



DRAFT: Community Emission Inventory Update CARB Mobile and Area Source Emissions

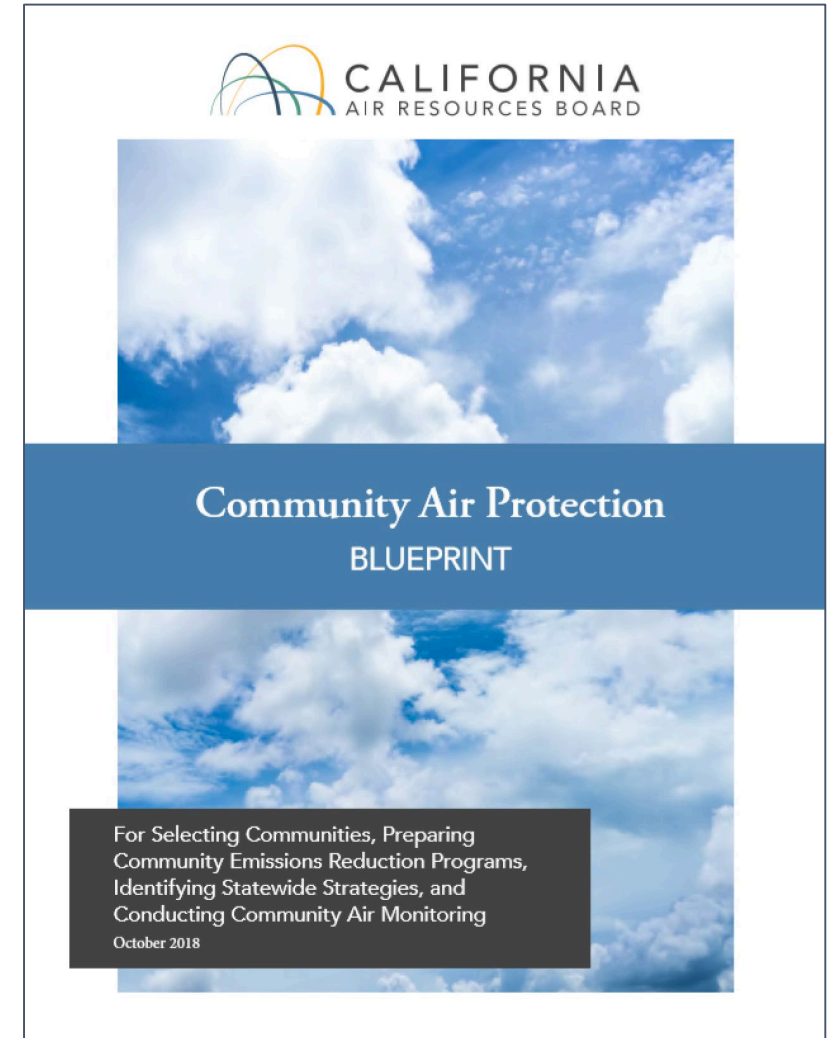
**Portside Environmental Justice Neighborhoods Community
CERP Sub-Committee Meeting
July 7, 2020**

**Jenny Melgo, Victoria Villa, Adrian Cayabyab, Alejandra Cervantes, Abhishek Dhiman
Air Quality Planning and Science Division
California Air Resources Board**

Emission Inventories Foundation of Air Quality Programs

AB 617 calls for the use of emission inventories in community emissions reduction programs to:

- Identify emission sources
- Establish baseline emissions
- Set emission targets and reduction measures
- Track emission reductions in communities selected for a community emissions reduction programs



