Guiding Documents for Community Objectives

Community Emission Reduction Plan (CERP) July 2021

GOAL 5. By December 2021, APCD to present the cumulative cancer risk for Portside Communities from Health Risk Assessments and modeling of cumulative risk (including freeways, rail, vessels, stationary sources, etc.) to inform Goal #6. APCD can achieve this modeling goal with CARB assistance and input from the Portside Community Steering Committee including methodology and input data.

GOAL 6. By February 2022, establish an estimated cancer risk reduction goal based on the modeling that is done in Goal #5. Estimated cancer risk at all census tracts in Portside Community from locally generated emissions, including both stationary and mobile sources, to meet goals of ___/ million by 2026 and ___ /million by 2031.

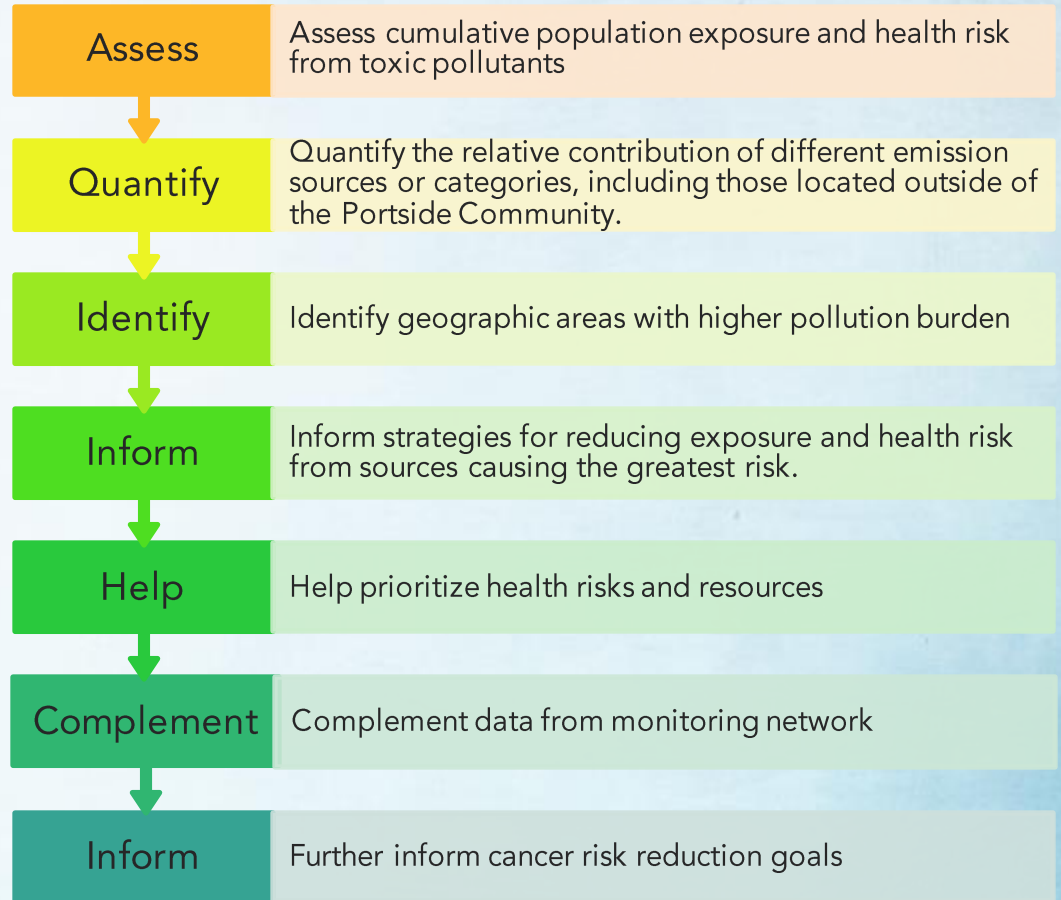## Maritime Clean Air Strategy (MCAS) October 2021

Health Objective 1: By October 2021, identify existing health risk levels generated from the Port's Tenth Avenue Marine Terminal and the National City Marine Terminal for Diesel Particulate Matter (DPM) and other Toxic Air Contaminant emissions.
a. Reduce DPM Emissions: The Health Risk Assessment (HRA) may be used to inform an emission reduction goal.
b. b. Reduce Health Risk: The HRA may be used to inform a cancer risk reduction goal.

Health Objective 2: Assist the San Diego Air Pollution Control District and the California Air Resources Board with preparing a cumulative or community health risk analysis for the AB 617 Portside Community by providing them with the Port's Health Risk Assessment (October 2021) and other operational related information.

San Diego County **Air Pollution Control District**

PORT of **SAN DIEGO**

1

CSC Objectives for Health Risk Model

Assess	Assess cumulative population exposure and health risk from toxic pollutants
Quantify	Quantify the relative contribution of different emission sources or categories, including those located outside of the Portside Community.
Identify	Identify geographic areas with higher pollution burden
Inform	Inform strategies for reducing exposure and health risk from sources causing the greatest risk.
Help	Help prioritize health risks and resources
Complement	Complement data from monitoring network
Inform	Further inform cancer risk reduction goals

San Diego County
Air Pollution Control District

San Diego Regional & Portside Community Modeling

Presentation for the Portside Community Steering Committee

Today's Presentation

- CARB's Modeling Objectives
- Emission Inventory and Domain Visualization
- Inventory Updates and Risk Summary
- Walk-through Modeling Results
  - *Regional Modeling* for the Portside Community
  - *Local Scale Modeling* for the Portside Community
- Take-Home Messages

CARB

CARB Modeling Objectives

- Toxics modeling for San Diego County is part of the <u>statewide</u> air quality and toxics modeling program

- Toxics modeling for the Portside EJ Community assists SDAPCD in implementing the CERP's goals

  - **Regional scale modeling for Goal #5:** estimate baseline <u>*cumulative*</u> cancer risk for Portside Communities

  - **Community scale modeling for Goal #6**: establish a local cancer risk reduction goal based on the modeling from Goal #5.

