

Updated Draft Health Risk Assessment

*Focusing on Diesel Particulate Matter
at the District's Marine Cargo Terminals*

June 14, 2022

Agenda Item #13
File #2022-0176

Regional and Community Level Analyses

Modeling Differences

CARB's Population Weighted Analysis

- Larger geographic areas (such as County or Census block levels)
- Overall effect on population / weighted towards more densely populated areas
- Typically used to support rulemaking

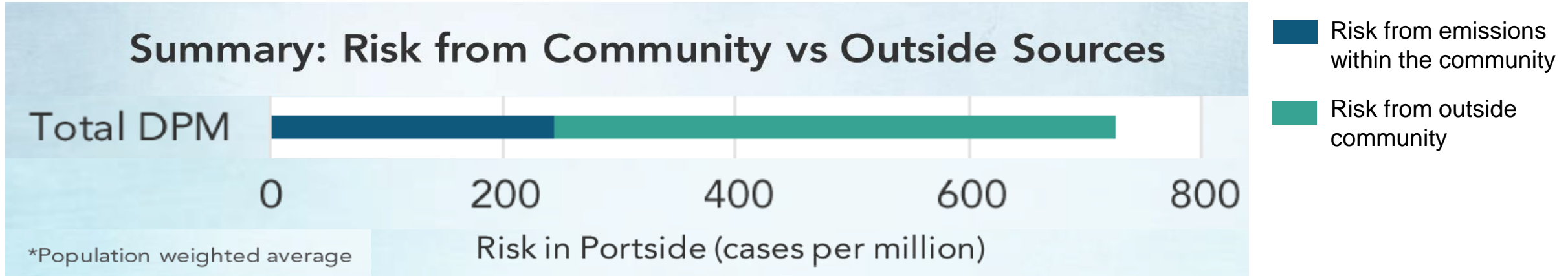


Port's Maximum Exposure Individual Resident (MEIR)

- Individual receptor level (Residence)
- Impact from a specific source or facility
- More granular scale
- Easier to understand



CARB's DPM Risk Summary








Modeling Software: CALPUFF and CMAQ [Baseline 2017](#)

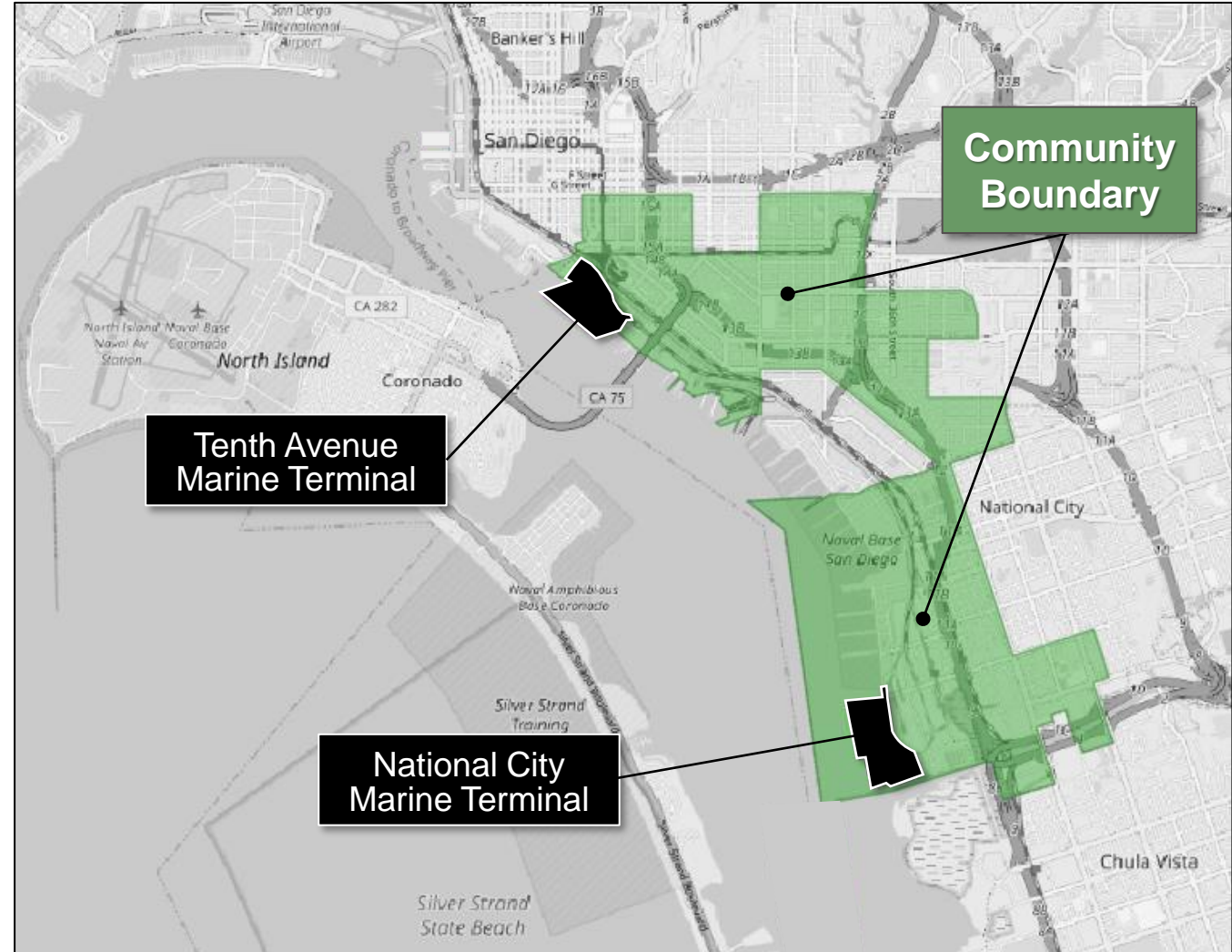
The highest regional contributions of diesel particulate matter is attributed to:

- Regional transportation on the interstate highway system
- Commercial harbor craft
- Industrial operations and manufacturing
- Mexico and border region activity

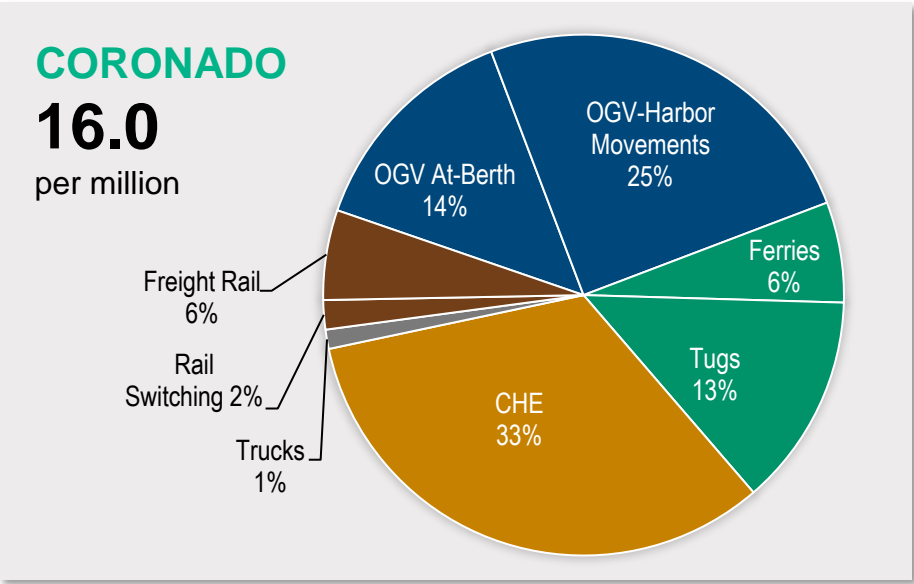
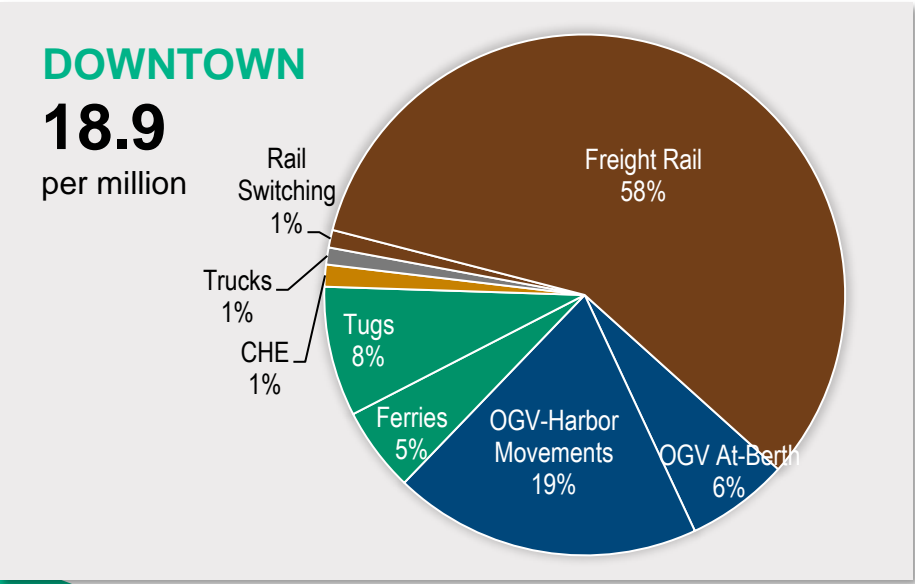
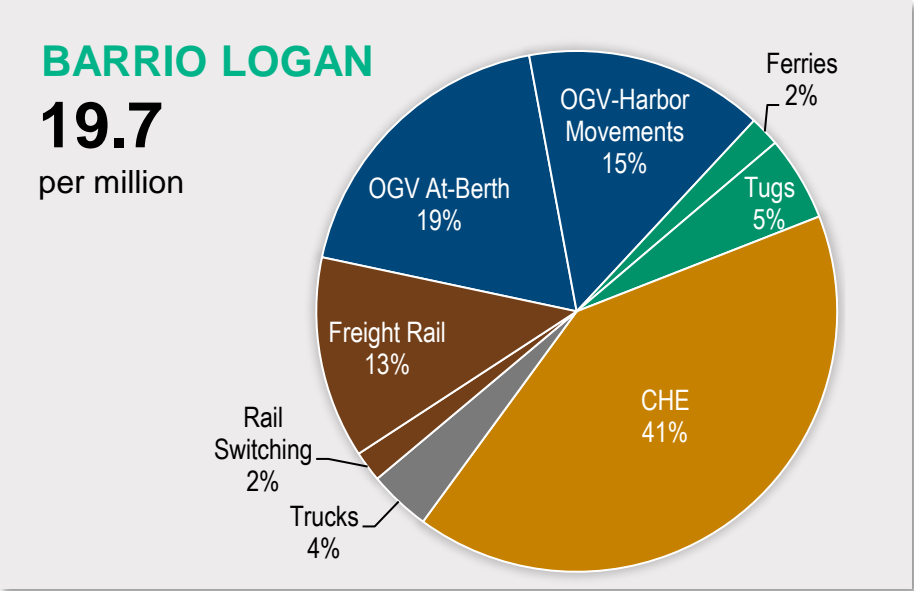
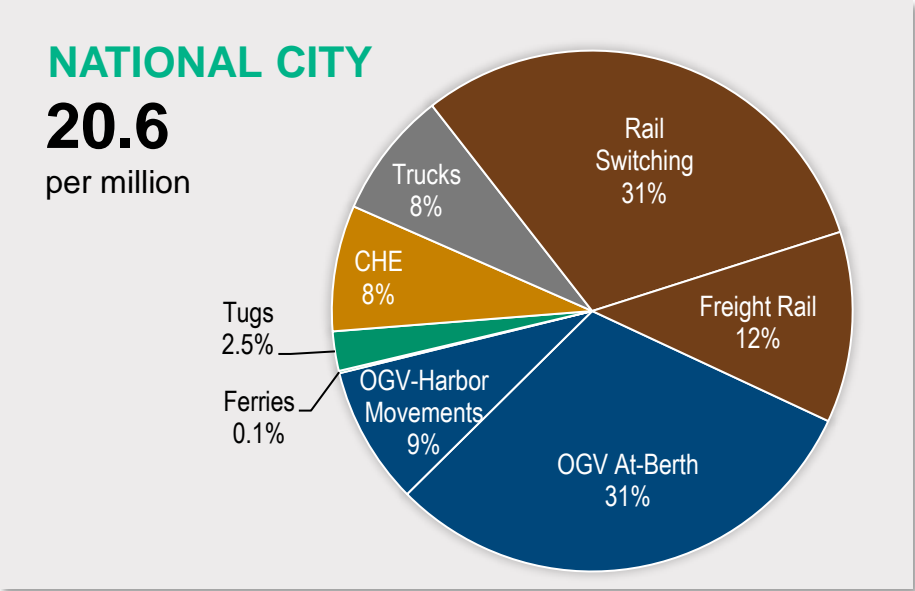
Updated Draft Health Risk Assessment Source Types