Air District & CARB Staff Collaboration



Stationary Sources:
Shipyards, Industry, Autobody shops

District



Area Sources:
Consumer Products, Commercial Cooking,
Residential Fuel Combustion

CARB/District



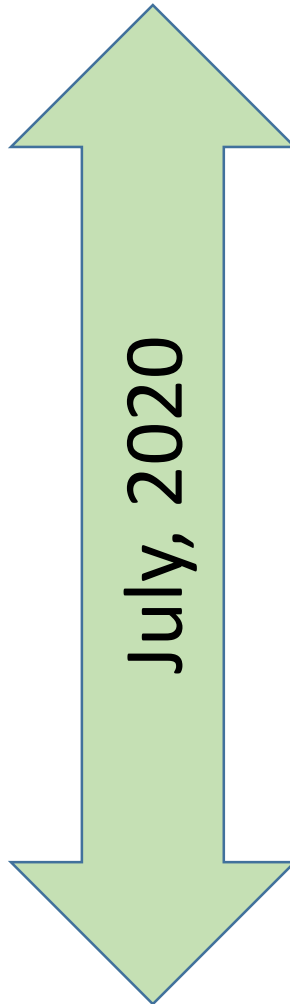
On-road Mobile Sources:
Cars, Trucks

CARB



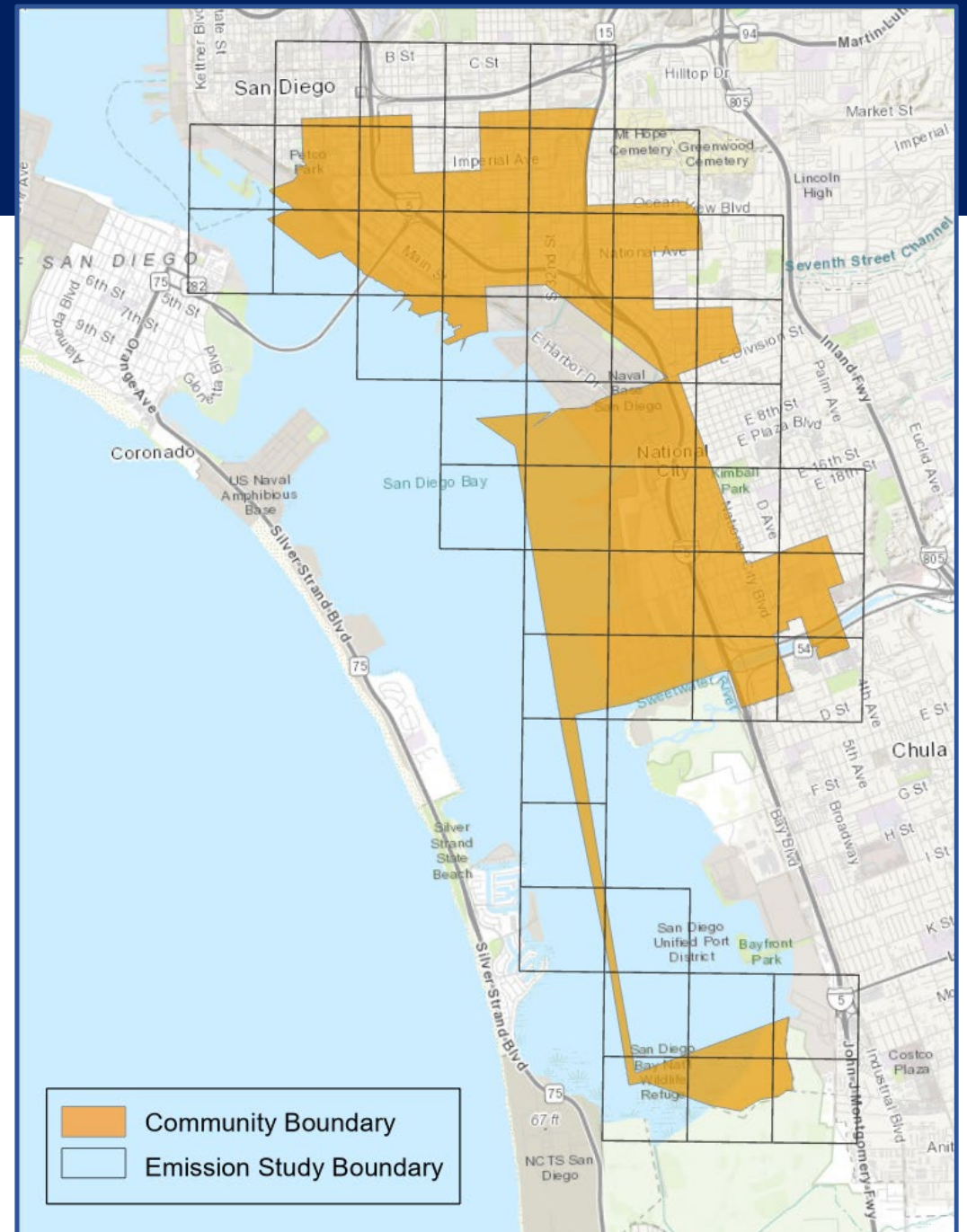
Off-road Mobile Sources:
Ocean Going Vessels, Railyards, Transport
Refrigeration Units

CARB



Community Boundary

- **Emission Study Boundary** - expanded boundary to estimate emissions for the community (1-km x 1-km grid)



DRAFT 2018 Community Emissions Summary

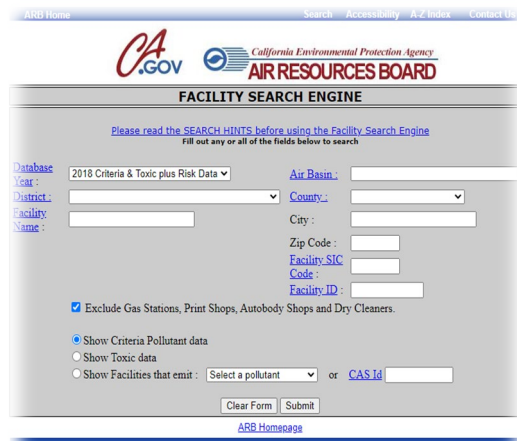
Source Category	NOx	ROG	PM10	PM2.5	DPM
STATIONARY*	140.6 (10%)	691.2 (41%)	69.5 (9.3%)	64.0 (26.4%)	2.5 (9.4%)
AREA	25.8 (1.8%)	445.3 (26.4%)	581.1 (77.4%)	116.5 (48.1%)	0 (0%)
OFF-ROAD MOBILE	791.3 (56%)	292.2 (17.4%)	32.0 (4.3%)	30.4 (12.5%)	18.7 (70.3%)
ON-ROAD MOBILE	454.8 (32.2%)	255.4 (15.2%)	68.3 (9.1%)	31.5 (13%)	5.4 (20.3%)
TOTAL (tons/year)	1,412.5	1,684.1	750.9	242.4	26.6

NOx: Nitrogen Oxides
 ROG: Reactive Organic Gases
 PM10: Particulate Matter 10 Microns or Smaller
 PM2.5: Particulate Matter 2.5 Microns or Smaller
 DPM: Diesel Particulate Matter

