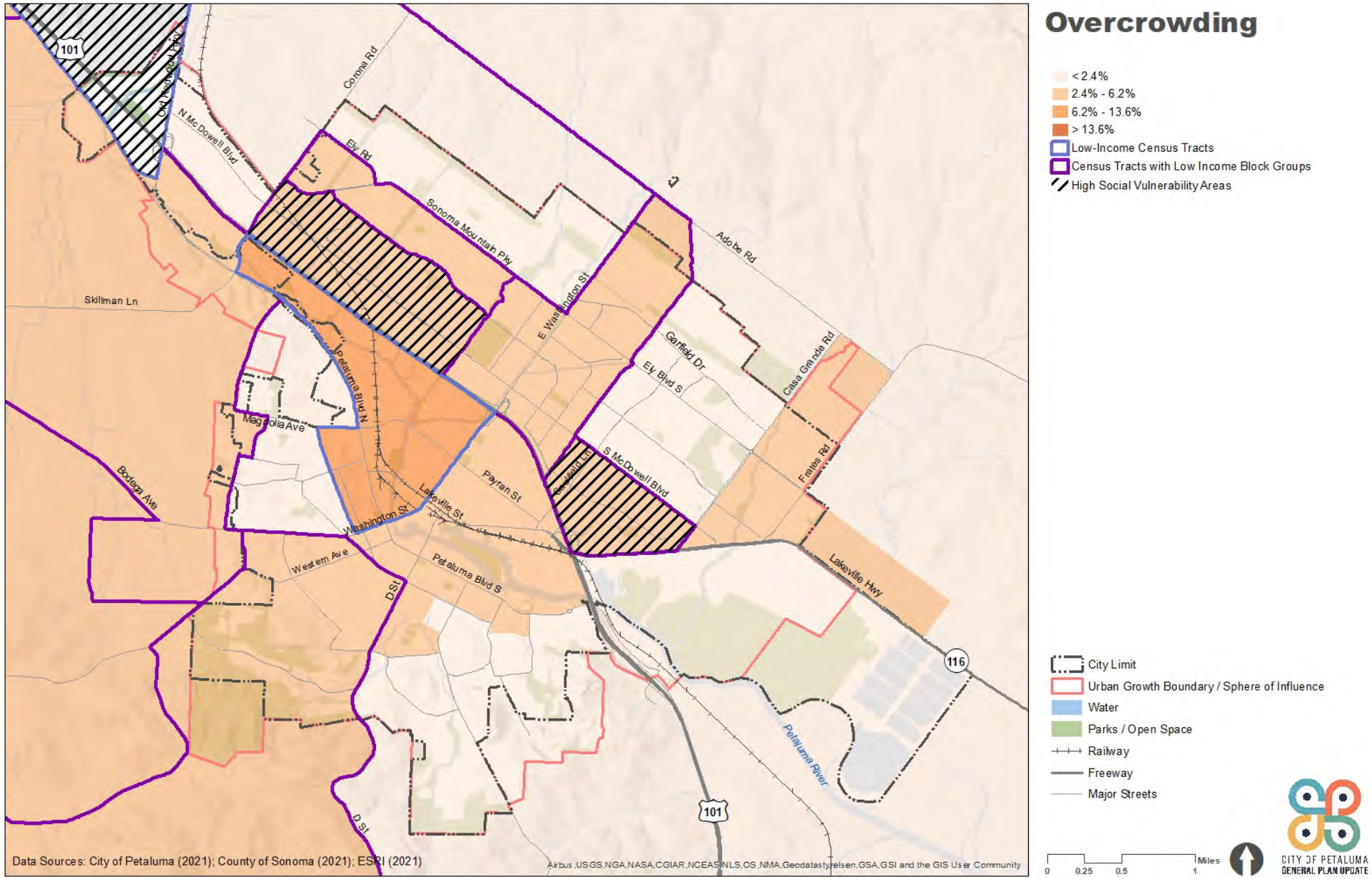
Housing: Overcrowding

Overcrowding is closely tied to poorer health outcomes from infectious diseases and psychological stress. This map shows the percent of overcrowded households (more than 1 person per room), in comparison to the rest of the state.

