



Overview of Socioeconomic Analyses for Air District Rulemaking

Stationary Source Committee

November 12, 2025

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Presentation Outline

- Background on Rule Development Requirements
- Statutory Requirements for Socioeconomic Impacts
- Overview of Socioeconomic Analyses
- Additional Information for Decision Making Processes
 - Health and Equity Assessments
 - Expanded Analysis of Socioeconomic and Economic Impacts

Rule Development Requirements

- Air District develops new rules and rule amendments to be considered by the Board of Directors for adoption
- Number of requirements for evaluating and considering different impacts as part of the rule development process include estimates of:
 - Emission reductions
 - Compliance costs
 - Cost-effectiveness and incremental cost-effectiveness
 - Environmental impacts
 - Socioeconomic impacts

Statutory Requirements

- **California Health and Safety Code, Section 40728.5**
 - “...agency shall, to the extent data are available, perform an assessment of the socioeconomic impacts of the adoption, amendment, or repeal of the rule or regulation.”
 - “The district board shall actively consider the socioeconomic impact of regulations and make a good faith effort to minimize adverse socioeconomic impacts...”

Statutory Requirements (cont.)

- “Socioeconomic impact” means the following:
 - (1) The type of industries or business, including small business, affected by the rule or regulation
 - (2) The impact of the rule or regulation on employment and the economy of the region affected by the adoption of the rule or regulation
 - (3) The range of probable costs, including costs to industry or business, including small business, of the rule or regulation

Statutory Requirements (cont.)

- “Socioeconomic impact” means the following (cont.):
 - (4) The availability and cost-effectiveness of alternatives to the rule or regulation being proposed or amended
 - (5) The emission reduction potential of the rule or regulation
 - (6) The necessity of adopting, amending, or repealing the rule or regulation to attain state and federal ambient air standards

Overview of Socioeconomic Analyses

- Air District performs some of these assessments as part of other analyses and requirements (such as evaluating emission reductions, cost-effectiveness of alternatives, necessity findings)
- Impacts to industries, businesses, and regional employment and economy assessed with support of socioeconomic consultants

Socioeconomic Analysis: Current Process

Identify Industry

- Identify entities impacted by the proposed regulation
- Estimate economic value of these entities to the Bay Area via input-output (I-O) models, such as IMPLAN (Impact Analysis for Planning) and REMI (Regional Economic Models, Inc.)

Identify Costs

- Estimate average cost of device and implementation to comply with regulation (including cost-effective alternatives)

Assess the Impact

- Analyze economic performance of entities
- Estimate emissions reduction and need for regulatory action
- Estimate impact of regulation (i.e., costs) on continued economic performance (i.e., assumptions of profit reduction/loss, jobs losses)

Limitations of Analysis

- Analysis is focused on regional macroeconomic indicators
 - Does not answer more nuanced local/community-level questions
- Socioeconomic analyses are not designed to provide information on changes to consumption patterns resulting from regulation
 - Direct impact is measured currently, but analysis of impacts on changes in consumption patterns resulting from a change to a regulation, i.e., induced impact estimates, are not currently conducted nor required

Limitations of Analysis (cont.)

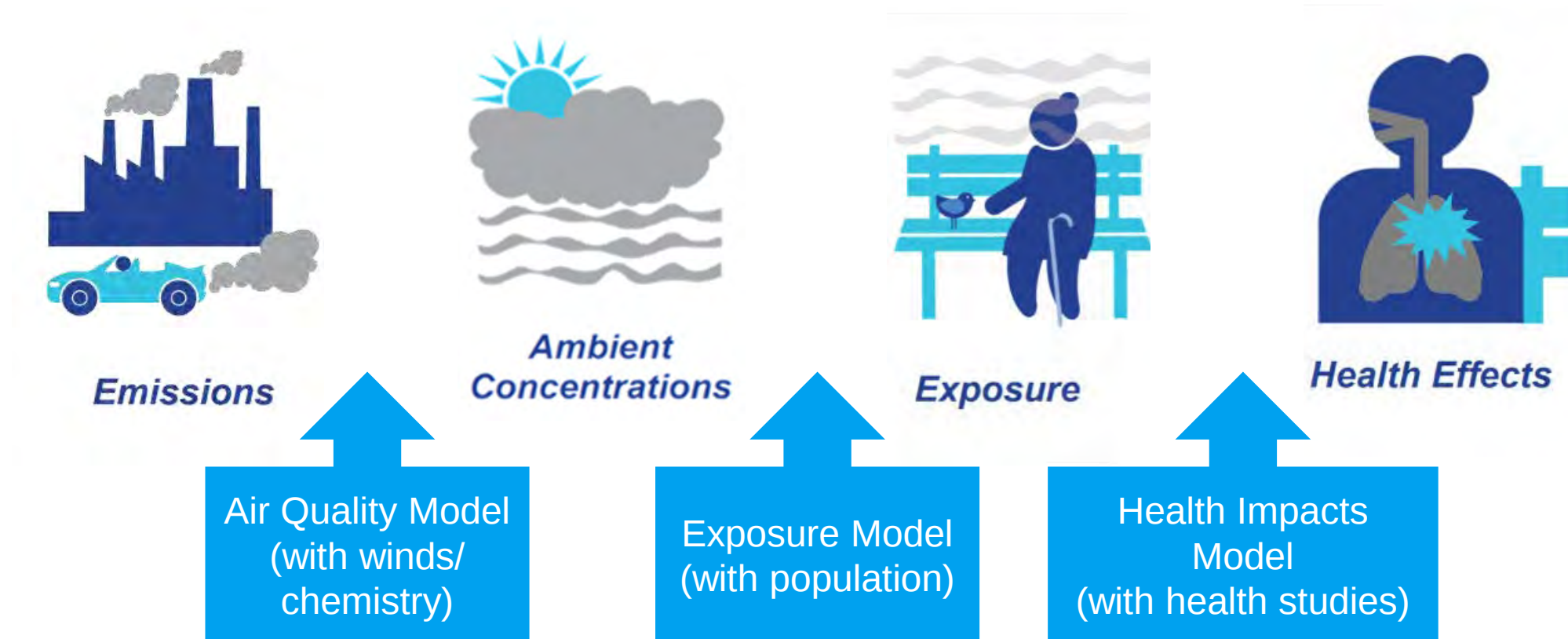
- While some groups have expressed concerns about the adequacy or completeness of the analyses, a precise impact assessment is hard to achieve due to data availability – proprietary business data, such as profit details, relevant cross-sectional data to measure impact on certain specific areas or people groups