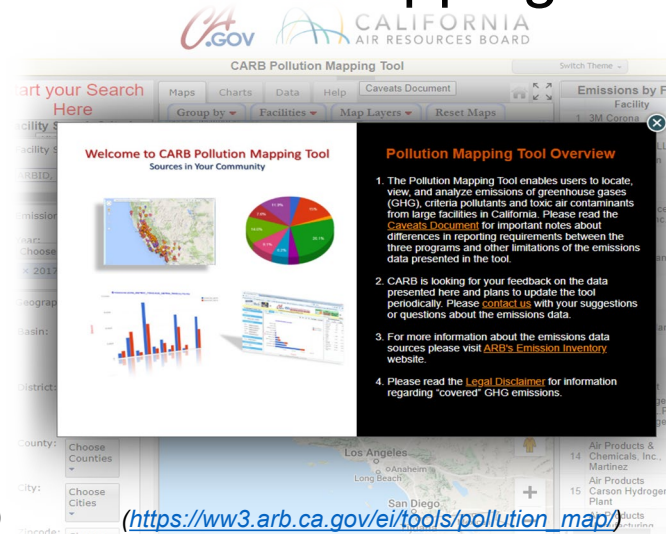
***Draft District submitted point source emissions to CARB's criteria pollutant and toxics emissions reporting system (CEIDARS). District staff are presently updating stationary source emissions and will provide an update when ready.**

Stationary Sources

- District oversees stationary point source emissions and submits facility emissions to CARB's emissions reporting system (CEIDARS)
- CARB provides public access to facility emissions through the Facility Search Tool webpage and CARB Pollution Mapping Tool



<https://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php>



https://ww3.arb.ca.gov/ei/tools/pollution_map/

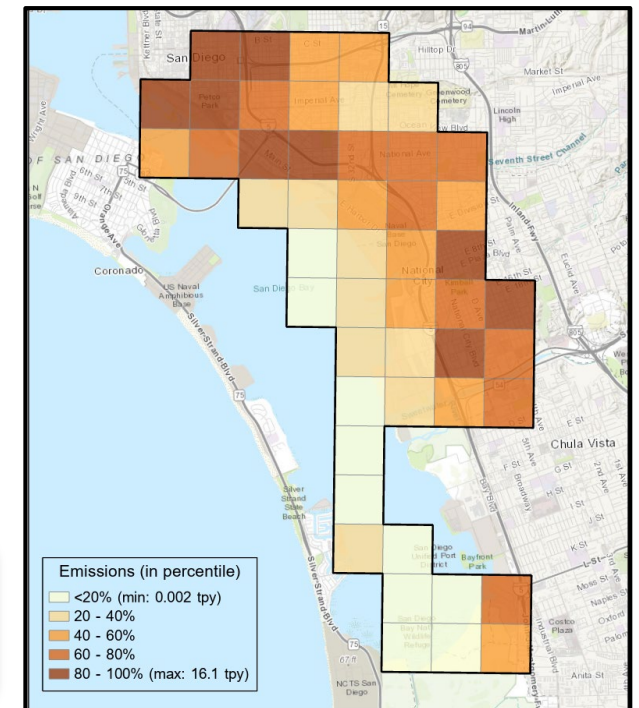
District staff presently updating the latest stationary point source emissions for the community

High Resolution 1-km Grid Approach

- Characterized community-specific emissions using 1x1 km grid
- Use spatial surrogates to allocate regional-level area source and off-road mobile emissions to more specific location
- Use link-level activity data to aggregate on-road mobile emissions
- Use resulting high-resolution 1x1 km grid to determine sources and allocate emissions by source category within each community

Example map below shows gridded PM_{2.5} emissions from area sources

Allows for better characterization of sources and emissions in communities



Area & Off-Road Mobile Sources Estimation Method

Emissions (County)

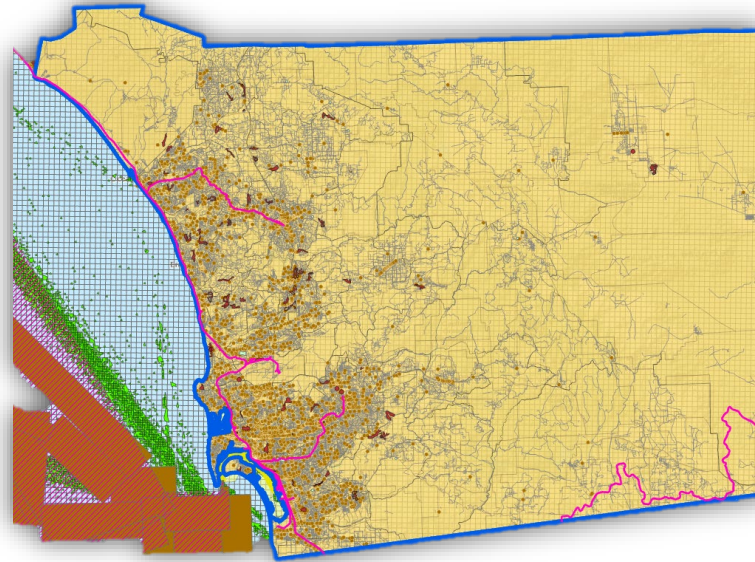
Activity Data

- e.g., Fuel Consumption, consumer product sales, vehicle miles traveled, population and activity based on survey data, vessel visits