About 9.1% of households statewide and about 5.2% of households in Sonoma County are overcrowded.

No low-income and high social vulnerability areas are in the highest quantile for overcrowding in the state, however, there are still high levels of overcrowding in these areas and throughout the city.

(Data from 2015-2019)

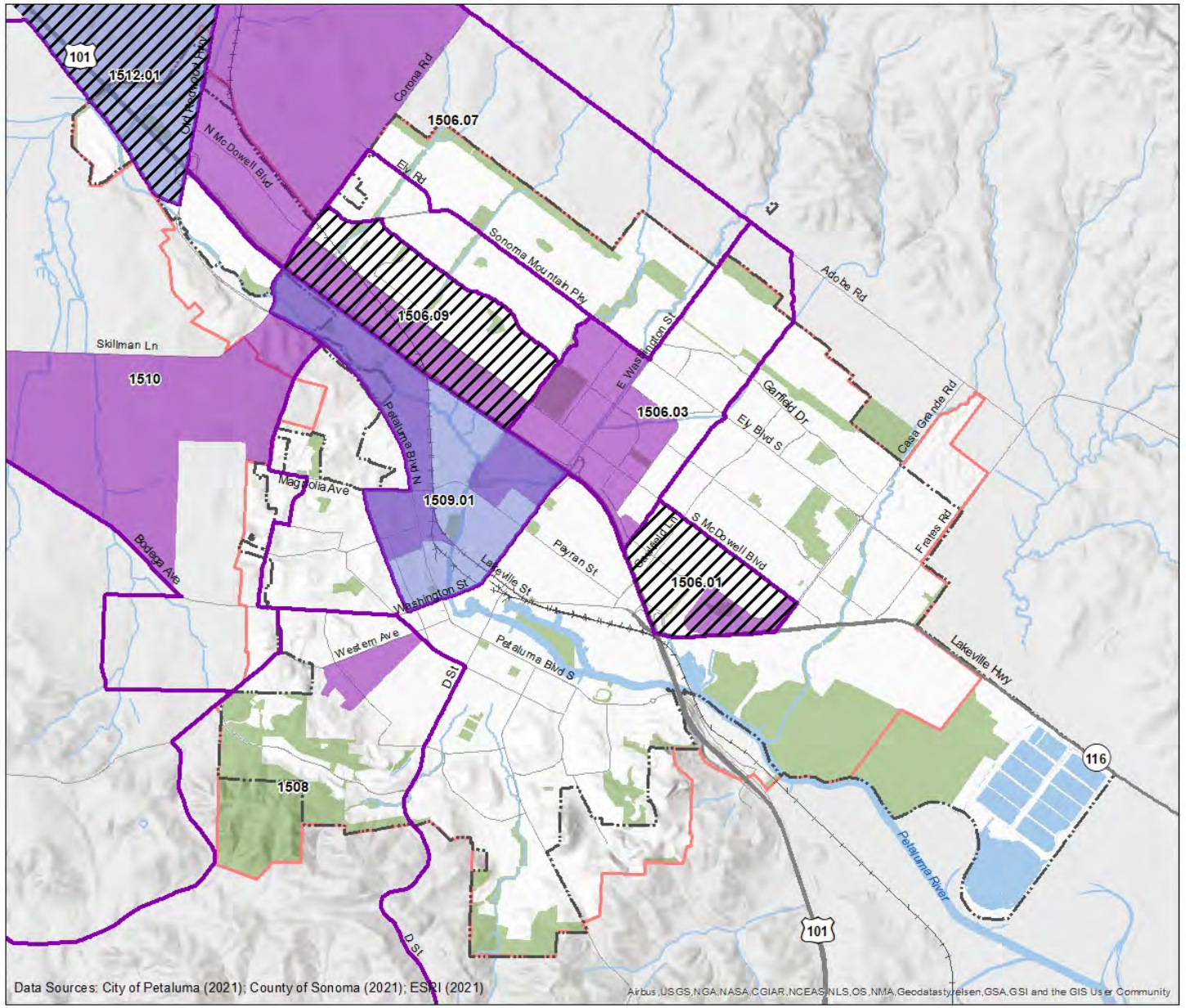


Sources: ACS, 2015-2019

Method 3B Results

All the low-income or high social vulnerability areas had multiple cumulative health and environmental justice burdens.

They scored above established thresholds of disproportionate burden for the following indicators: life expectancy, adult asthma rates, adult heart disease rates, adult obesity rates, access to healthy food markets, alcohol availability, food insecurity, and active commuting.