CARB

CARB Emission Inventory

Stationary Sources: Fixed sources of air pollution such as power plants and industrial facilities with known location

Areawide Sources: Area spread over a wide geographic area such as construction and agriculture equipment
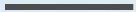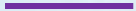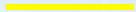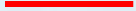
On-Road Mobile Sources: Any air pollution emitted by motor vehicles on roadways including passenger cars, trucks, and motorcycles.
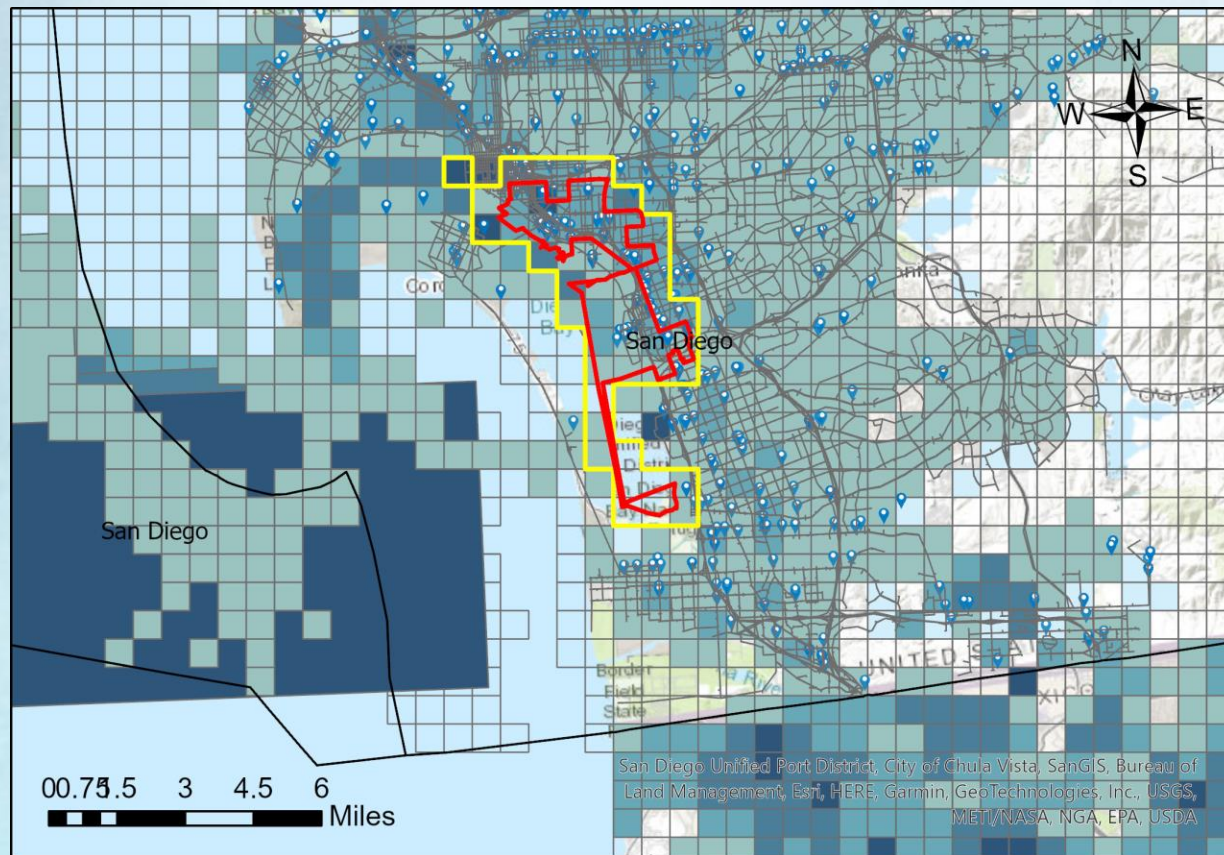
Off-Road Mobile Sources: Include small off-road engines such as cargo handling equipment
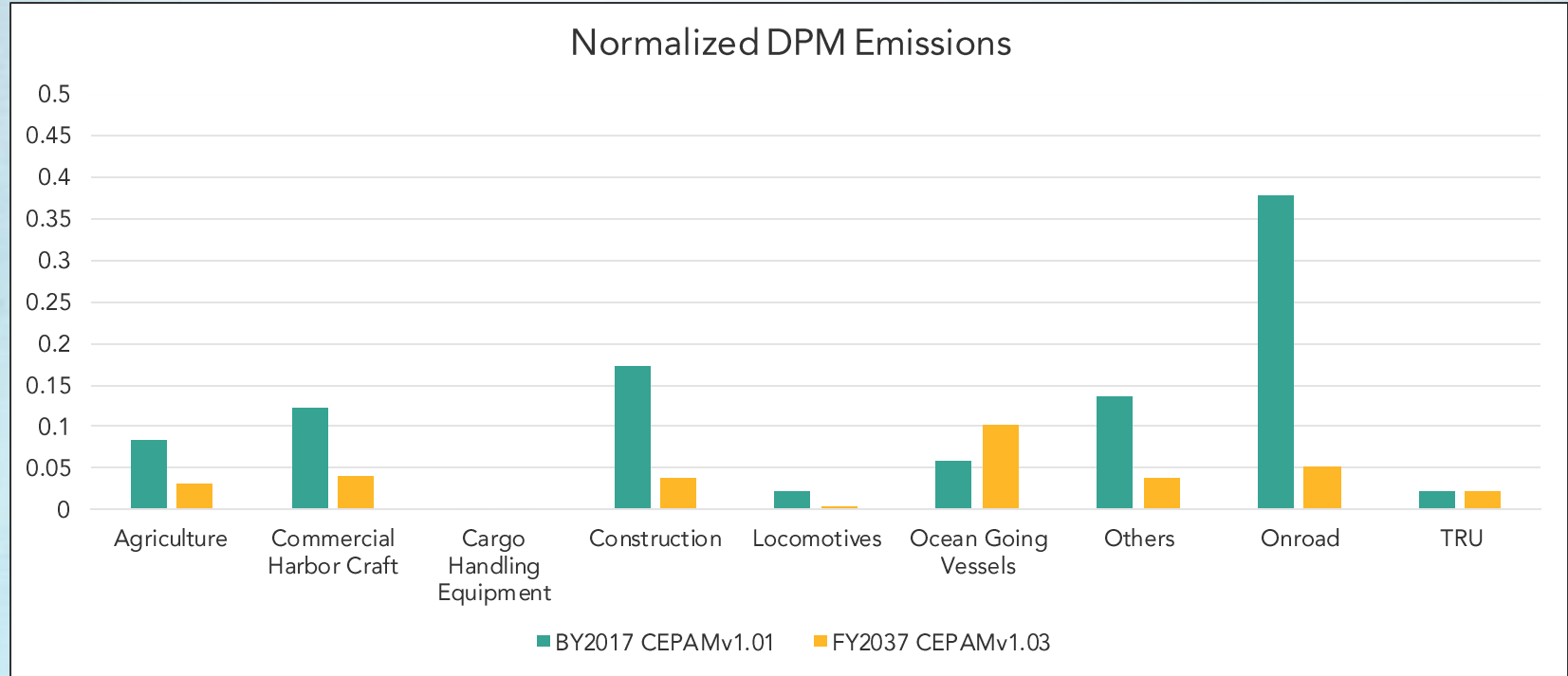
CARB