Emission Factor

- e.g., US EPA, CARB

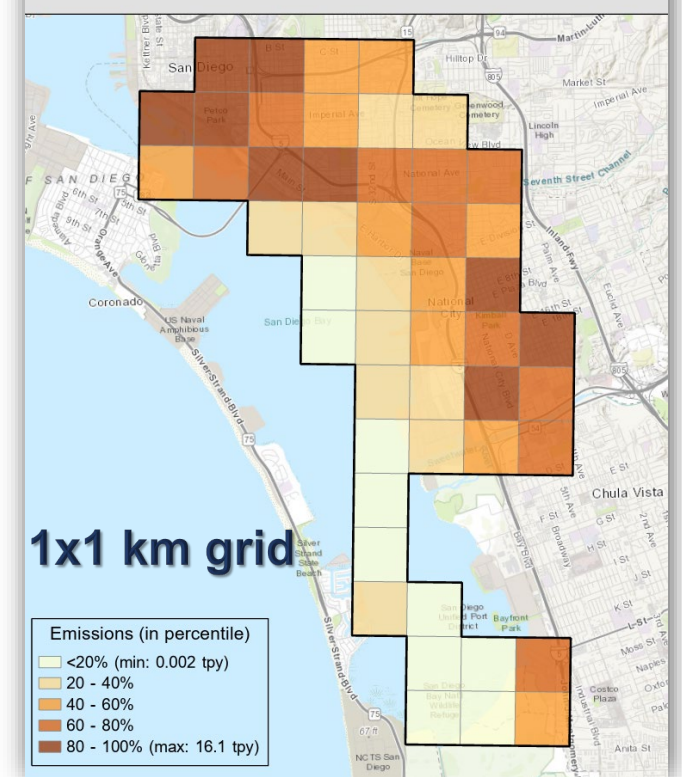
Spatial Surrogate



e.g., population, employment, housing, roads, location of building & road constructions, ports, ship lanes, rail lines

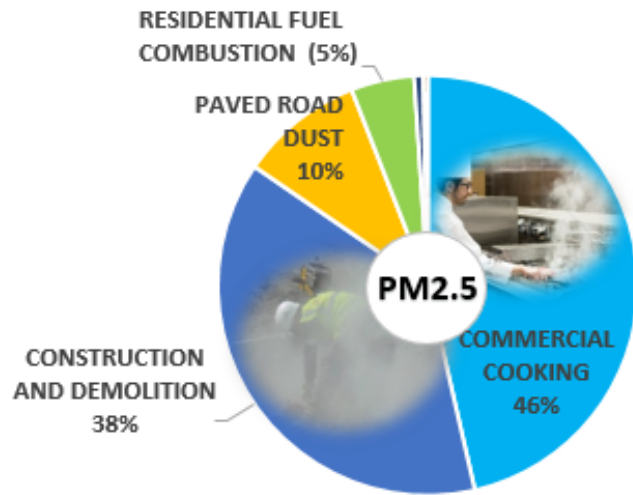
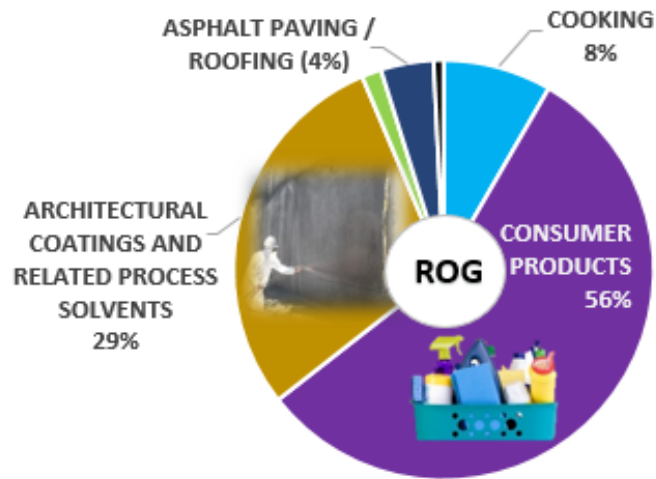
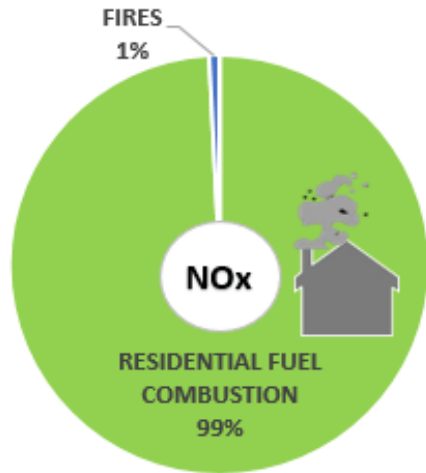
Emissions (Community)