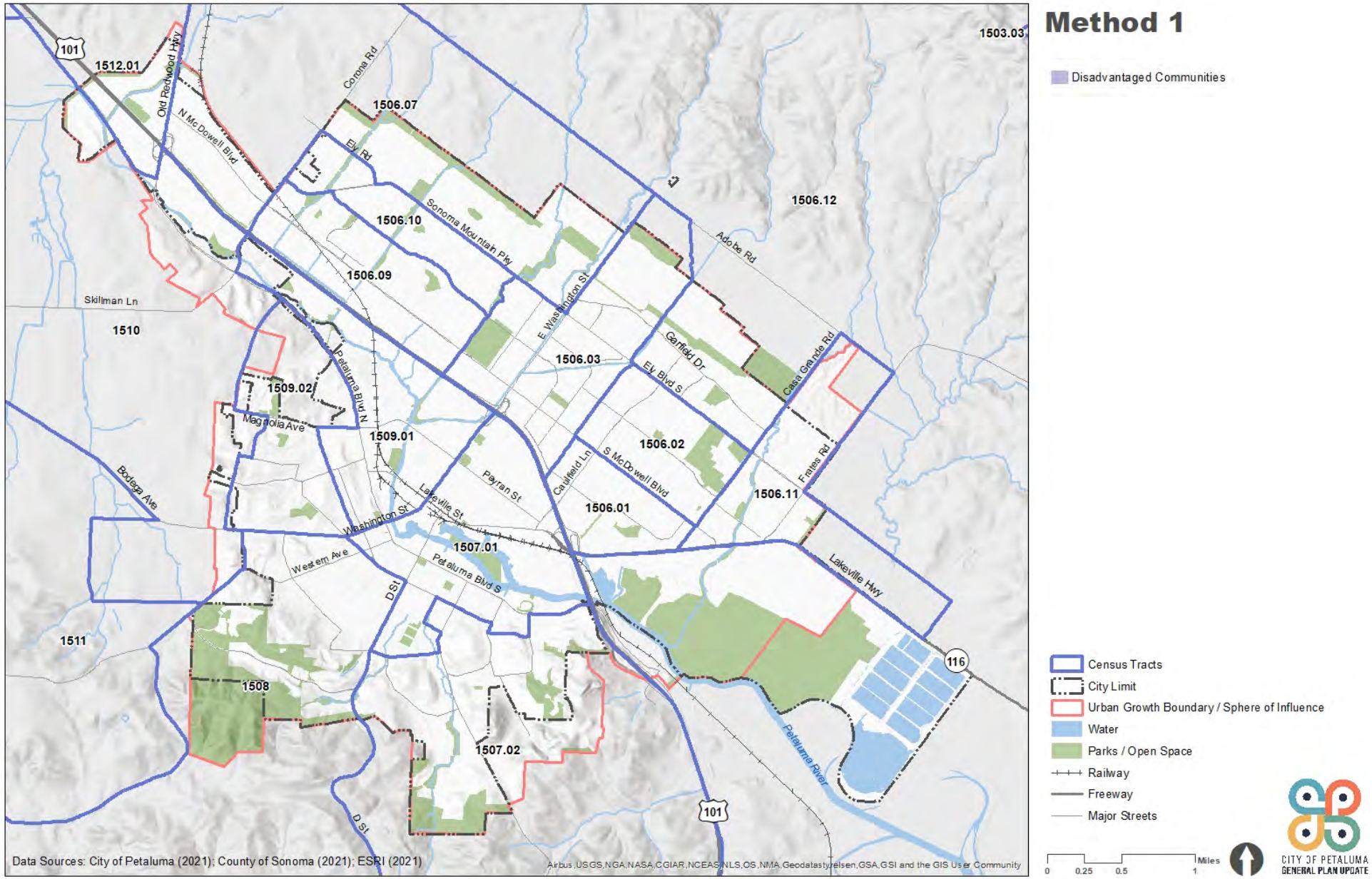


Conclusion

CITY OF
PETALUMA GENERAL PLAN

Method 1 Results