Additional Information for Decision Making

- Types of information that are not statutorily required, but can provide supplemental information to the Board and public
 - Modeling-based assessments on health and equity benefits for proposed new rules or amendments
 - Expanded analysis or more detailed assessment of potential socioeconomic and economic impacts

Health and Equity Assessments

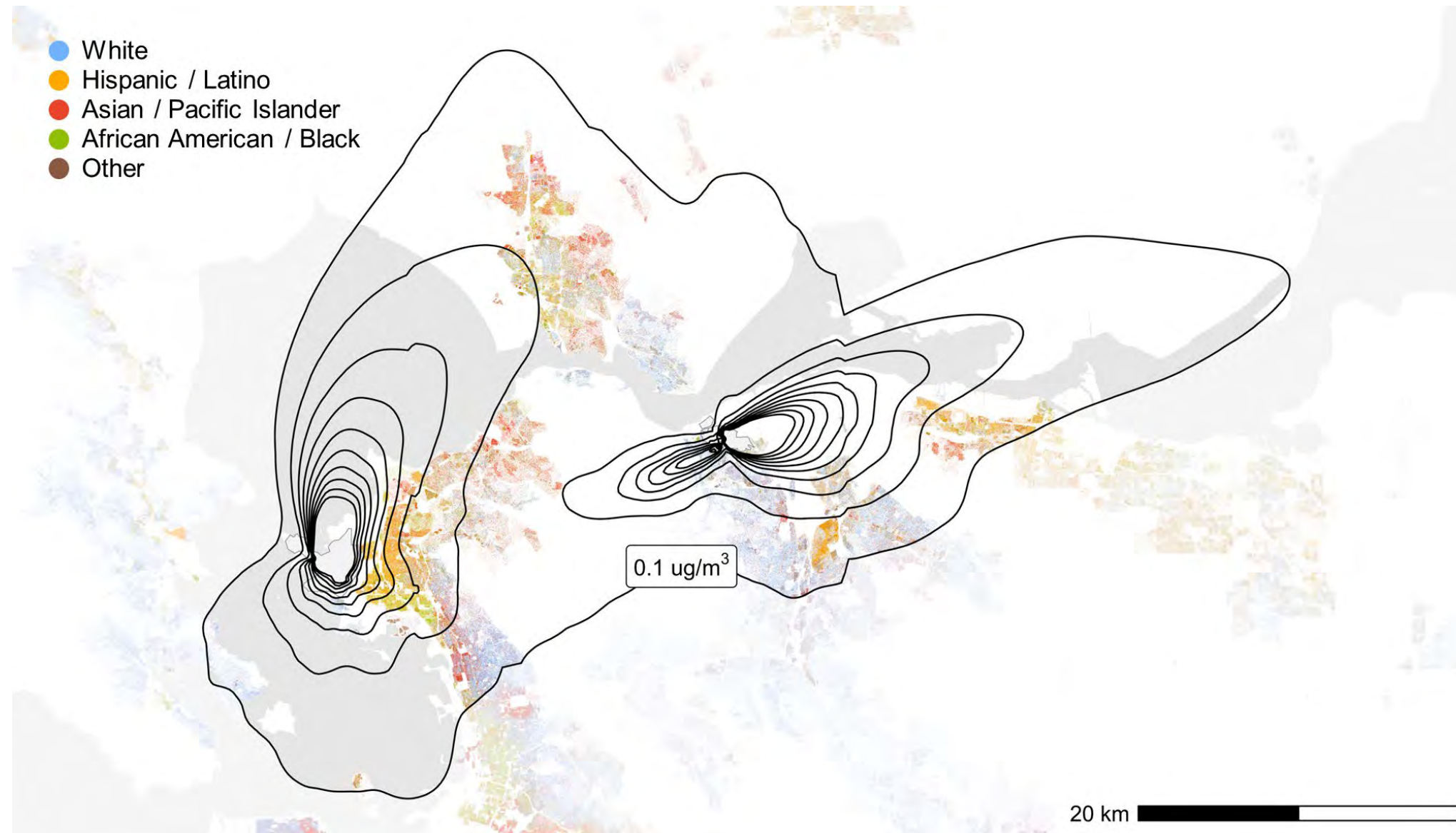
- Modeling can link proposed emission reductions to health impact reductions