Regional Domain Visualization
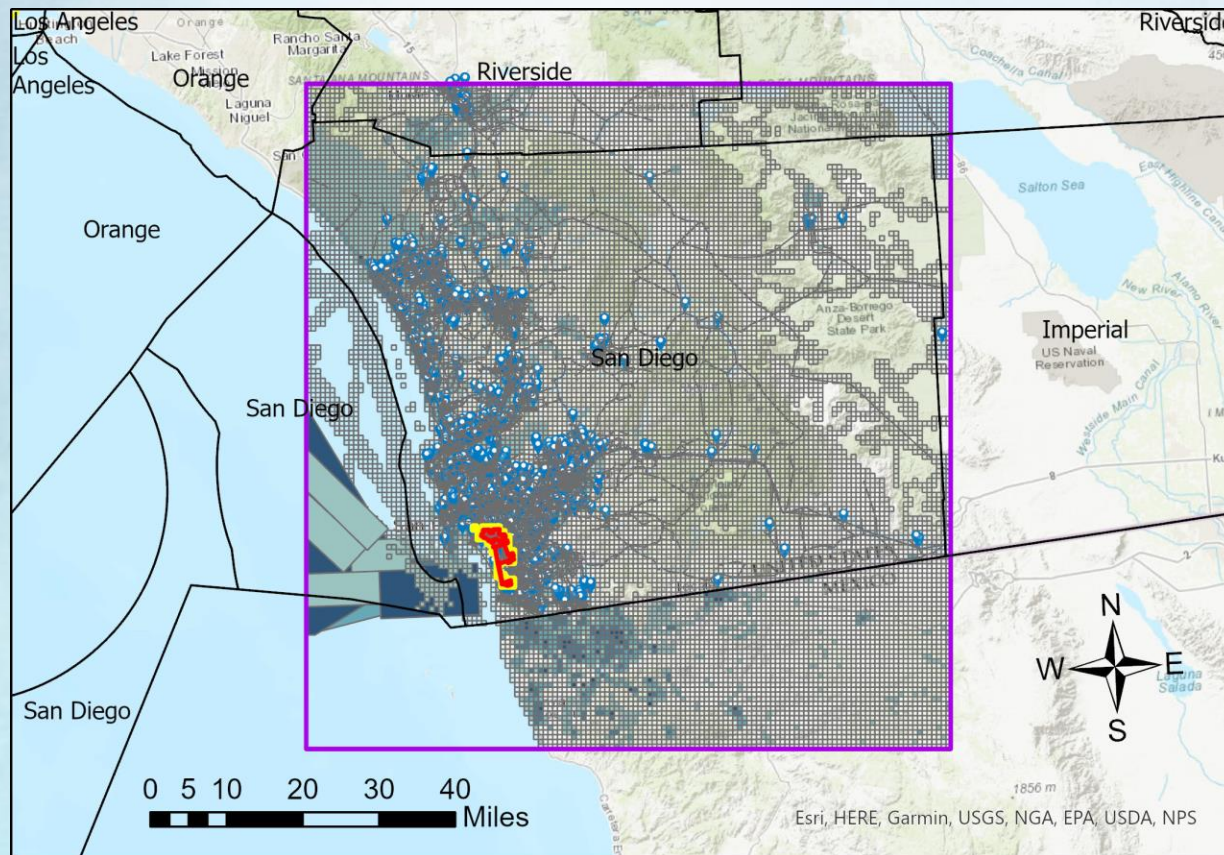
Legend:
- California COABDIS
- SDC 1-km modeling domain
- Portside Emission Study Boundary[1]
- Portside Community Boundary[2]
- Stationary Sources
- DPM

- Locomotive
- Commercial Harbor Craft
- Ocean Going Vessels
- Onroad (links)
- Mexico (onroad)
- All Other Sources (area)
- All Other Mexico sources (area)

[1]Portside_EJ CERP_Final Document_https://www.sdapcd.org/content/dam/sdapcd/documents/capp/cerp/Portside-Environmental-Justice-CERP-July-2021.pdf_(sdapcd.org)