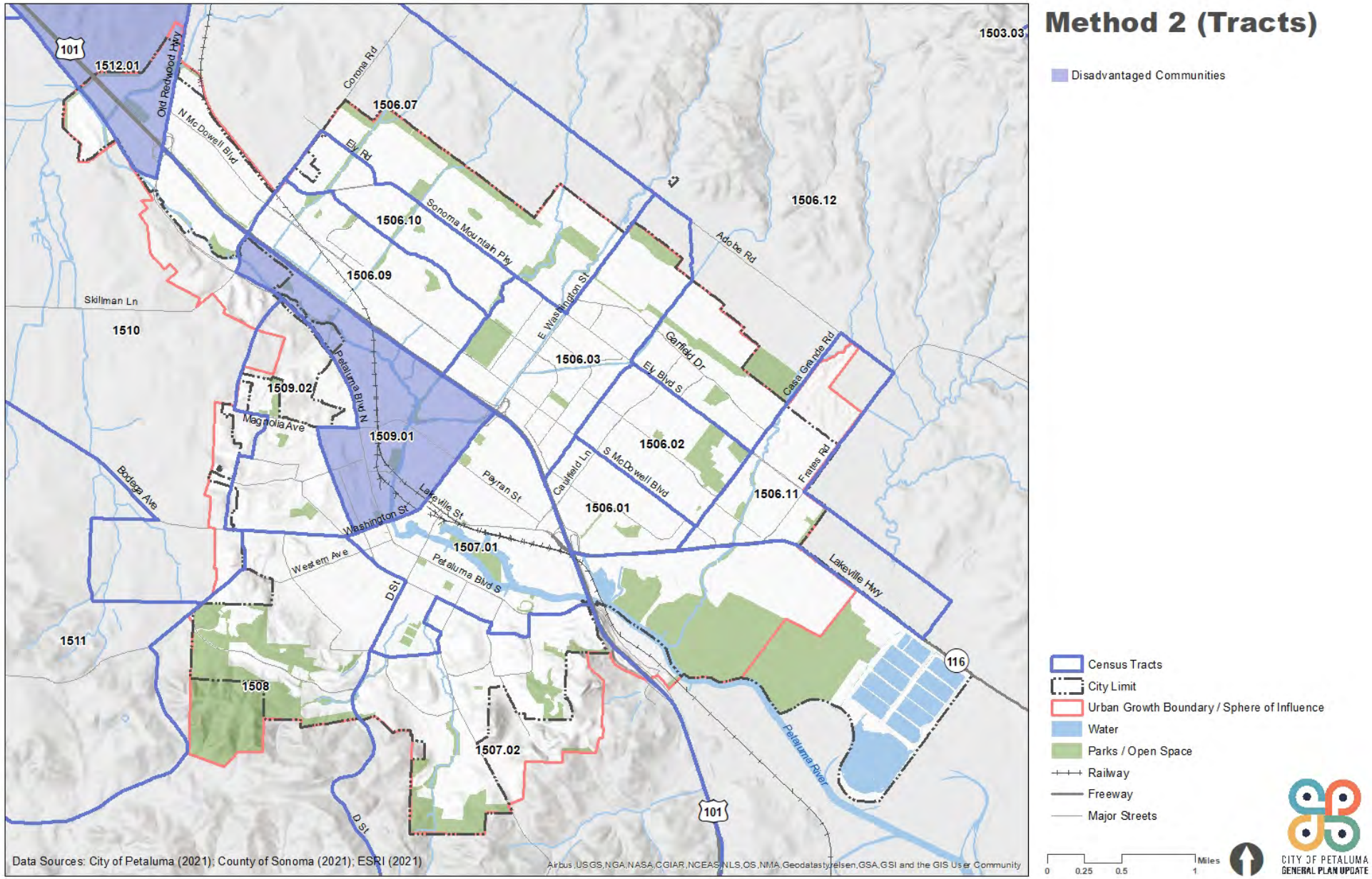
There are no census tracts with an overall score of 75% or higher in CalEnviroScreen 4.0.