AB 617 Community Boundary and Marine Cargo Terminal Boundaries

| Source Type | Emission Source Summary (2019) |
|---|---|
|  Oceangoing Vessels | 329 calls |
|  Commercial Harbor Craft | 2 Assist Tugs 2 Commuter Ferries |
|  Cargo Handling Equipment | 184 pieces |
|  Heavy-Duty Trucks | ~ 86,600 trips total (~237 average daily trips) |
|  Freight Rail | 2.725 million tons |



Residential Cancer Risk Results – Updated Baseline (2019)



- Oceangoing Vessels
- Commercial Harbor Craft
- Cargo Handling Equipment
- Heavy-Duty Trucks
- Rail

Source Contribution to Maximum Risk by Community

Key Modeling Adjustments Since December 2021 Based on Agency and Stakeholder Input



Oceangoing Vessels

- Updated Vessel Stack Height



Trucks

- Extended capture of Port truck trips on Interstates and non-designated surface streets
- Updated truck fleet mix



Commercial Harbor Craft

- Updated fuel consumption (for tugs) and updated CARB emission factor (for tugs and ferries)



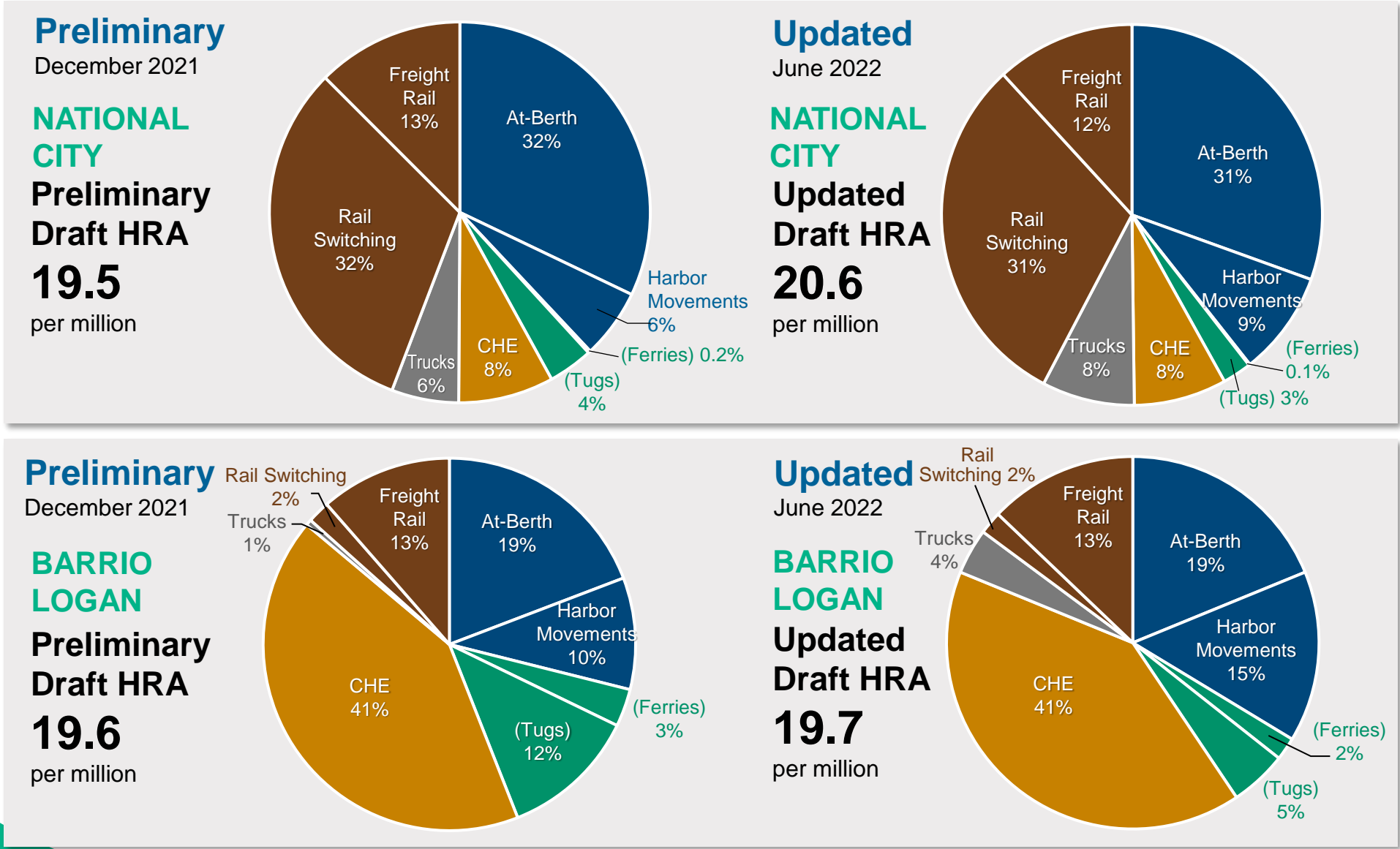
Rail

- Updated fuel consumption and emission factor

**The Updated HRA Report will include a complete list of all technical modeling changes*

Source Apportionment Comparison

Between Preliminary and Updated Modeling Efforts



Preliminary
December 2021

BARRIO LOGAN

Preliminary Draft HRA

19.6
per million

| Source | Percentage |
|------------------|------------|
| At-Berth | 19% |
| CHE | 41% |
| Harbor Movements | 10% |
| (Tugs) | 12% |
| (Ferries) | 3% |
| Freight Rail | 13% |
| Rail Switching | 2% |
| Trucks | 1% |

Updated
June 2022

BARRIO LOGAN

Updated Draft HRA

19.7
per million

| Source | Percentage |
|------------------|------------|
| At-Berth | 19% |
| CHE | 41% |
| Harbor Movements | 15% |
| (Tugs) | 5% |
| (Ferries) | 2% |
| Freight Rail | 13% |
| Rail Switching | 2% |
| Trucks | 4% |

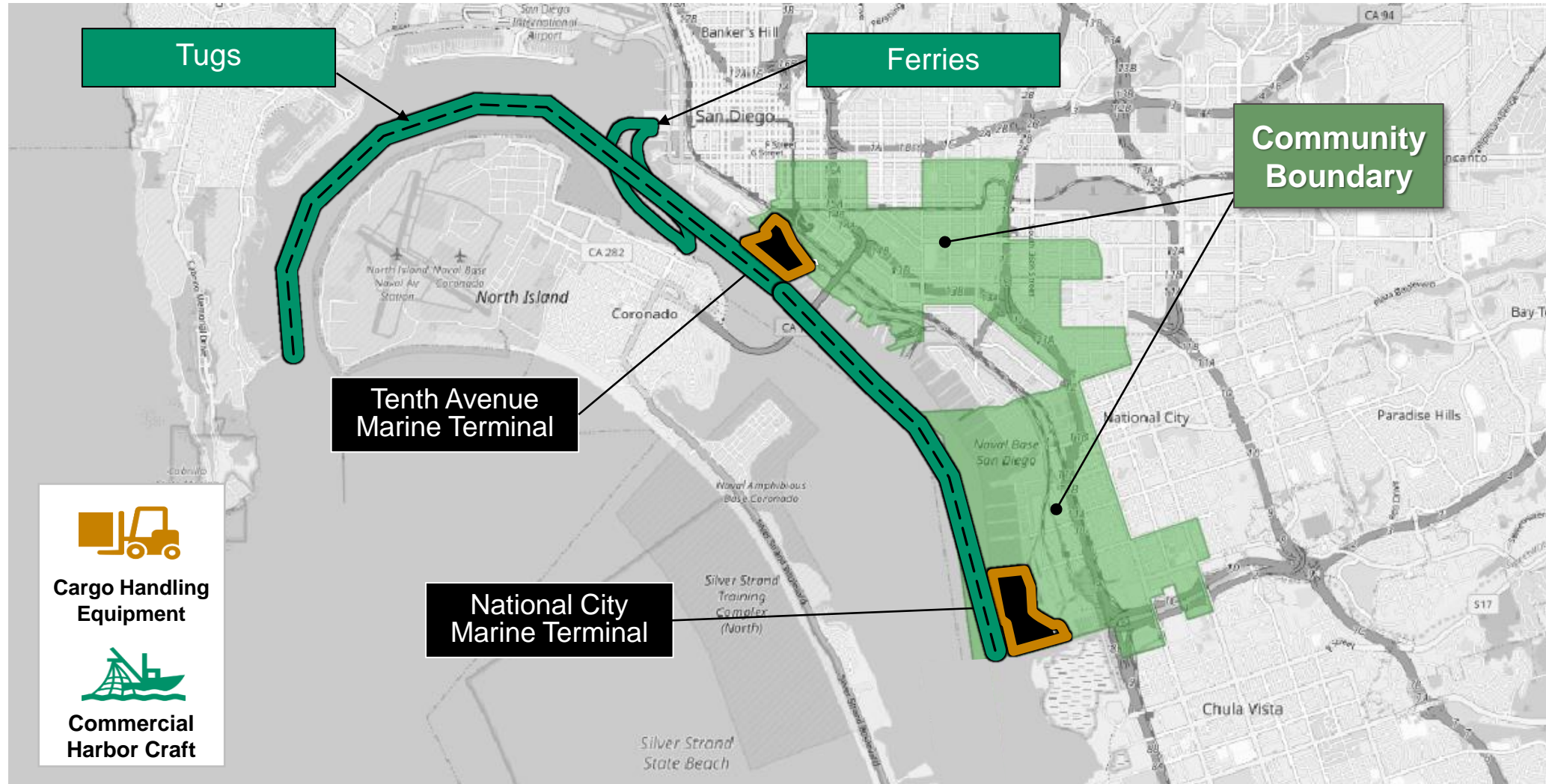
- Oceangoing Vessels
- Commercial Harbor Craft
- Cargo Handling Equipment
- Heavy-Duty Trucks
- Rail