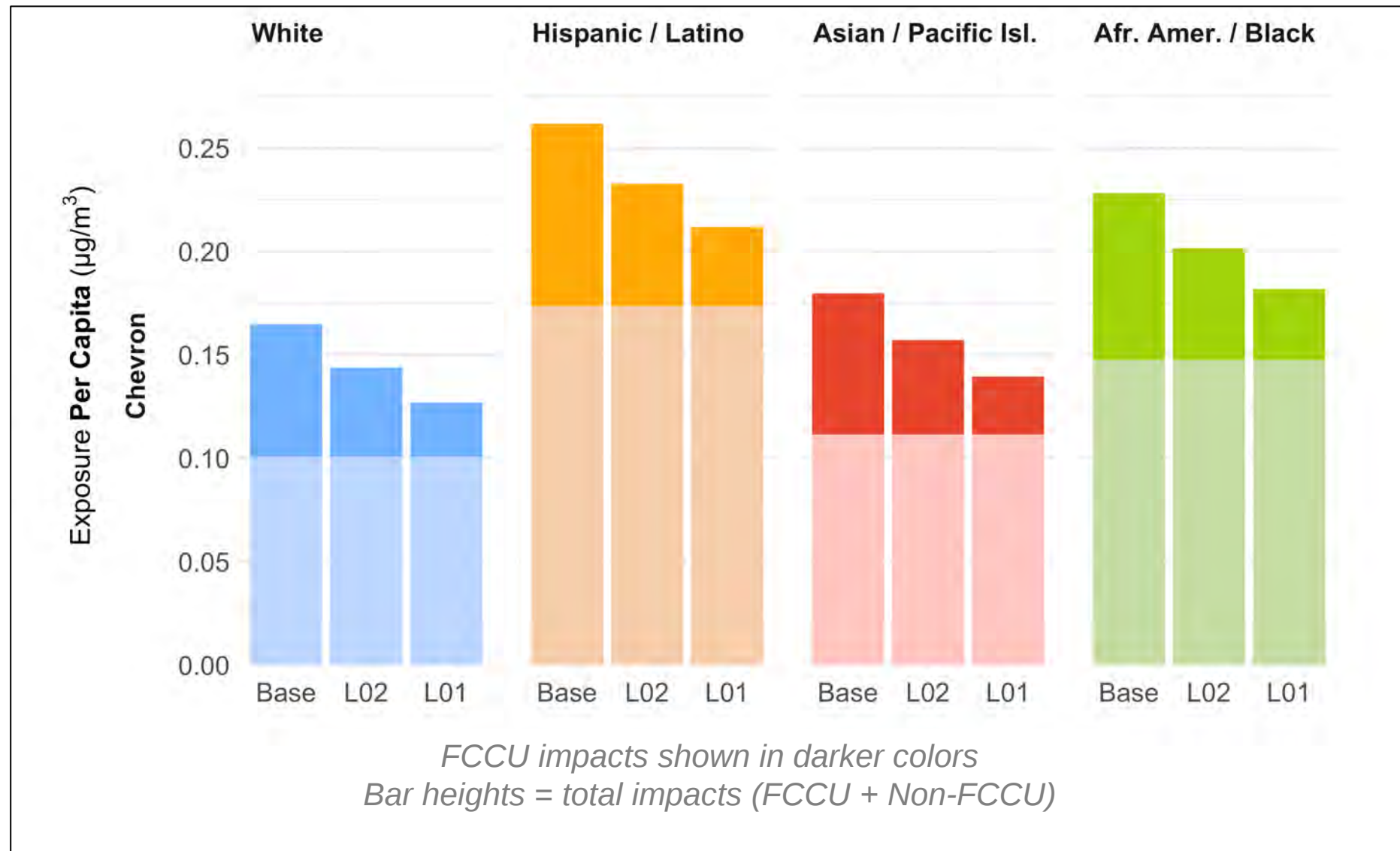
Health and Equity Assessments: Examples

- Examples from past rulemakings:
 - 2021 Amendments to Rule 6-5: Particulate Emissions from Refinery Fluidized Catalytic Cracking Units (FCCUs)
 - 2023 Amendments to Rules 9-4 and 9-6: Nitrogen Oxides (NOx) from Natural Gas Space and Water Heaters
- Modeled contributions to annual average particulate matter (PM_{2.5}) at 1 kilometer scale
- Evaluated corresponding exposure levels and disparities
- Estimated health benefits and valuations from rulemakings