Method 2 Results (Census Tracts)

Two low-income census tracts with a high pollution burden.

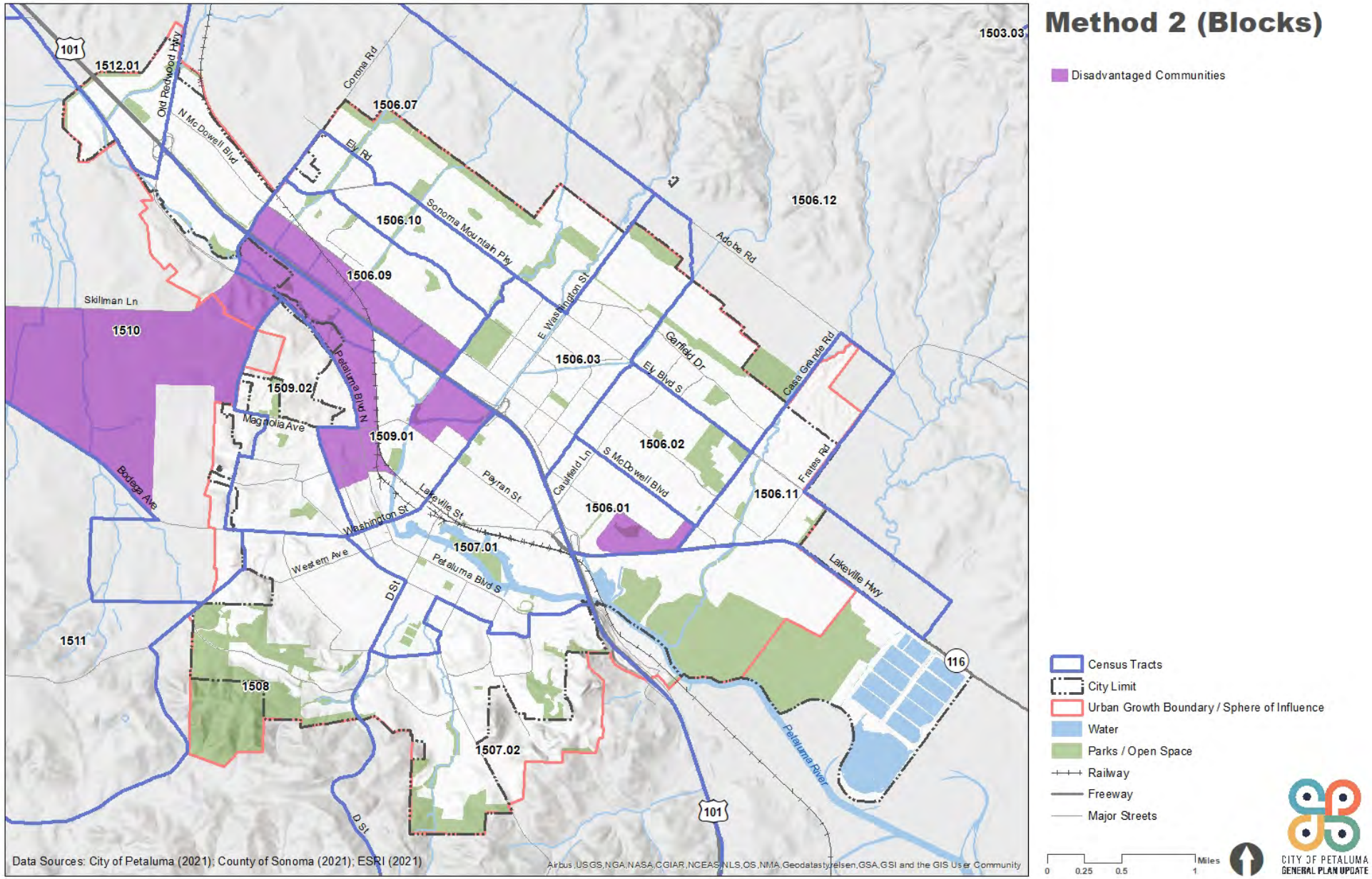
They scored within the top 25% of census tracts in the state for the following pollution exposures: traffic impacts, groundwater threats, impaired waterbodies, and solid waste sites.



