



March 26, 2020

## Control Measure for Ocean-Going Vessels At Berth (15-Day Changes)

While at berth, vessels generate toxic and harmful exhaust that impacts the surrounding communities, many of which are disadvantaged.

Since 2014, emissions from container, refrigerated cargo (reefer), and cruise vessels have been controlled at berth through CARB's existing At-Berth Regulation. This regulation results in a reduction of 80% of emissions from those vessel types (around 4,000 visits) by 2020. However, additional reductions are needed to further protect public health and the environment.



### Purpose of New At Berth Control Measure

- Expand public health and environmental benefits by including additional vessel types and visits
- Provide reductions of particulate matter (PM) and oxides of nitrogen (NOx) to help attain regional and federal air standards

### Recent Revisions to the Proposed Regulation (as reflected in the public notice posted March 26, 2020)

- Incorporate an Innovative Concepts (IC) option. The IC provision allows regulated entities to use other options to achieve earlier or equivalent (or greater) emissions reductions in port communities versus reducing emissions directly at berth. It also provides a pathway for currently regulated vessel fleets to continue using fleet averaging methods to comply with the Proposed Regulation
- Expand use of Vessel and Terminal Incident Events (VIEs and TIEs) to new and growing vessel fleets and terminals
- Broaden the scope of the interim evaluation to include a review of public information provided to CARB and consider control requirements for use with bulk/general cargo vessels, and for vessels at anchor
- Accelerate implementation dates to 2024 for ro-ro and 2025/2027 for tanker vessels to achieve earlier health and environmental benefits
- Provide additional flexibility by:
  - extending vessel emissions control strategy connection time from one hour to two hours;
  - expanding reporting deadlines; and
  - allowing the remediation fund to be used by ports and third-party control system operators

### Implementation Schedule

- Additional container, reefer and cruise vessels in 2021
- Ro-ro vessel (auto carrier) 2024 (previously 2025)
- Tanker vessels 2025 (Los Angeles and Long Beach) and 2027 (Northern California) (previously 2027 and 2029)

### Cost Impacts

- Cost of Proposed Regulation is \$2.40 billion. Avoided adverse health outcomes valued at \$2.44 billion
- Costs are reasonable and can be distributed over individual units of freight:
  - Container/reefer - \$1.12 per twenty-foot container
  - Cruise - \$4.56 per passenger
  - Auto Carrier - \$7.49 per automobile
  - Tanker - less than \$0.01 per gallon of refinery product

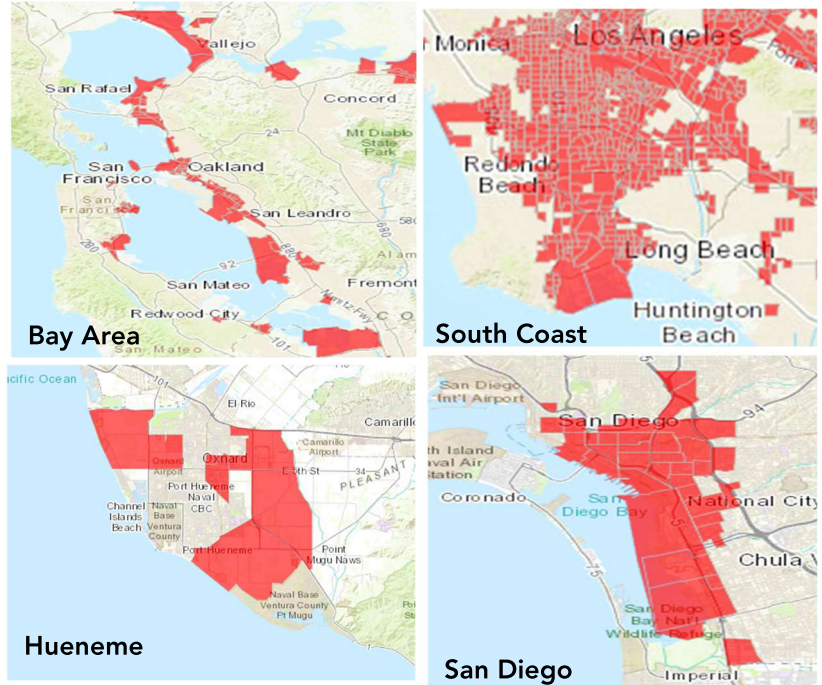


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## Port Activities Impact Disadvantaged Communities