[2]Portside_Environmental_Justice_Neighborhoods_AB 617 Boundaries | California Air Resources Board
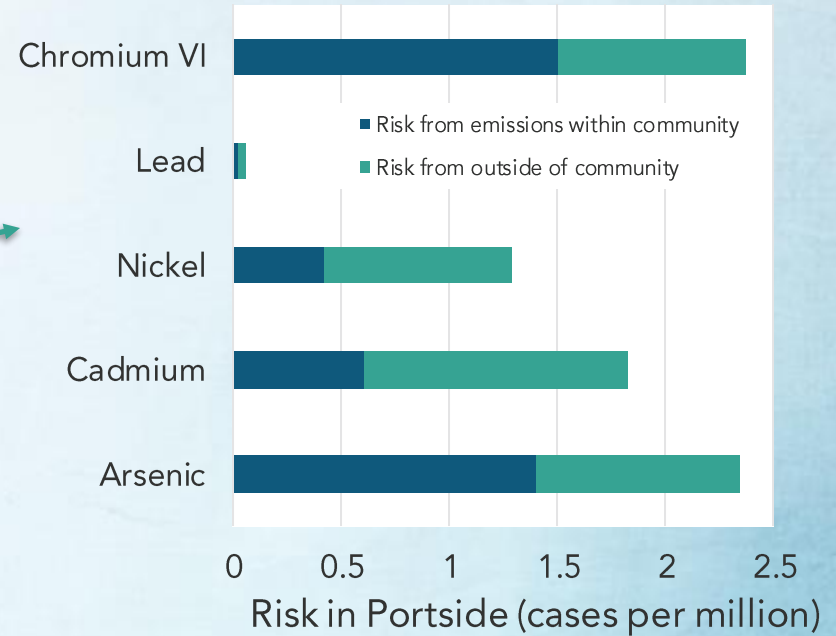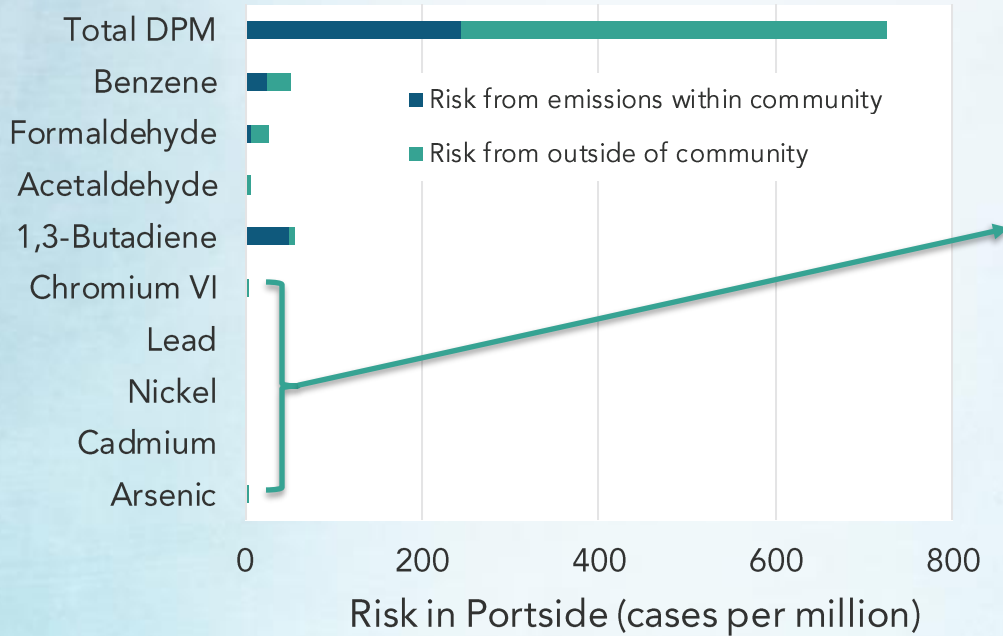
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Zoom into Portside Community

California COABDIS

Portside Emissions Study Boundary[1]

Portside Community Boundary[2]

Stationary Sources

DPM

- Locomotive
- Commercial Harbor Craft
- Ocean Going Vessels
- Onroad (links)
- Mexico (onroad)
- Other sources (SD + Mex)

CARB

[1]Portside_EJ CERP_Final Document_https://www.sdapcd.org/content/dam/sdapcd/documents/capp/cerp/Portside-Environmental-Justice-CERP-July-2021.pdf (sdapcd.org)

[2]Portside_Environmental_Justice_Neighborhoods_AB 617 Boundaries | California Air Resources Board

State Strategies: Inventory Snapshot and Forecasted DPM Changes

Normalized DPM Emissions

Legend: ■ BY2017 CEPAMv1.01 ■ FY2037 CEPAMv1.03

CARB

Summary: Risk from Community vs Outside Sources

Risk from emissions within community

Risk from outside of community
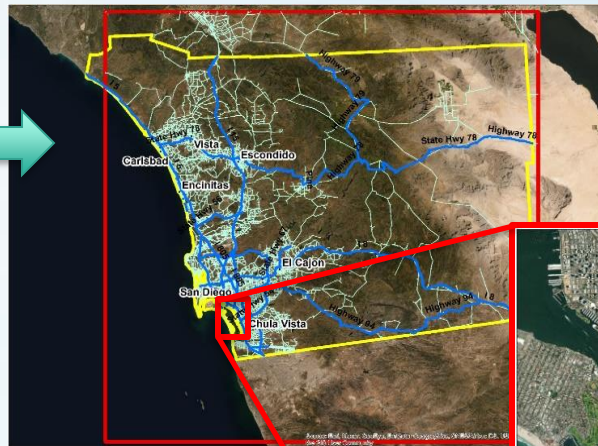
Risk in Portside (cases per million)