Method 2 Results (Block Groups)

Five low-income block groups with a high pollution burden. These are associated with four census tracts.

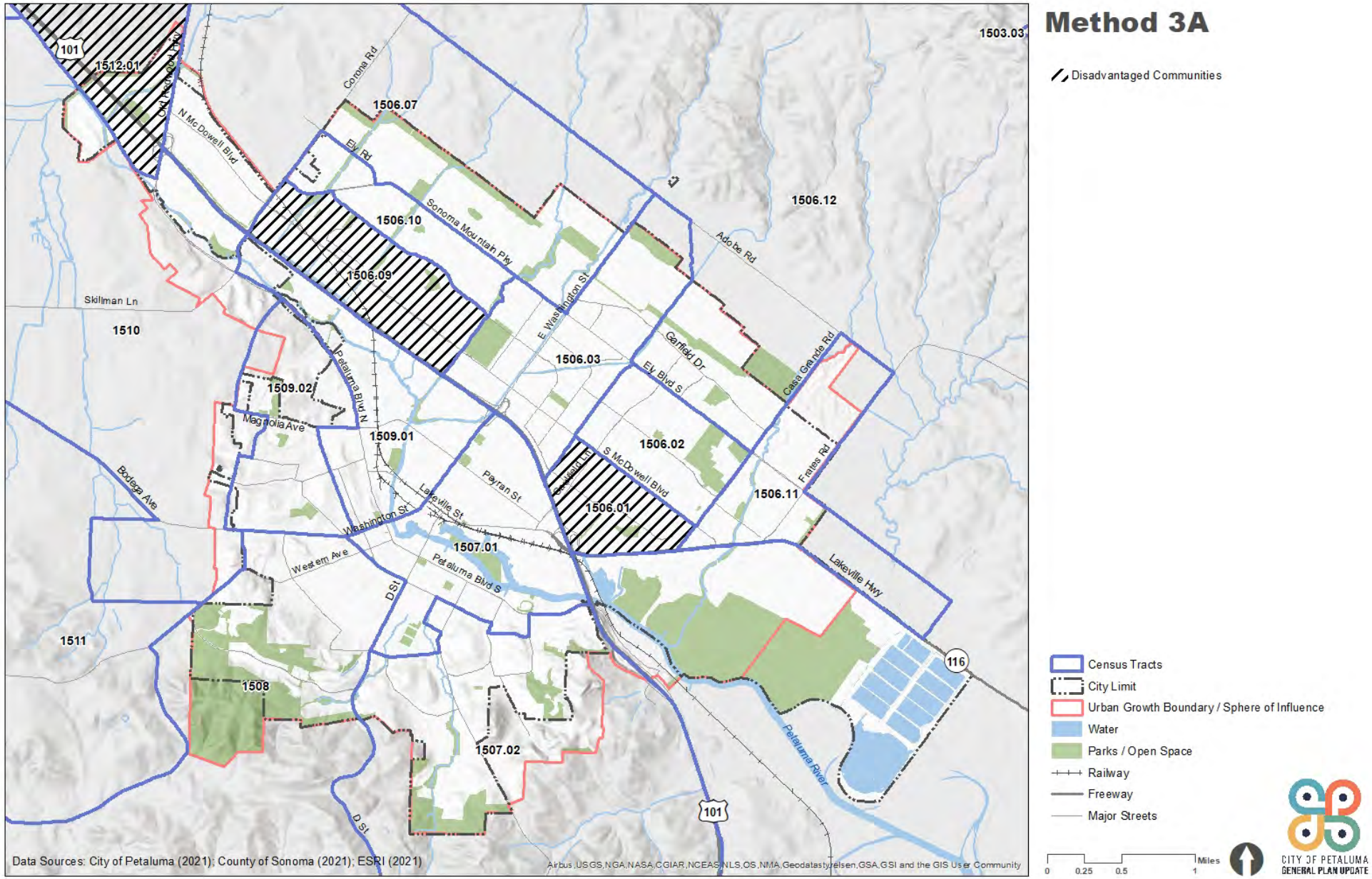
They scored within the top 25% for the following pollution exposures: diesel PM, traffic impacts, groundwater threats, and solid waste sites.