2021 Amendments to Rule 6-5: Refinery FCCUs – Modeled PM_{2.5} Levels & Residential Demographics



2021 Amendments to Rule 6-5: Refinery FCCUs – Exposure Disparities



2021 Amendments to Rule 6-5: Refinery FCCUs – Health Benefits

Modeled Health Endpoints

Premature mortality

Cardiovascular: heart attacks, hospital admissions

Restricted activity days

Work loss days

Asthma: exacerbations, Emergency Room visits, hospital admissions

Respiratory illness: upper/lower tract, bronchitis, chronic lung disease

Expected PM_{2.5} exposure reductions →

Decreased mortality & morbidity →

Overall valuations (\$)

Expanded Socioeconomic Impact Analysis

- Often beyond statutory requirement, but can provide additional information for the Board and public
- Additional analysis relevant or appropriate often specific to project of interest and dependent on data availability:
 - Pass down of compliance costs from industry to consumers
 - Special impacts to small businesses
 - Cumulative regional economic impact, location, and market structure of the affected industries
 - Incremental impacts of potential alternative control options

Expanded Socioeconomic Impact Analysis: Example

- **2023 Amendments to Rules 9-4 and 9-6: NOx from Natural Gas Space and Water Heaters**
 - Direct cost impacts on residential consumers
 - Household level impacts – Income groups, housing tenure, poverty level
 - Shifts in consumer spending and potential job losses (direct and indirect/induced)
 - Potential costs of related infrastructure upgrades

Expanded Socioeconomic Impact Analysis: Example (cont.)

- **2025 Amendments to Rule 6-3 and Regulation 5 (Woodburning)**
 - Industry impacts and direct cost impacts on residential consumers
 - Household level impacts – Income groups, poverty level
 - Shifts in consumer spending and potential job losses (direct and indirect/induced)

Expanded Socioeconomic Impact Analysis: Potential Future Work

- Evaluating and expand vendor capabilities as needed:
 - Air District selected vendors in 2023 from a Request For Proposals (RFP) solicitation process with capabilities for additional/expanded analysis (given appropriate data is available for analysis)
 - Evaluate the need for potential expansion of capabilities in the future (Request For Qualifications [RFQs], RFPs, etc.)

Expanded Socioeconomic Impact Analysis: Potential Future Work (cont.)

- Expanding analysis when appropriate and feasible for specific projects
- Amendments to Regulation 3: Fees
 - Socioeconomic analysis not required for these amendments under California Health and Safety Code, Section 40728.5
 - Additional information on impacts to industries/businesses
- Other future rulemaking projects with potential impacts:
 - Broad and widespread impacts
 - Direct small business and/or household impacts
 - Data availability to support level of analysis

Questions & Discussion

For more information:

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Update on Amendments to Rule 11-18

Stationary Source Committee

November 12, 2025

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Presentation Outline

- Background of Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities
- Draft Amendments
 - Rule Language
 - Implementation Procedures
- Public Engagement and Comments
- Next Steps