*Population weighted average

CARB

CARB Regional Toxics Modeling

- Utilizes two different models to simulate air toxics across the San Diego Air Basin:
  - CALPUFF (Better for tracking source-to-receptor, simple chemistry): diesel PM (DPM) and metals.
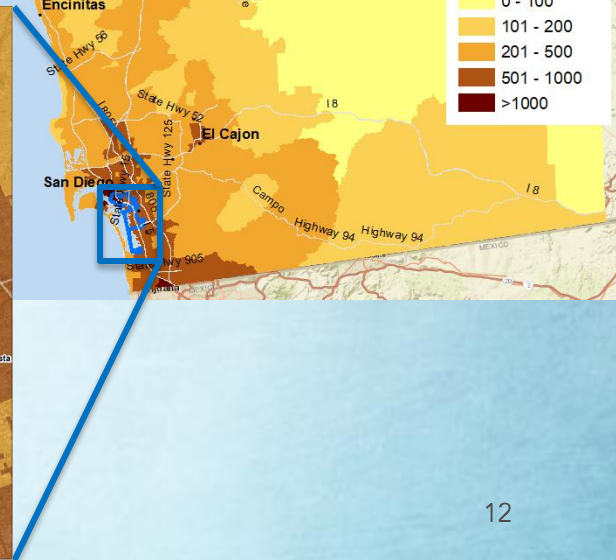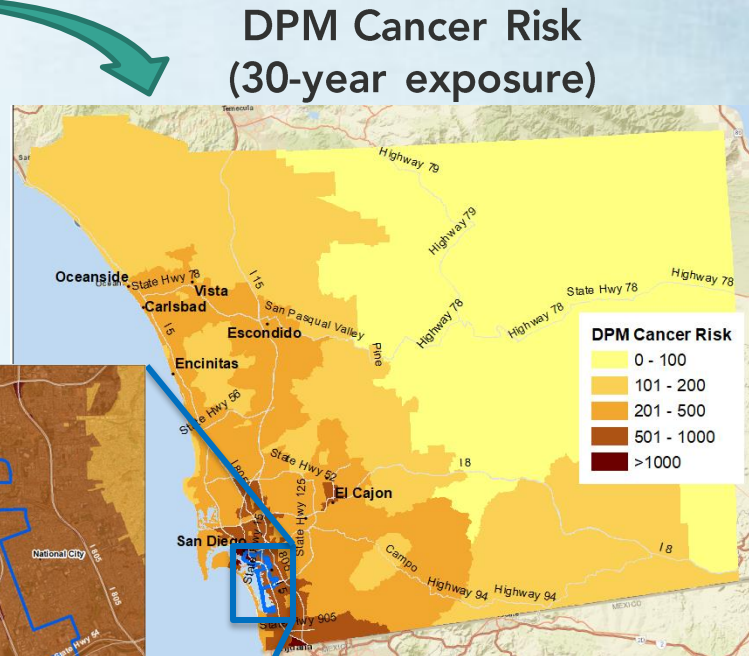 - CMAQ (lower resolution, detailed chemistry): toxic VOCs

  - Can track contributions from different pollutants, source categories and regions (e.g., Portside Community)
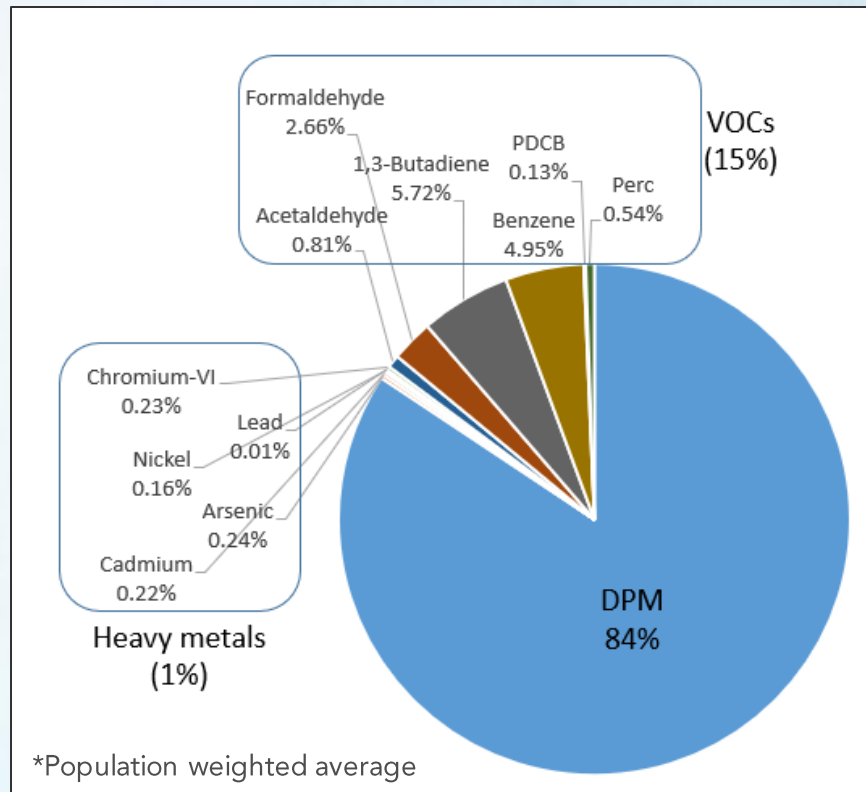
Regional Toxics Modeling Results

DPM Concentration
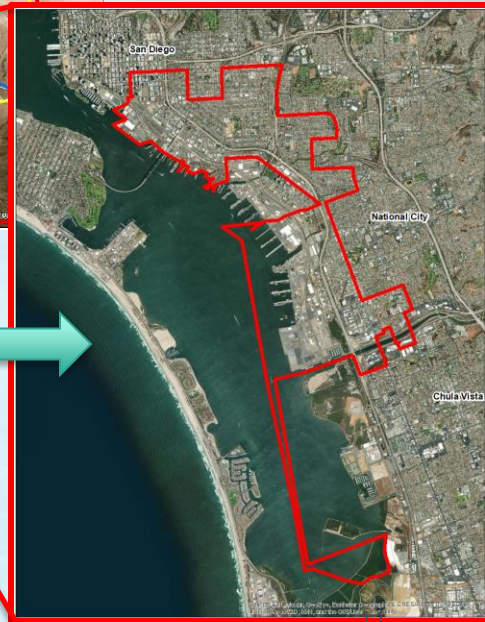
Combine with population data and OEHHA risk assessment guidelines/toxicity data