Method 3A Results

Three high social vulnerability census tracts with high pollution burden.

They scored within the top 25% of census tracts in the state for the following pollution exposures: diesel PM, traffic impacts, groundwater threats, impaired waterbodies, and solid waste sites

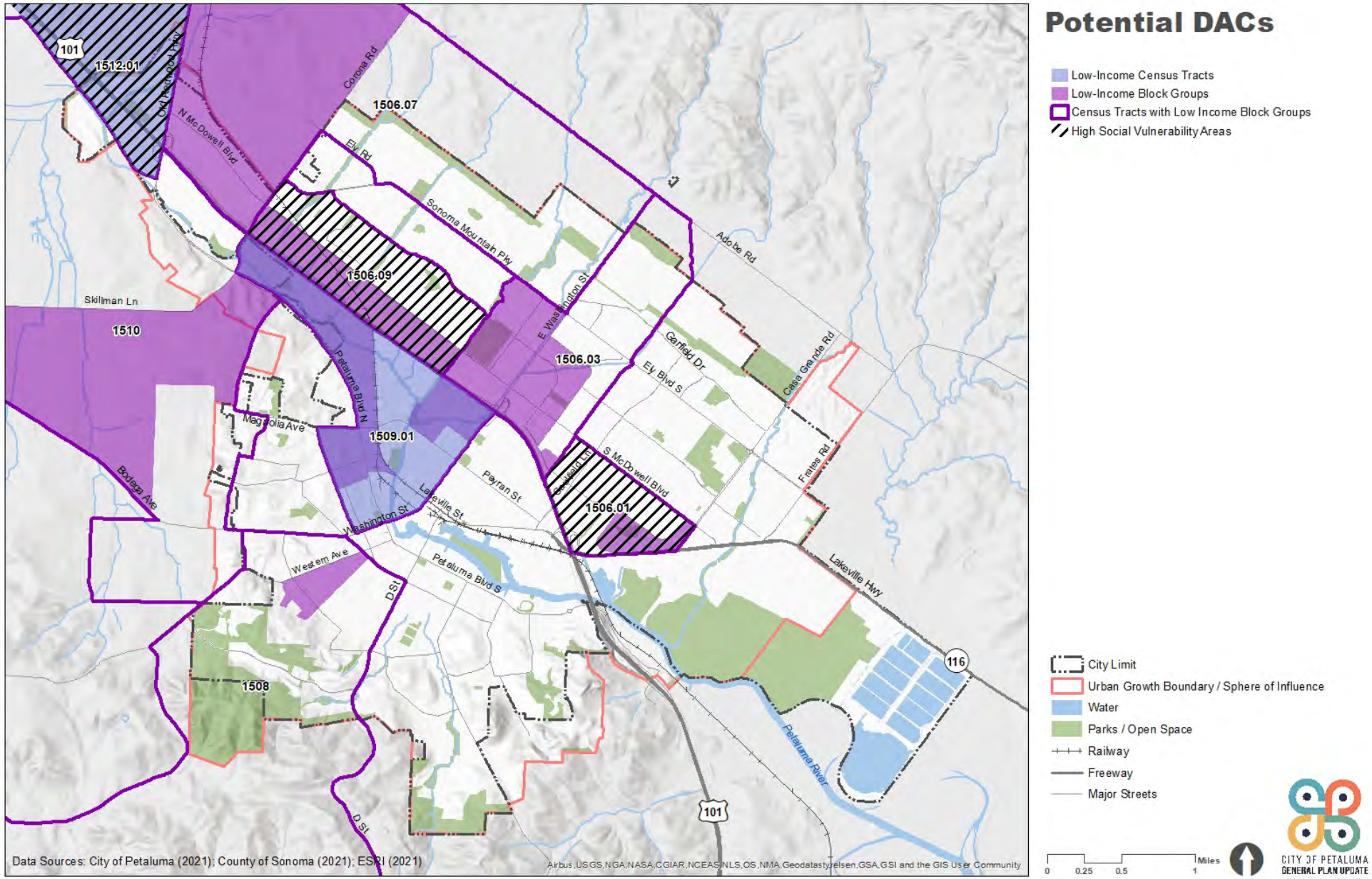


Method 3B Results and DAC Recommendations

In total, there are 8 census tracts that are either low-income areas, have block groups within them that are low-income areas, or are high social vulnerability areas.

They scored above established thresholds of disproportionate burden for the following indicators: life expectancy, adult asthma rates, adult heart disease rates, adult obesity rates, access to healthy food markets, alcohol availability, food insecurity, and active commuting.

The following slide provides a summary of each of their individual health and environmental justice burdens.



Summary of Health & EJ Burdens

Potential DACs		DAC Categorization			Health & Environmental Justice Burdens													