Background of Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities



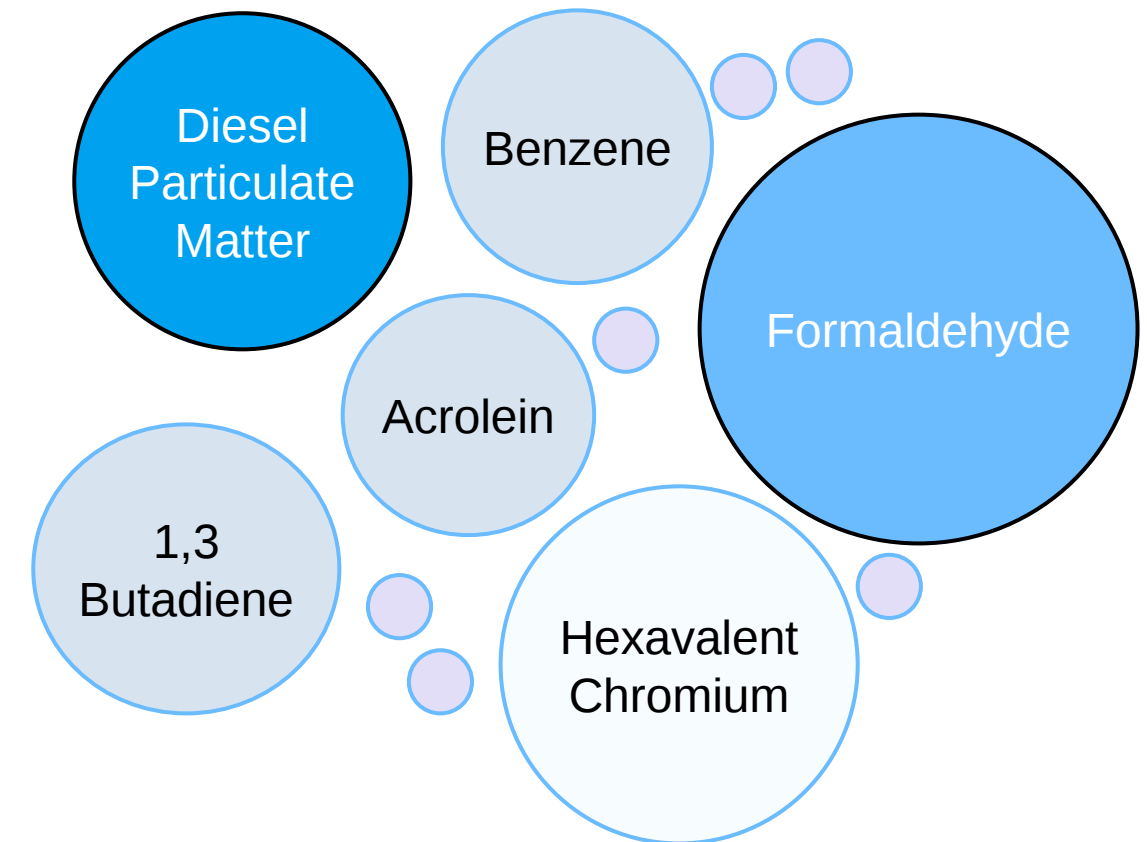
Overview of Rule 11-18

Goal: Reduce the risk from toxic air emissions from existing facilities in the Bay Area

Air Toxics

An air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health

→ Approx. 200 individual chemicals, including:



Air Toxics in the Bay Area

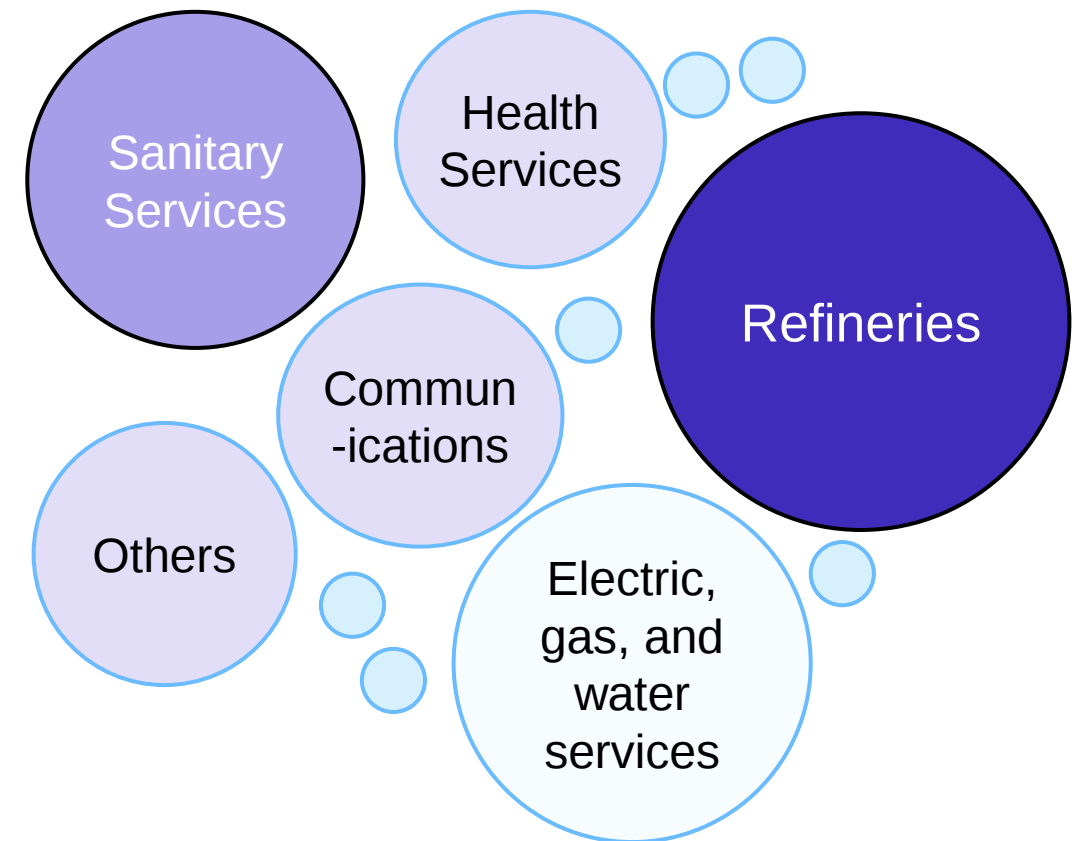
Thousands of facilities currently report their air toxic emissions to the Air District

- Estimated 350 facilities will be reviewed¹
- Many types of facilities

Types of sources at these facilities:

- Diesel-fueled internal combustion engines
- Combustion sources
- Waste water treatment
- Evaporative and fugitive emissions

Types of Facilities with Highest Prioritization Scores



¹The list of facilities subject to Rule 11-18 is updated annually. The most up-to-date list can be accessed at the following link:

<https://www.baaqmd.gov/community-health/facility-risk-reduction-program/facility-risk-reduction-list>

Major Steps in the Rule 11-18 Process

Goal: Reduce the risk from toxic air emissions from existing facilities in the Bay Area.



