Ambient air measurements prove disparately elevated exposures to particulate matter air pollution from refineries in nearby communities

(a) Comparison is average Bay Area exposure from refinery emissions (from 2017 Clean Air Plan).
(b) Comparison is background measured by the original investigation (CBE Atts. KR-23, 26, 33, 38).

Increasing $PM_{2.5}$ exposure caused by increasing refinery emissions: Broome et al.'s estimate (bracketed diamonds) appears reasonable compared with refinery dispersion modeling (bracketed circle) that BAAQMD air permitting has relied upon.
Persistent refinery emissions increase caused by the expansion of infrastructure for hydrocracking lower quality oil feeds that started operating in 2010 at Rodeo, California

Emissions from CARB; infrastructure data from BAAQMD permit files.

“WHEREAS, all Bay Area refineries are in the process of infrastructure and crude oil changes that have the potential to result in significant worsening of air quality”

BAAQMD Board finding in Res. 2014-7 (15 Oct 2014)

“Rule 12-16 could cumulatively prevent 800 to 3000 deaths of Bay Area residents given a refinery facility lifetime of 40 years following conversion to heavier crude. The additional mortality burden for the Bay Area’s disadvantaged residents could be 8–12 times that of the Bay Area’s general population”

Broome et al. (8 May 2017 health experts’ report)
Bay Area refinery combustion emissions could increase by ≈ 40–100% in the plausible worst-case low quality oil scenarios, based on peer reviewed data and methods that predict current oil quality effects on Bay Area refinery emissions well. See CBE 8 May 2017; Att. KR-6.