Census Tracts	Low-Income Block Group Names	Low-Income Census Tract	Tract with Low-Income Block Groups	High Social Vulnerability Tract	High Traffic Impacts	High Groundwater Threats	High Solid Waste Sites	High Impaired Waterbodies	High Diesel PM	Low Life Expectancy	High Adult Asthma Rates	High Adult Heart Disease Rates	High Adult Obesity Rates	High Highway Pollution	Low Access to Healthy Food Markets	High Alcohol Availability	High Food Insecurity	Low Active Commuting	Low Access to High-Quality Transit
1506.01	3		■	■	■						■	■	■	■		■	■		■
1506.03	1, 2, & 5		■								■	■	■	■					■
1506.07	2		■								■	■		■					■
1506.09	2		■	■	■		■		■	■	■	■	■	■				■	■
1508	3		■							■	■	■				■			
1509.01	3 & 5	■	■		■	■					■	■	■	■		■	■		
1510	2		■		■						■	■		■	■				■
1512.01	N/A	■		■		■	■	■		■	■	■	■	■				■	■

Discussion Questions

- What are Petaluma's health and environmental justice strengths and weaknesses?
- Are any topics or issues missing from the analysis?
- What geographic areas may have unique or compounded health risks?
- What City initiatives or initiatives run by other organizations exist to address the issues identified in the environmental justice analysis?