Bonnet was approved by BPC on 5/10/2022 and reductions are not quantified here.

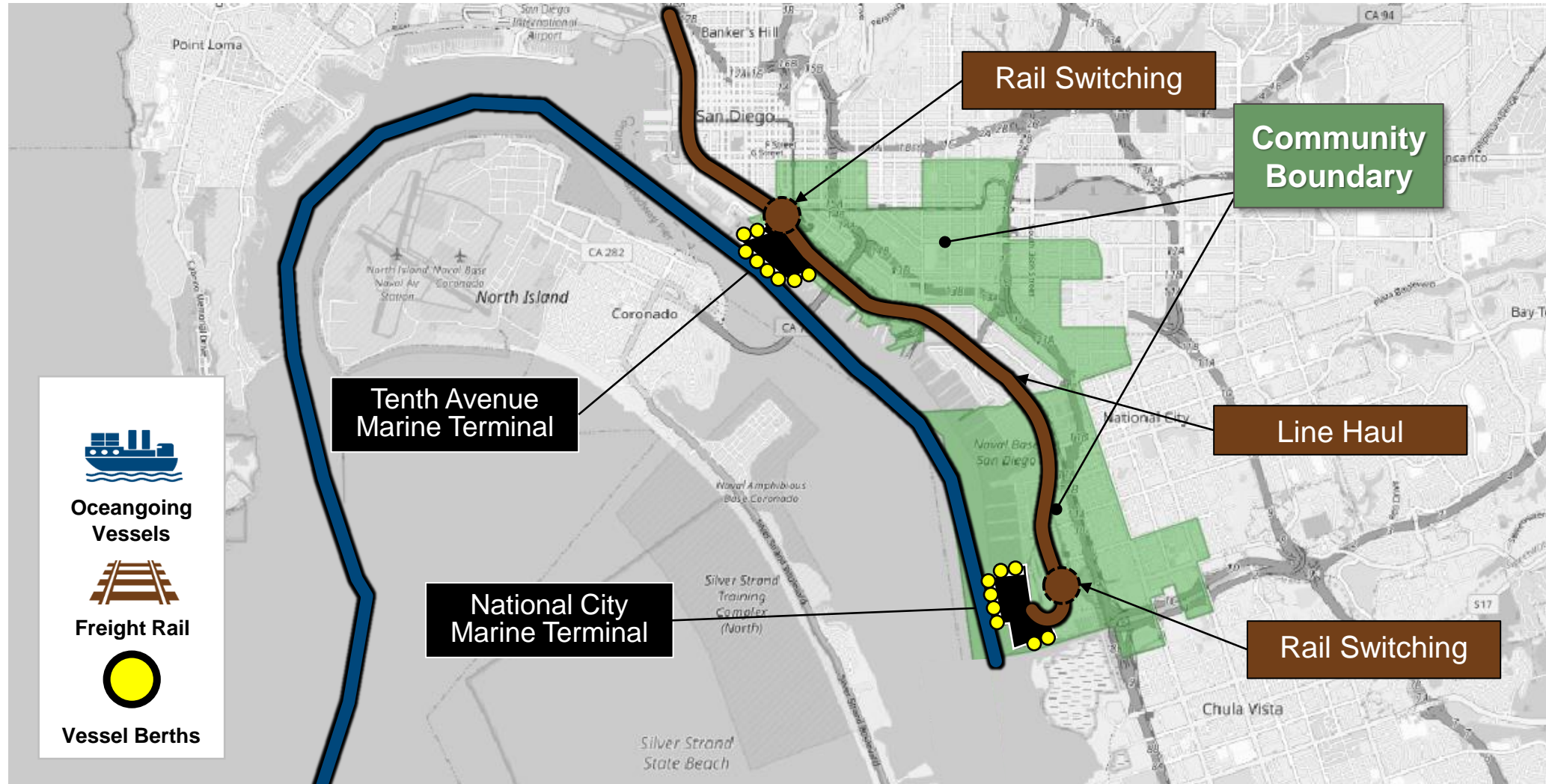
Heavy-Duty Trucks



Ferries, Tugs, and Cargo Handling Equipment



Oceangoing Vessels and Freight Rail