### California Ports and Marine Terminals

### Disadvantaged Communities (in red)

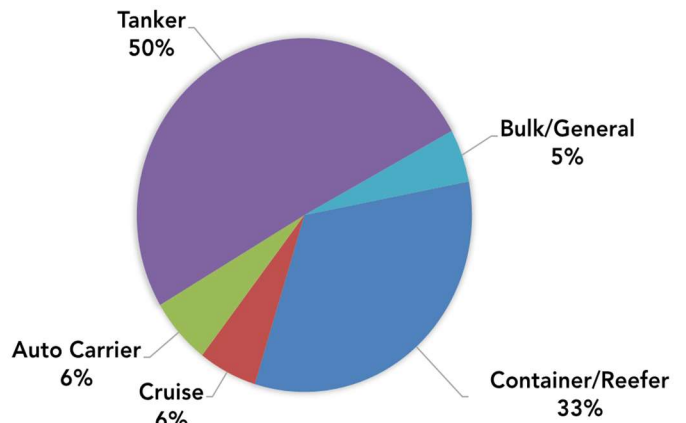


## Reducing Emissions From Vessels At Berth

### More Opportunities Exist For Reductions

- Existing At-Berth Regulation will reduce 80% of emissions from container, reefer, and cruise vessel fleets (around 4,000 visits) by 2020 at Ports of Los Angeles, Long Beach, Oakland, San Francisco, San Diego, and Hueneme
- Proposed Regulation expands requirements to include auto carriers (ro-ro) and tanker vessels, and new ports and terminals, reducing emissions from an additional 2,300+ vessel visits
- Auto carriers and tanker vessels make up more than half the remaining emissions
- Proposed Regulation shares responsibilities for compliance between vessels, terminals, and ports – all three parties play a vital role in reducing emissions from vessels at berth

### Projected Statewide At Berth PM<sub>2.5</sub> Emissions – Auxiliary Engines and Boilers (2020)





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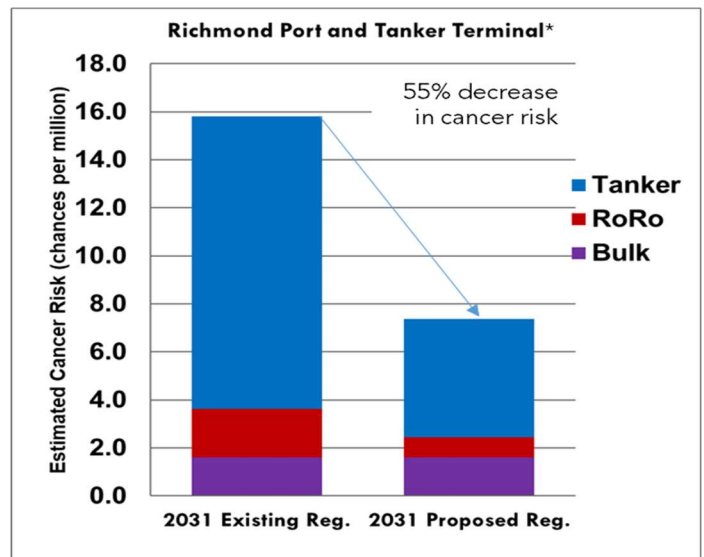
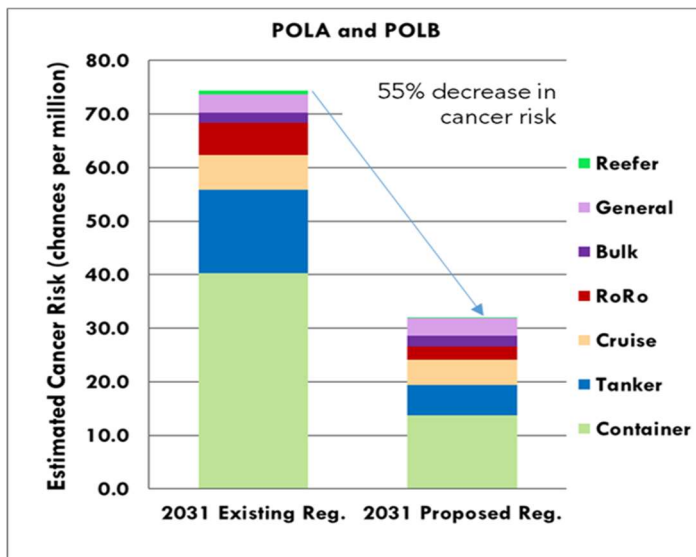
## Shore Power and Capture and Control are Available

### Compliance Mechanisms

- Shore Power and Capture and Control equipment are commercially available
- Shore power installed at ~65 berths (A)
- 2 barge-based and 1 wharf-based capture and control systems are operating in California (B & C)
- On-board technologies (similar to after treatment controls on stationary engines such as particulate filters)
- Alternative fuels
- Innovative Concept(s)



## Health Analysis Shows Reduction in Potential Cancer Risk



\*Richmond does not receive container, refrigerated cargo, or cruise visits

More Information: <https://ww3.arb.ca.gov/ports/shorepower/shorepower.htm>