DPM Cancer Risk (30-year exposure)

Risk at census block centroid

CARB

Quantify

Regional Toxics Risk Modeling Results in the Portside Community: Total Cancer Risk for 2017

Risk at census block centroid

*Individual risk dependent on proximity to emission sources

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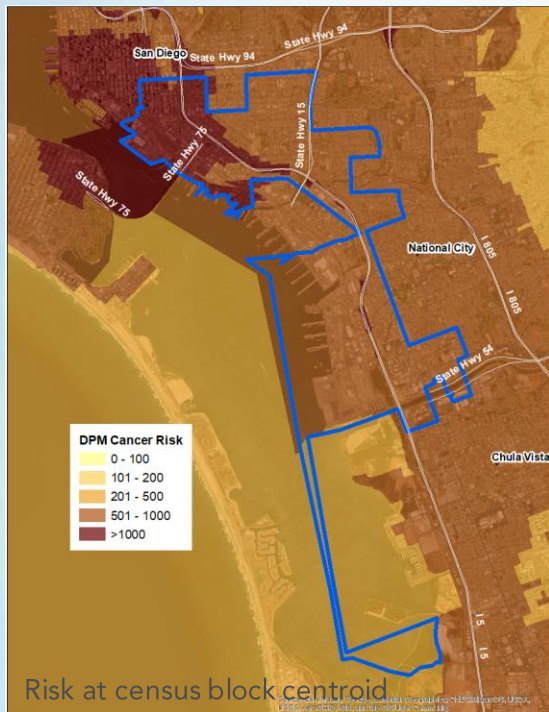
Regional Diesel PM Risk Projection in the Portside Community

Quantify

2017

Agriculture

CHE, Construction

OGV

SD & Mexico Stationary

| CHC | Others | On-Road | TRU | Mexico On-Road |

Locomotive

Mexico Off-Road

0 10 20 30 40 50% 60 70 80 90 100

2037 (% with respect to 2017 Risks)

| CHC | OGV | Others | On-Road | TRU | Mexico On-Road |

0 10 20 30 40 50% 60 70 80 90 100

CARB

*Population weighted average

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Local Scale Modeling for the Portside Community

Portside Emissions Only

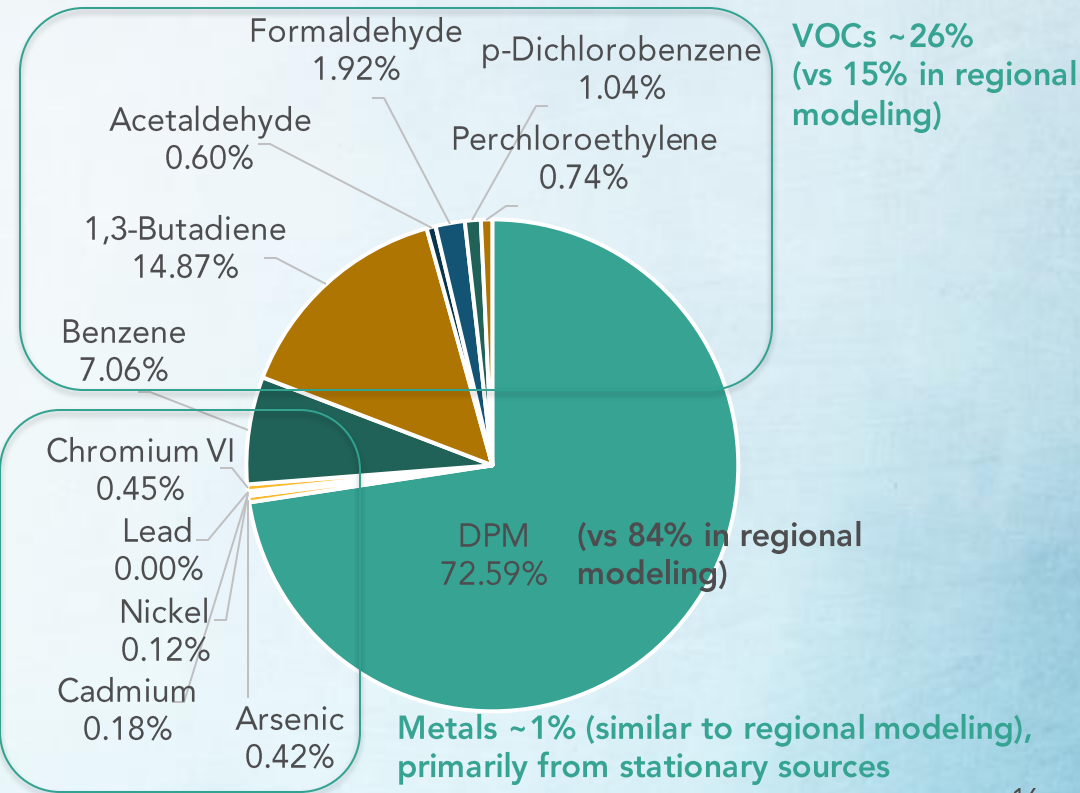CARB
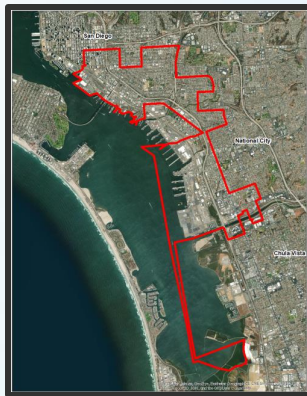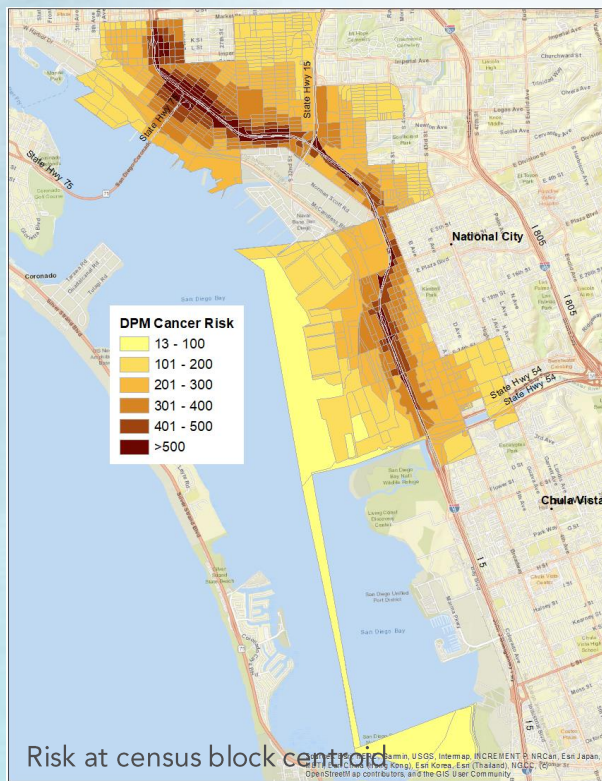
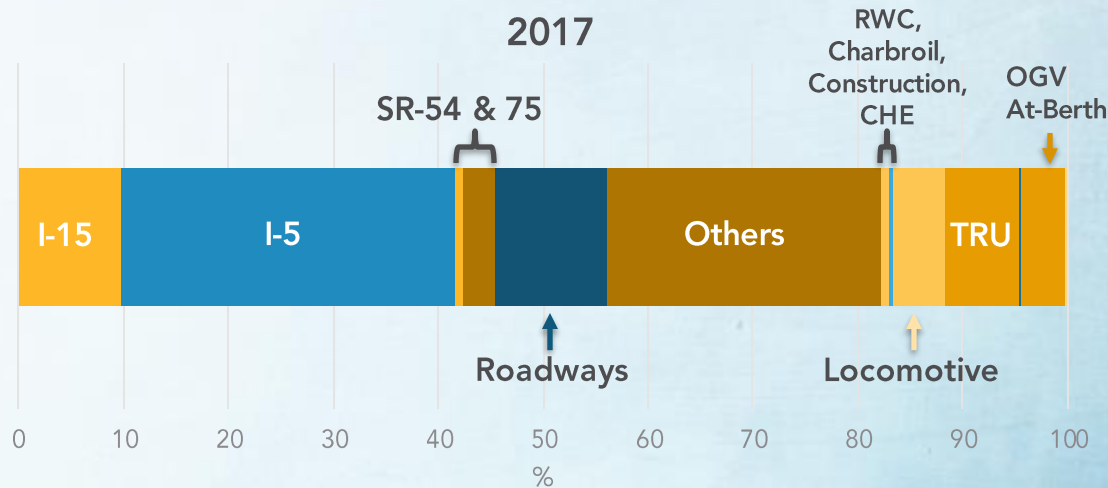# Total Risk and Source Apportionment of Community Sources