2018 PM_{2.5} Emissions



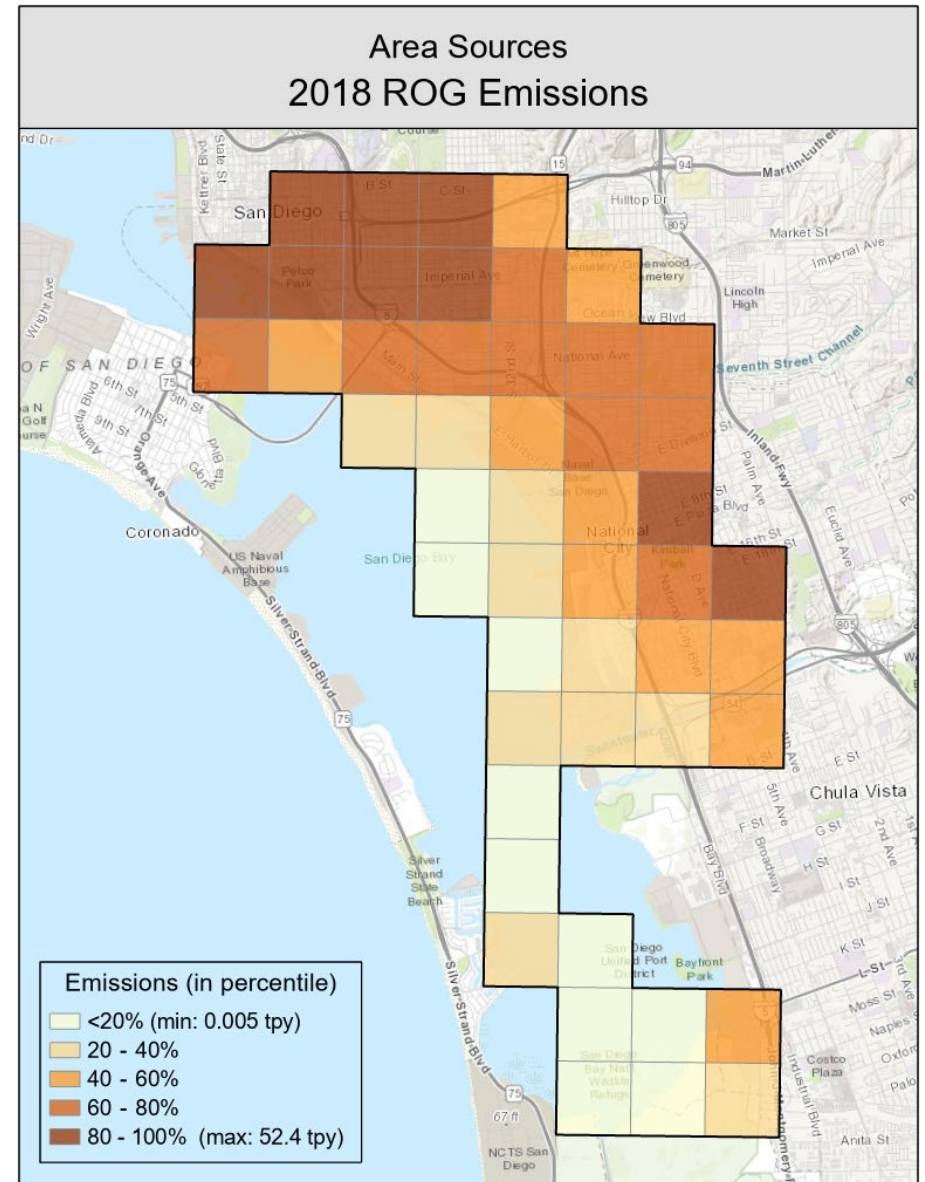
County-level emissions are distributed to the 1km x 1km grids using the fraction of spatial surrogate data in each grid = weighted emissions

DRAFT 2018 Area Source Emissions

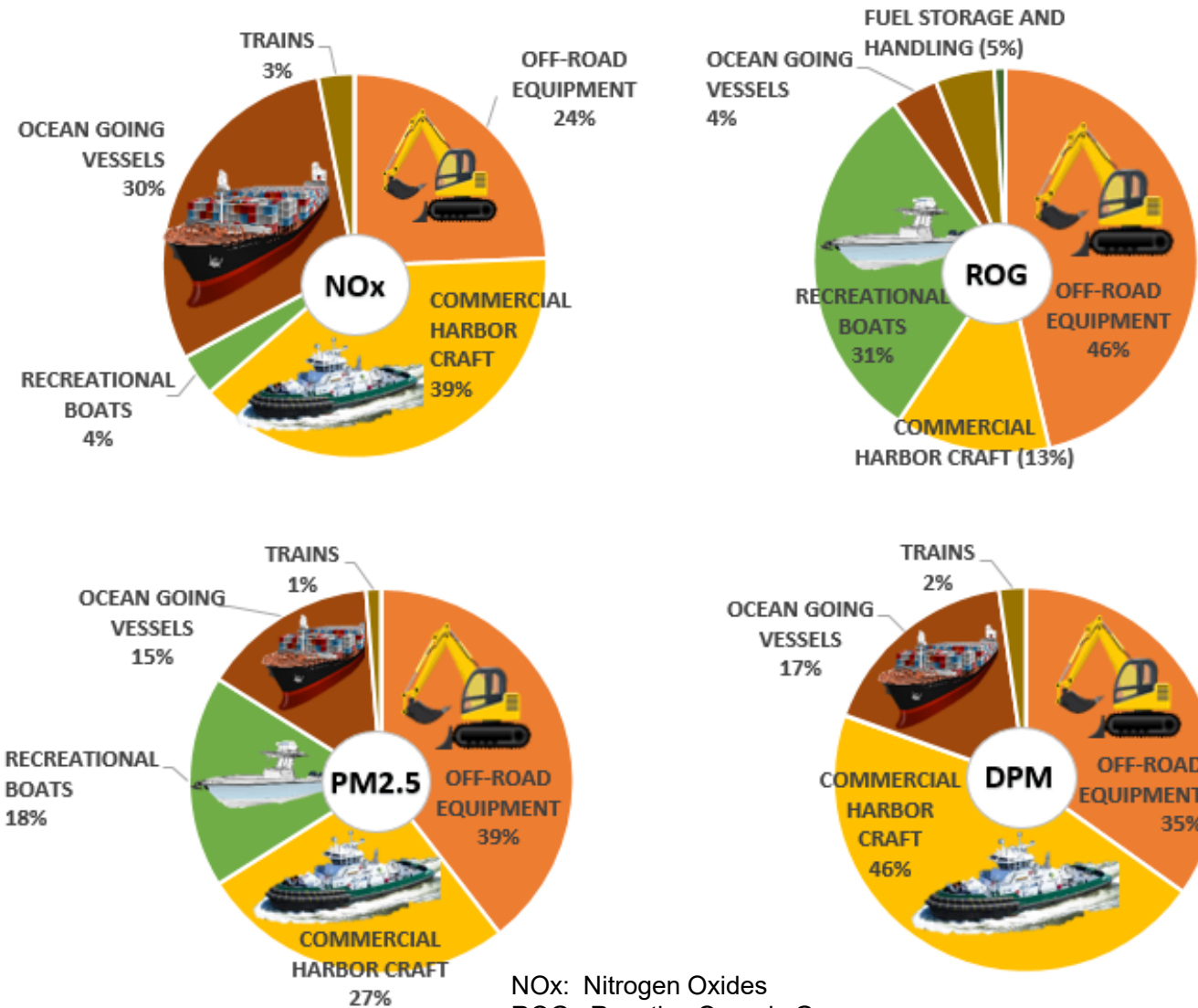


NOx: Nitrogen Oxides
 ROG: Reactive Organic Gases
 PM2.5: Particulate Matter 2.5 Microns or Smaller