Health Risk Assessments (HRAs): **Identify facilities** that pose elevated health risks due to toxic air contaminant emissions by evaluating if HRA results exceed Risk Action Levels.



Risk Reduction Plan (RRPs): If HRA results exceed Risk Actions Levels, require those facilities to **reduce health risks**.

Requirements to reduce health risks:

Develop and implement a **Risk Reduction Plan** to (a) reduce facility health risks below Risk Action Levels, or (b) install **best available retrofit controls** on each significant source of health risk

Feedback on Rule 11-18 Driving Amendments

Major concern:

Delays in Rule 11-18 implementation and risk reduction progress

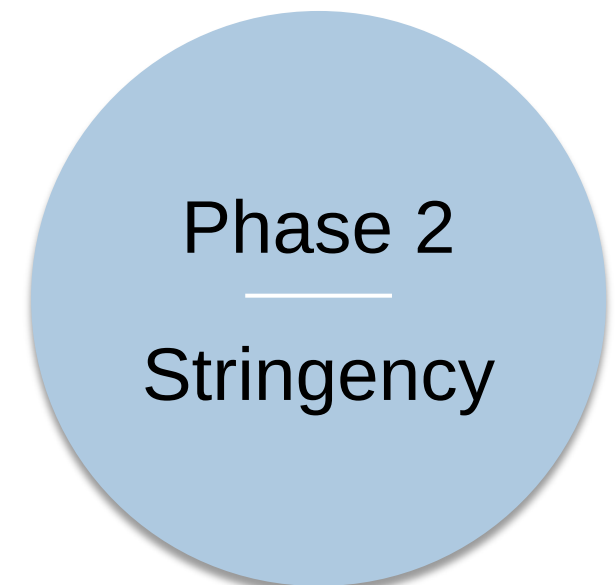
Raised at:

- Air District Stationary Source Committee
- Assembly Bill (AB) 617 Community Steering Committees
- Richmond-North Richmond-San Pablo Path to Clean Air (PTCA)
Community Emissions Reduction Plan (CERP): Fuel Refining Strategy 4.1

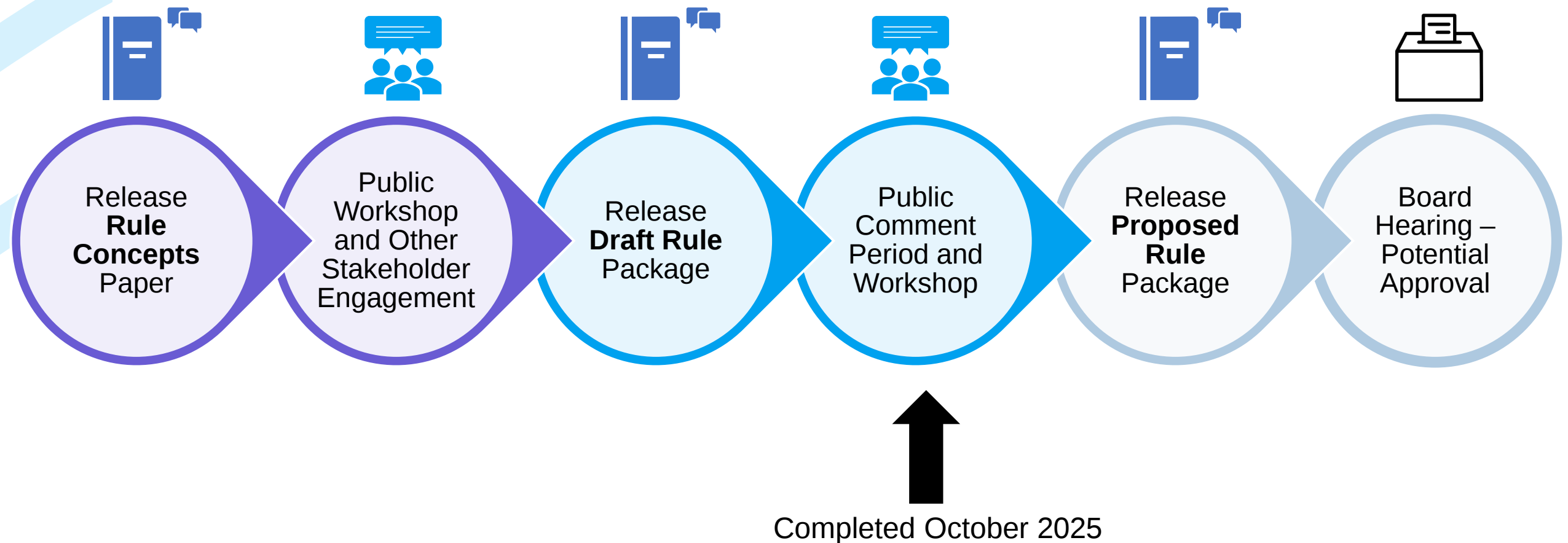
Air District Actions

- Working on and enacting process improvements
- Website additions and updates for improved transparency
- Significant community outreach efforts