2017 Overall Risk

Risk at census block centroid

Total Cancer Risk
- 18 - 100
- 101 - 200
- 201 - 300
- 301 - 400
- 401 - 500
- >500

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Formaldehyde 1.92%

p-Dichlorobenzene 1.04%

Acetaldehyde 0.60%

Perchloroethylene 0.74%

1,3-Butadiene 14.87%

Benzene 7.06%

Chromium VI 0.45%

Lead 0.00%

Nickel 0.12%

Cadmium 0.18%

Arsenic 0.42%

DPM 72.59% **(vs 84% in regional modeling)**

VOCs ~26% (vs 15% in regional modeling)

Metals ~1% (similar to regional modeling), primarily from stationary sources

*Population weighted average

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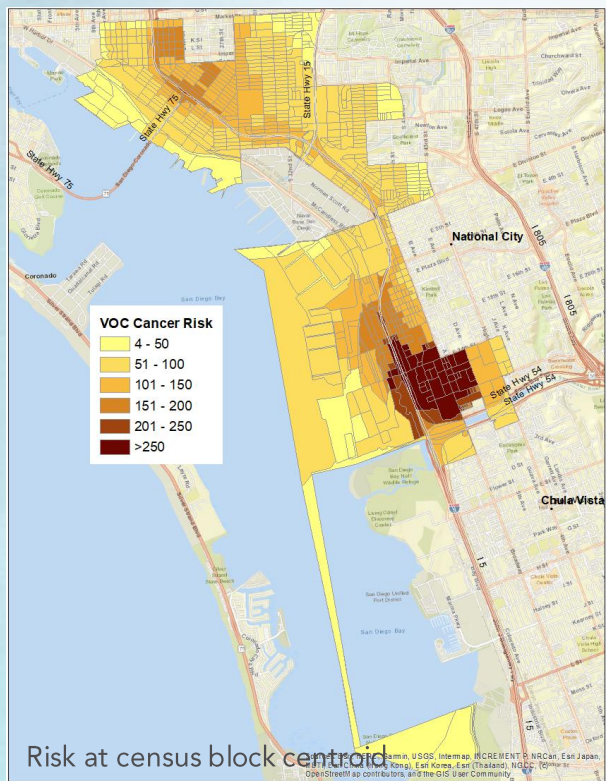# DPM Risk and Source Apportionment of Community Sources