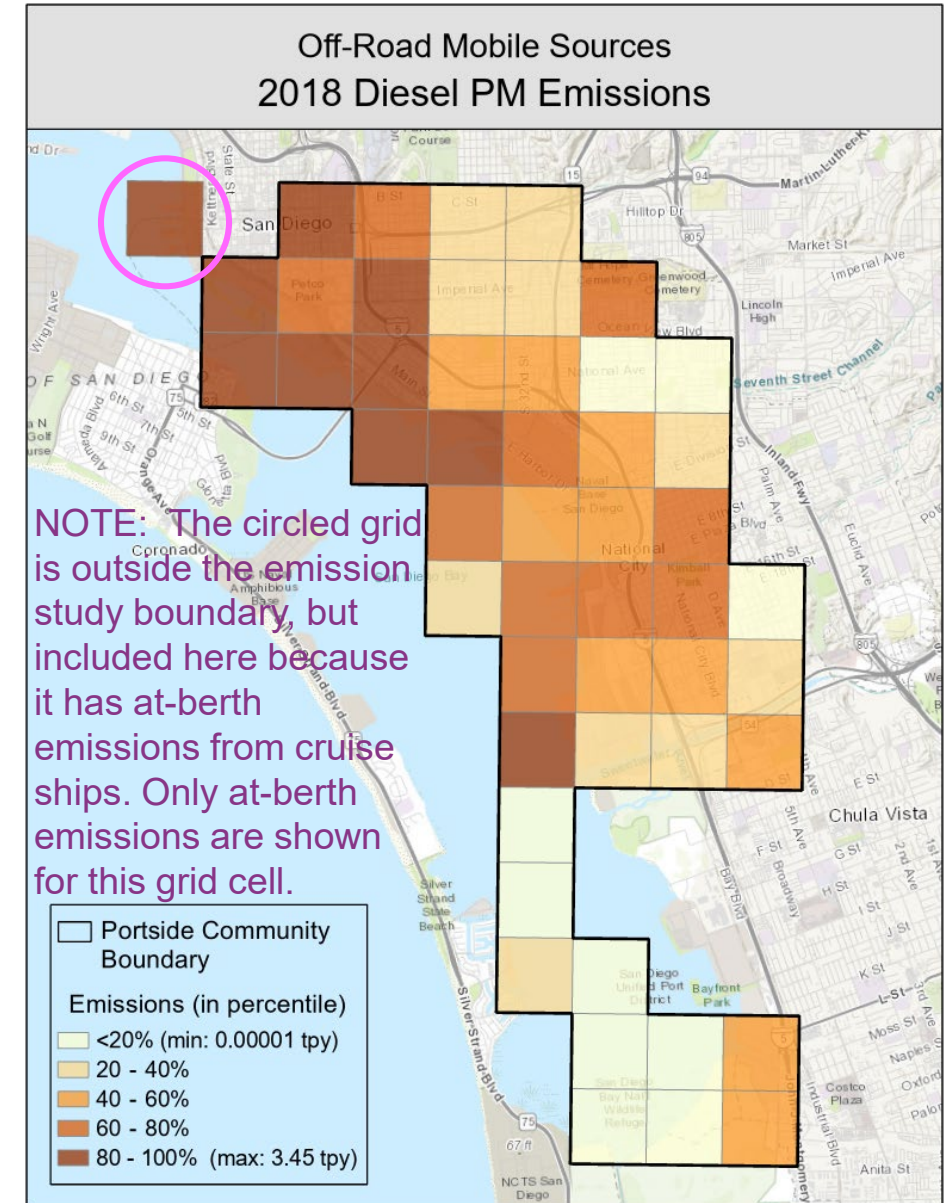
Only includes 'true' areawide sources



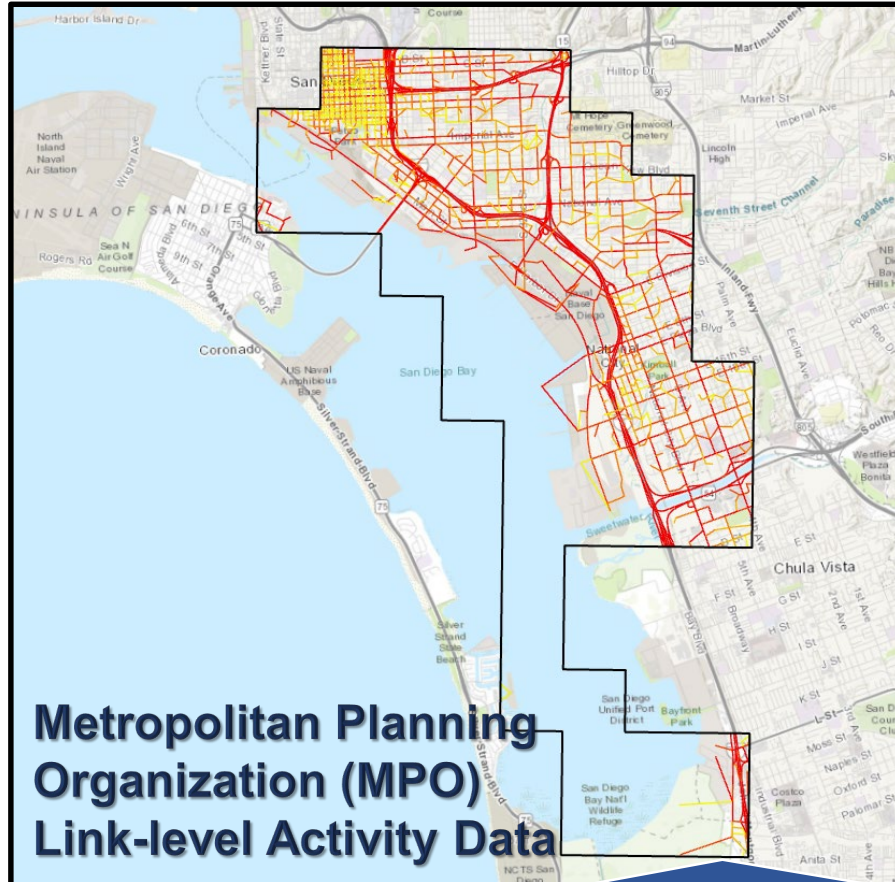
DRAFT 2018 Off-Road Mobile Source Emissions