- Initiated 2-phased **rule amendment** process:



Rule Development Progress



Draft Amendments

- Rule Language
- Implementation Procedures



Draft Amendments Overview

Draft Amendments to Rule 11-18

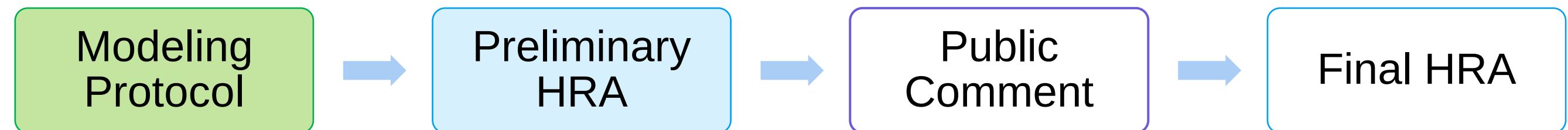
- Health Risk Assessments
- Risk Reduction Plans

Draft Amendments to Implementation Procedures

Draft Rule Amendments: *Health Risk Assessments*



- Require facilities to prepare preliminary HRAs using Air District-approved modeling protocols
 - Standardized methods
 - Customized with site-specific information
- Retain and exercise Air District authority to review, correct, and approve HRA inputs and results
- Establish specific deadlines for facilities to respond to Air District comments and corrections



Draft Rule Amendments: *Health Risk Assessments* (cont.)



- Add language outlining what happens when new emissions data (e.g. source test data) affect the facility's HRA results and risk action level status
- Facilities can recalculate and request reconsideration of their Prioritization Score
- Formalize the current practice of holding a public comment period on the preliminary HRA concurrent with the existing 90-day comment period for the facility

Draft Rule Amendments: *Health Risk Assessments* (cont.)



These draft amendments would enhance efficiency by:

- Saving considerable Air District time inputting modeling parameters:
 - Source locations
 - Stack heights
 - Meteorological data
 - Terrain data
- Leveraging facility-specific knowledge and resources instead of back and forth between Air District and facility
- Enabling more preliminary HRAs to move forward simultaneously
- Allowing for emissions inventory review with a preliminary HRA available: this allows focused review on the most impactful line items rather than having detailed discussions about each item before we know its impacts

Draft Rule Amendments: *Risk Reduction Plans*

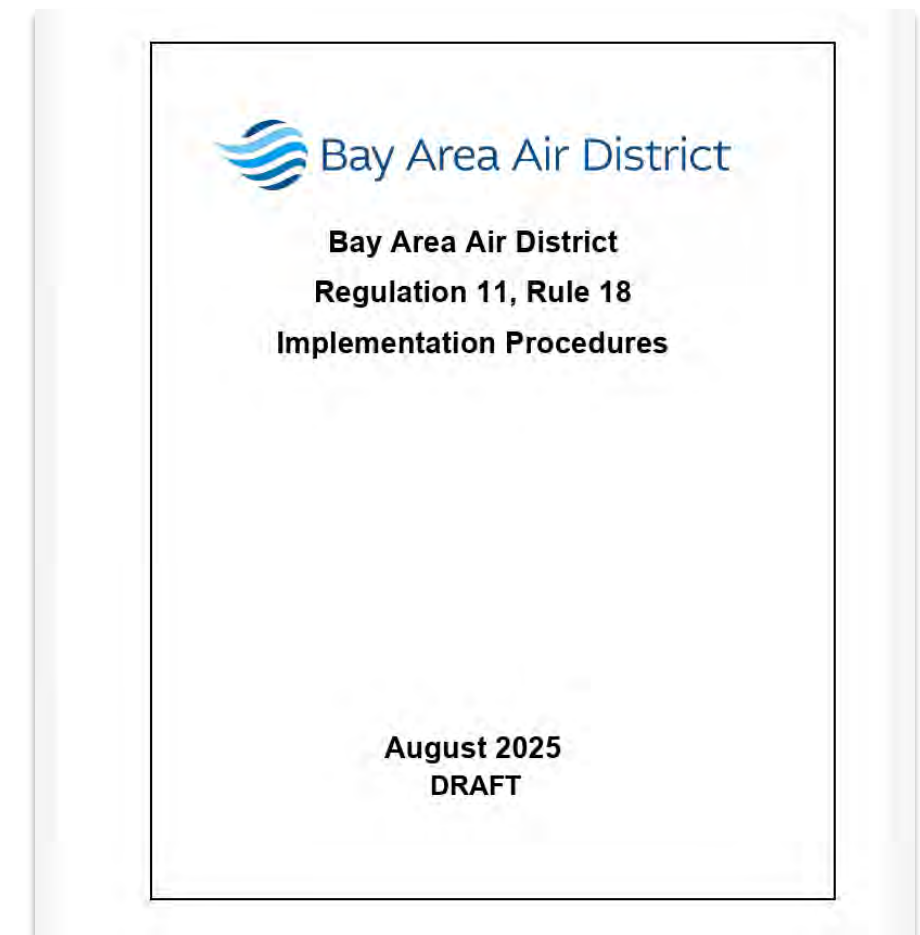


- Revise the terminology and timeline associated with the Air District's review of draft RRPs from a 20-day “completeness review” to a 60-day “review” prior to public comment; and
- Clarify the circumstances under which extensions to the implementation of an RRP or risk reduction measure may be granted