Quantify

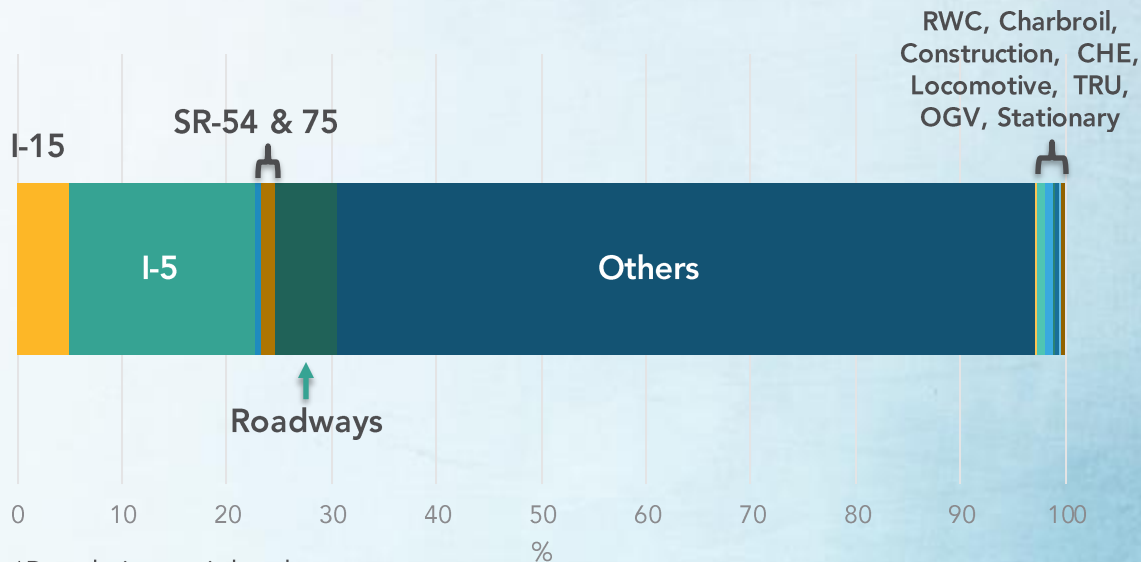**Portside DPM Cancer Risk by Emission Category**

*Population weighted average
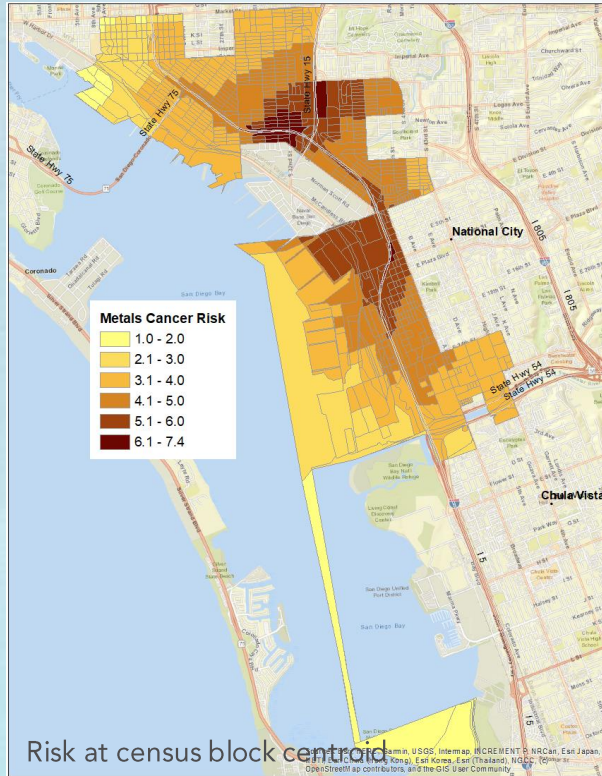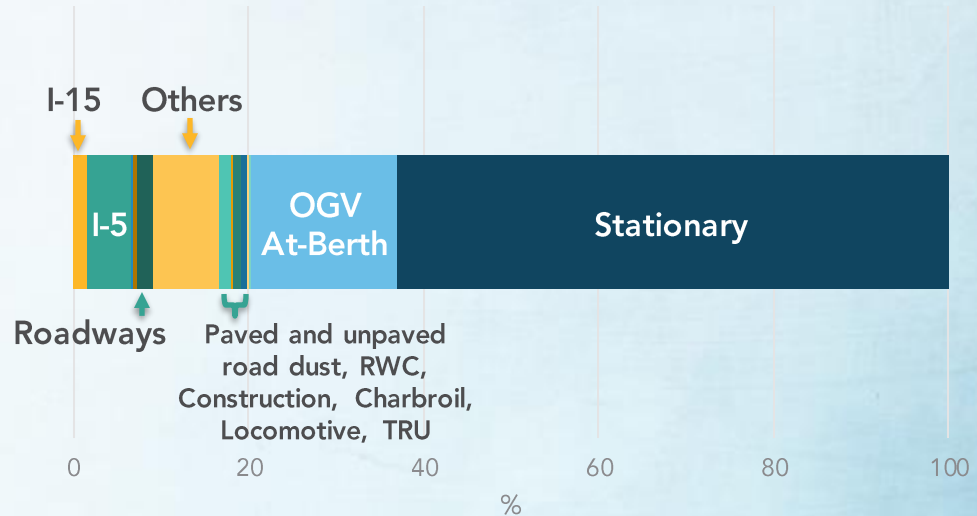
VOCs Risk and Source Apportionment of Community Sources

Metals Risk and Source Apportionment of Community Sources

Metals Cancer Risk
- 1.0 - 2.0
- 2.1 - 3.0
- 3.1 - 4.0
- 4.1 - 5.0
- 5.1 - 6.0
- 6.1 - 7.4

National City

Chula Vista

Risk at census block centroid

Portside Metals Cancer Risk by Emission Category 2017

I-15   Others

I-5   OGV At-Berth   Stationary

Roadways   Paved and unpaved road dust, RWC, Construction, Charbroil, Locomotive, TRU

0   20   40   60   80   100
%

*Population weighted average

CARB

Take-home messages

- Cumulative cancer risk within the Portside Community from regional and local emissions were estimated separately to better inform the CERP goals #5 and #6.

- For the 2017 base year modeling, DPM was the main contributing pollutant of total average risk.
  - Individual risk dependent on proximity to emission sources, i.e. heavy metals and VOCs can generate high local risk

- Overall, toxic pollutants emitted within the community accounted for about 38% of total risk in Portside.

- Important to consider projected changes in emissions when developing strategies to reduce risk
  - Ocean Going Vessels, TRUs, VOCs and metals

CARB