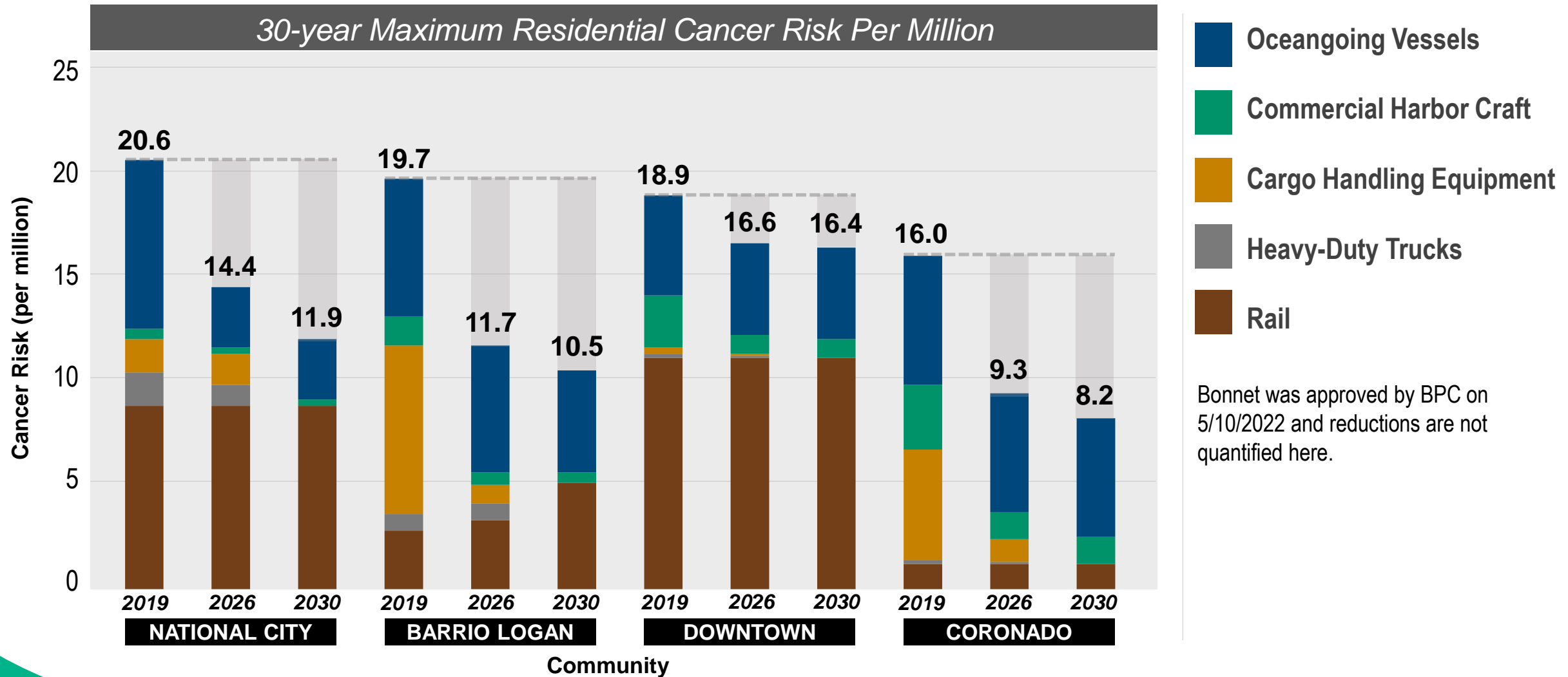
An aerial photograph of a port area, featuring a large ship docked at a pier, a bridge in the background, and various industrial structures. The image is overlaid with a blue gradient and a green wavy line at the bottom.