Overview of Implementation Procedures



- The Implementation Procedures are a set of procedural guidelines developed to support consistent and transparent application of Rule 11-18
- The Implementation Procedures were most recently revised in 2024 after a public comment period



Draft Implementation Procedures: *General*



- Draft amendments made to reflect the revised requirements and procedures described in the draft amendments to Rule 11-18 (e.g. steps for facilities conducting preliminary HRAs)
- Administrative corrections and clarifications

Draft Implementation Procedures: *Dispute Resolution Panel*



- In the 2017 Board Resolution approving Rule 11-18 and a 2019 settlement agreement with Western States Petroleum Association (WSPA), the Air District included provisions to convene a panel of technical experts
- This Dispute Resolution Panel (DRP) is intended to advise the Air District regarding technical disputes that may arise regarding implementation of Rule 11-18 at refineries

Draft Implementation Procedures: *Dispute Resolution Panel (cont.)*



- **Eligibility:** Limit to facilities defined as refineries.
- **Submission Content:** Requests must identify specific disagreements with an Air District determination, propose specific remedies, and include supporting materials.
- **Limits on Requests:** One request per plan (HRA/RRP), each covering up to three distinct issues (each with a specific disagreement and proposed remedy).

Draft Implementation Procedures: *Dispute Resolution Panel (cont.)*



- **Scope of Disputes:**
 - After the Air District responds to comments on preliminary HRAs, disputes are limited to inventory and methodology issues
 - After the Air District responds to comments on draft RRP, disputes are limited to technical feasibility, economic burden, determinations on best available retrofit controls for toxics, or updated inventories
- **Timeliness and Prior Participation:** Only issues, remedies, or materials raised during the public comment period may be included, unless they address post-comment period changes made to the HRA or RRP



Public Comments and Next Steps



Public Engagement: Overview

Virtual **Public Workshop** held on October 2

- 50 attendees
- Majority industry representatives

7 written comments also received

- 2 from community members
- 5 from industry or consulting

Comments and workshop recording posted on the Air District **website**



Image Source: Microsoft 365

Public Comments: Community

- Both from AB 617 Richmond–North Richmond–San Pablo Community Steering Committee
 - **General support** for the draft amendments, and for a more stringent Rule 11-18.
 - Concerns that smaller facilities may need additional technical help, not just oversight from the Air District.

Public Comments: Industry

Timeline and process flexibility

- Nearly all industry commenters object to 14-day turnaround times for revisions; request 30–60 days minimum.

Inventory and modeling issues

- Concerns with finalizing emissions inventories (the key input into the HRAs) after preliminary HRAs are submitted.

Workload planning

- Clarification on Air District response timelines to better facilitate their planning of response resources
- Request accommodation of staffing and budget constraints when setting deadlines

Transparency and consistency

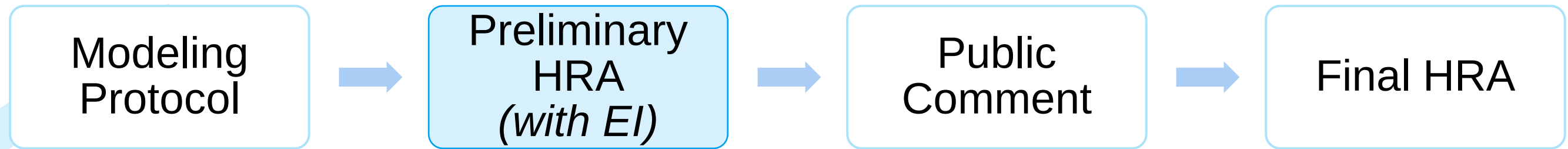
- Desire for clearer, documented Air District decision-making.

Dispute Resolution Panel

- Opposed constraints on the scope of the Dispute Resolution Panel.
- Request that DRP be codified in Rule 11-18.

Includes WSPA, California Council for Environmental and Economic Balance (CCEEB), Air Liquide, Bay Area Clean Water Agencies (BACWA), and Trinity Consultants

Change of Emissions Inventory (EI) Review Timing



- **Problem:** Ideal to approve EI first, but in practice this has proven inefficient due to lack of prioritization
- **Solution:** Prioritize the most important emissions as indicated by the Preliminary HRA

Next Steps

- Review and consider public feedback from draft rule package
- Emissions and costs impacts
- Socioeconomic impact analysis
- Environmental analysis under the California Environmental Quality Act

Questions & Discussion

For more information:

Air District Rule Development | ruleddevelopment@baaqmd.gov