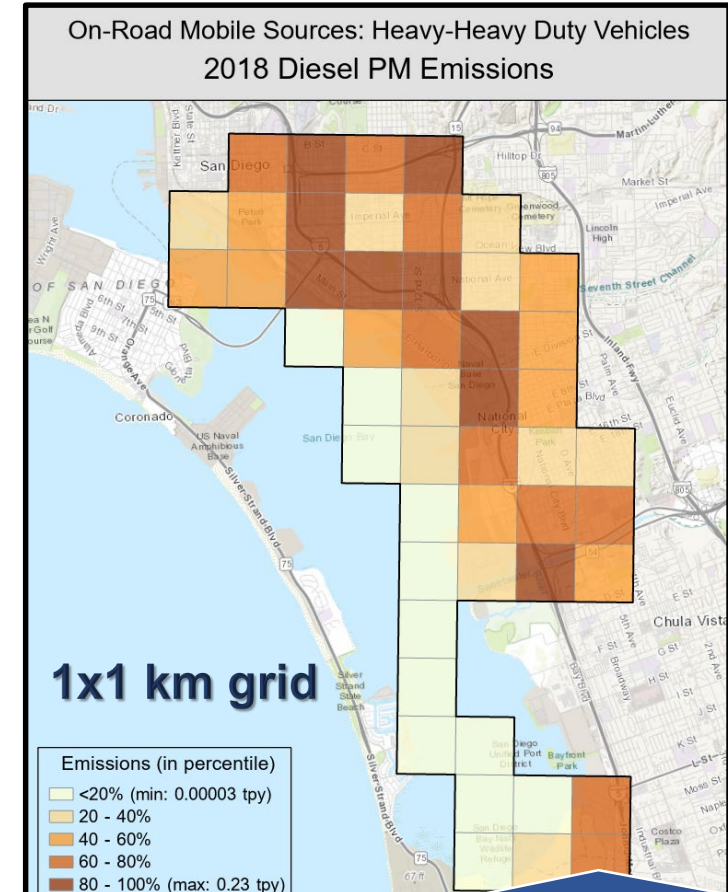
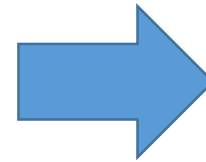
NOx: Nitrogen Oxides
 ROG: Reactive Organic Gases
 PM2.5: Particulate Matter 2.5 Microns or Smaller
 DPM: Diesel Particulate Matter