Forecasted MCAS 2026 and 2030

MCAS Modeling Inputs for 2026 and 2030

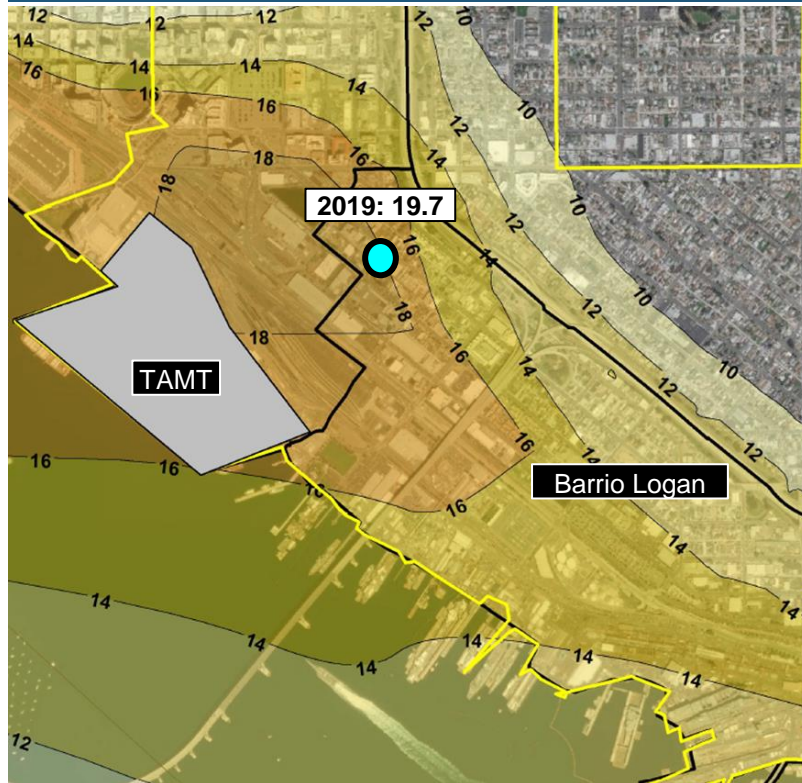
| Source Category | Measure (Year Implemented) |
|--------------------------|---|
| Commercial Harbor Craft | Electric Tugboat (2026) & Electric Short-Run Ferries (2026) |
| Cargo Handling Equipment | Electric CHE at TAMT (2025) + Electric 100% CHE at TAMT & NCMT (2030) |
| Trucks | 40% Zero Emission Trucks (2026) + 100% Zero Emission Trucks (2030) |
| Oceangoing Vessels | Vessel Speed Reduction (2022) & Shore Power at NCMT (2025) |

2019 Baseline Comparison to Forecasted Risk With MCAS Modeling Inputs for 2026 and 2030



Residential Cancer Risk Comparisons – Barrio Logan

Baseline 2019



| | |
|--------------------------|-------------|
| Cargo Handling Equipment | 8.1 |
| Oceangoing Vessels | 6.6 |
| Rail | 2.8 |
| Harbor Craft | 1.4 |
| Trucks | 0.8 |
| TOTAL | 19.7 |

Forecasted 2026 Model



| | |
|--------------------------|-------------|
| Cargo Handling Equipment | 0.9 |
| Oceangoing Vessels | 6.1 |
| Rail | 3.3 |
| Harbor Craft | 0.6 |
| Trucks | 0.8 |
| TOTAL | 11.7 |

Forecasted 2030 Model



| | |
|--------------------------|-------------|
| Cargo Handling Equipment | 0.0 |
| Oceangoing Vessels | 4.9 |
| Rail | 5.1 |
| Harbor Craft | 0.5 |
| Trucks | 0.0 |
| TOTAL | 10.5 |

Residential Cancer Risk Comparisons – National City

Baseline 2019



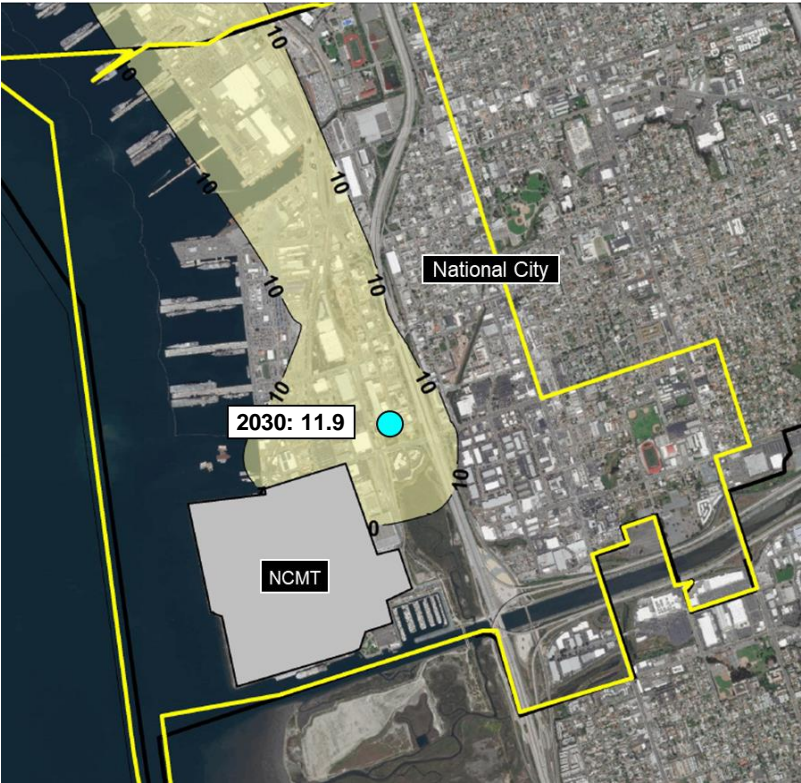
| | |
|--------------------------|-------------|
| Rail | 8.8 |
| Oceangoing Vessels | 8.1 |
| Cargo Handling Equipment | 1.6 |
| Trucks | 1.6 |
| Harbor Craft | 0.5 |
| TOTAL | 20.6 |

Forecasted 2026 Model



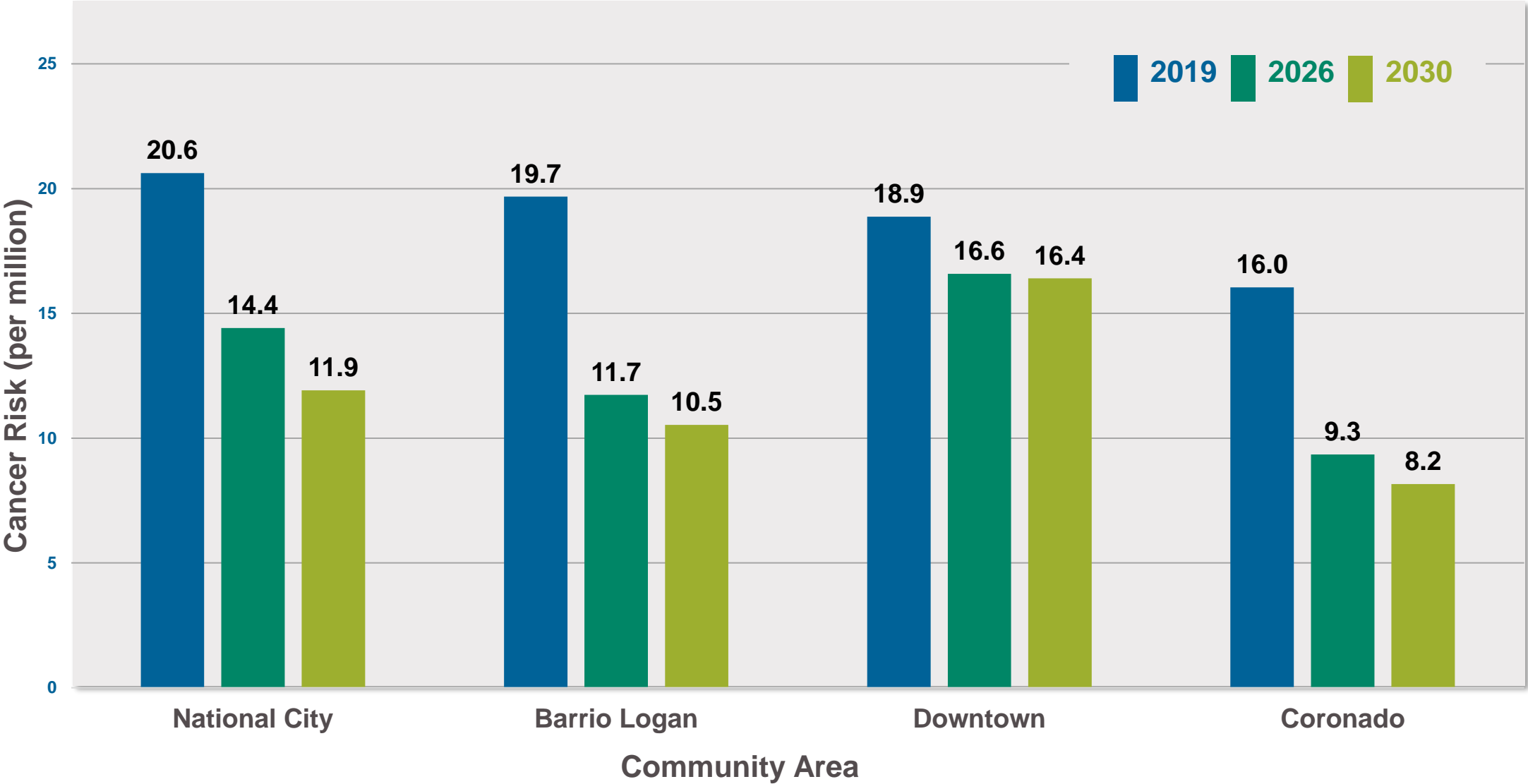
| | |
|--------------------------|-------------|
| Rail | 8.8 |
| Oceangoing Vessels | 2.9 |
| Cargo Handling Equipment | 1.5 |
| Trucks | 1.0 |
| Harbor Craft | 0.3 |
| TOTAL | 14.4 |

Forecasted 2030 Model



| | |
|--------------------------|-------------|
| Rail | 8.8 |
| Oceangoing Vessels | 2.9 |
| Cargo Handling Equipment | 0.0 |
| Trucks | 0.0 |
| Harbor Craft | 0.3 |
| TOTAL | 11.9 |

2019 Baseline Comparison to Forecasted Risk With MCAS Modeling Inputs for 2026 and 2030



Current Projects

Dole – Five new ZE Yard Trucks

Acquired April 2022

First All-Electric Mobile Harbor Crane

Operational Summer 2023 (expected)

1st All Electric Tug in the United States

Operational Summer 2023 (expected)

Barge Based Bonnet

Public Private Partnership Agreement Authorized by Board in May 2022

Operational by 2025 (expected)

Shore Power

Install 2 plugs / alternative technology at NCMT

Operational by 2025 (expected)

Harbor Drive 2.0

Project Approval / Environmental Document - Dec 2023 (expected)

Final Design - Dec 2024 (expected)

Construction - Jan 2025 through Dec 2026 (expected)



Next Steps

- Post the Updated Health Risk Assessment on District's Website for 30 days (July 2022)
- Finalize Health Risk Assessment and Transmit to Board
- Continue to work with CARB and APCD as they finalize Regional Toxics Risk Modeling
- Stay engaged with AB 617 Steering Committee



UPDATED Health Risk Assessment Report

July 2022

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