On-Road Mobile Sources Estimation Method

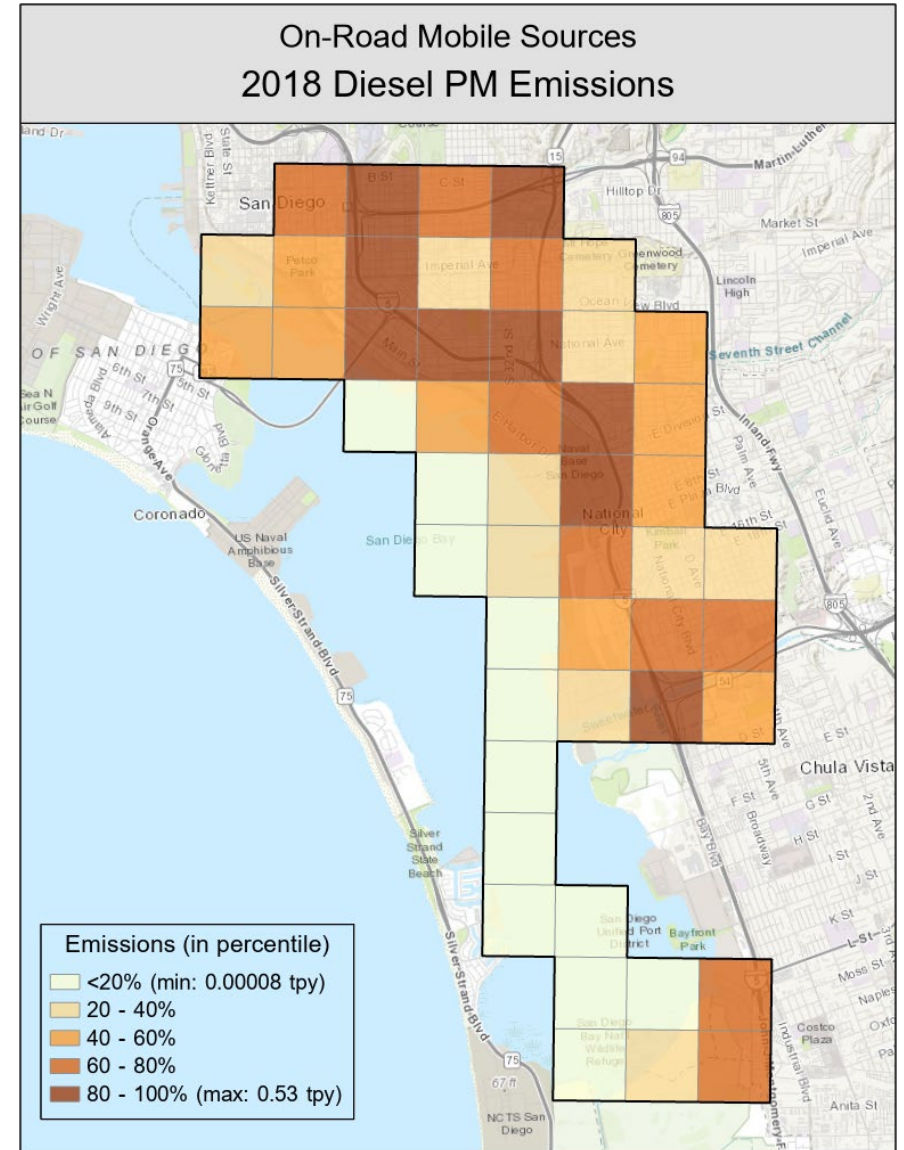
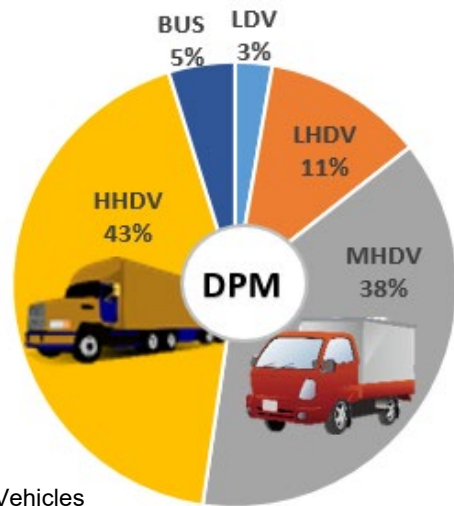
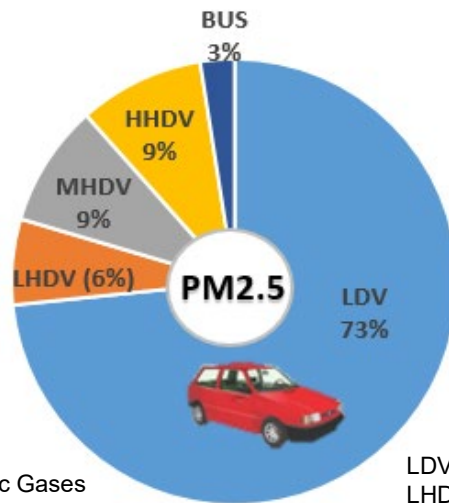
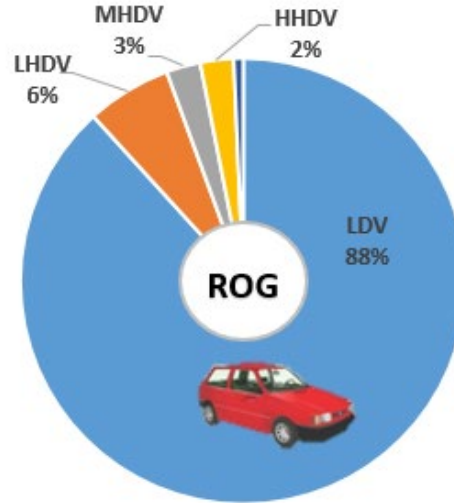
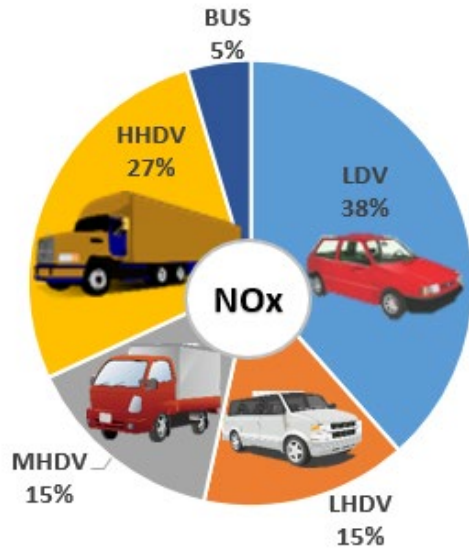


Estimate VMT based on vehicle activity in the community
(MPO link-level activity data)



Apply emission factors to VMT to calculate emissions
(CARB EMFAC2017 fleet mix & emission factors)

DRAFT 2018 On-Road Mobile Source Emissions



NOx: Nitrogen Oxides
 ROG: Reactive Organic Gases
 PM2.5: Particulate Matter 2.5
 Microns or Smaller
 DPM: Diesel Particulate Matter

LDV: Light Duty Vehicles
 LHDV: Light-Heavy Duty Vehicles
 MHDV: Medium-Heavy Duty Vehicles
 HHDV: Heavy-Heavy Duty Vehicles
 BUS: Buses

Next Steps

- Finalize community emission inventory working together with CSC and District (July)
- Update on-road mobile source inventory with community-specific fleet-mix results from District's license plate reader study from last Summer (when available)

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