BAY AREA AIR QUALITY MANAGEMENT DISTRICT

AGENDA: 3

Update on the AB 617-Required Best Available Retrofit Control Technology (BARCT) Review

David Joe
Senior Engineer- Rule Development
Stationary Source Committee
May 21, 2018

Outline

- Overview of AB 617 Requirements
- Expedited BARCT Implementation Schedule
- Sources Analyzed for Best Available Control / Retrofit
- Best Available Retrofit Control Technology (BARCT) Determinations

Outline (Cont.)

- Rule Development Project Priorities
- Priority Rule Development Projects
- Other Potential Rule Development Projects
- Project Plan

Overview of AB 617 Requirements

- ARB will:
  - Establish a BACT and BARCT clearinghouse for criteria and toxic pollutants
  - Develop model monitoring plans and select high priority communities by 9/30/2018
  - Develop a statewide strategy for emission reductions in highly impacted communities and select high priority communities by 9/30/2018

- Air Districts will:
  - **Adopt Expedited Schedule for Implementation of BARCT by End of 2018**
  - Implement Community Air Monitoring
  - Develop Community Emission Reduction Plans

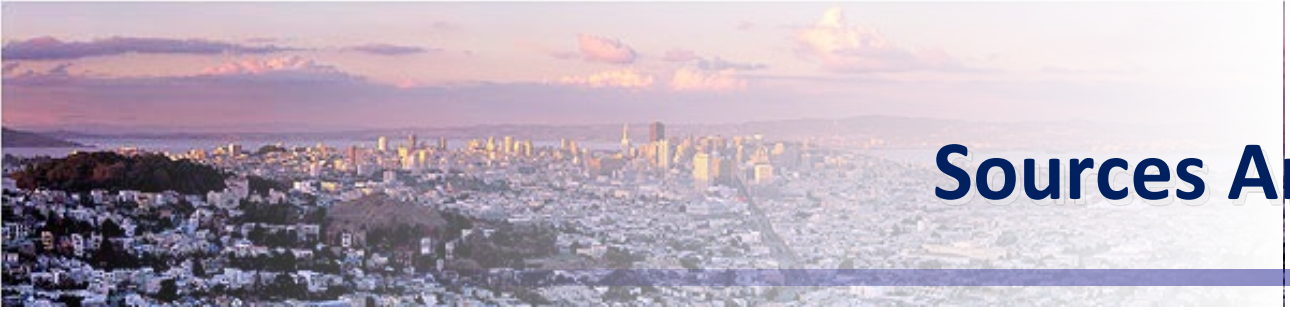
BARCT Schedule Requirements

- AB 617 requires adoption of expedited schedule by 1/1/2019
- Sources at facilities subject to Cap-and-Trade must implement BARCT by earliest feasible date, no later than 12/31/2023
- Best Available Retrofit Control Technology
  - An emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source
- Does not apply to sources that have implemented BARCT since 2007
- Priority for sources that have not modified emissions limits for longest period of time

Expedited BARCT Implementation Schedule

Approach

- Focus on non-attainment pollutants:
  - Ozone (precursors NOx and Reactive Organic Gases [ROG])
  - PM_{10} / $PM_{2.5}$ and SO_2 as a PM component
- 80 facilities subject to Cap-and-Trade
  - 3,246 sources in 61 source categories
- Screened out sources with emissions less than 10 pounds per day
- Eliminated sources with BARCT already achieved
  - i.e. regulations updated within the last 10 years



Sources Analyzed for BACT

- NOx: 15 source categories, 99 sources
- ROG: 11 source categories, 342 sources (one-third tanks)
- PM: 27 source categories, 174 sources
- SO_2: 23 source categories, 127 sources

Total: 742 sources

BARCT Determination Process

- Reviewed achievable emission limits and potential controls
  - Recent EPA, ARB, and other air districts determinations of BACT, Reasonably Available Control Technology (RACT), and Lowest Achievable Emission Rate (LAER)

- Reviewed current source emissions, current controls and performance, and existing emission limits

BARCT Determination Process (Cont.)

- Estimate potential emission reductions
- Estimate capital and operating costs for retrofit controls
- Cost effectiveness: annualized costs / tons per year emission reductions
- If cost effectiveness is within reasonable bounds, then control method equals BARCT
  - Smaller facilities with low emissions may not be cost effective – economy of scale

Potential Rule Development Project Priorities

- Localized clean air and public health benefits
- Substantial emissions reductions, particularly PM emissions reductions reducing localized health impacts
- Focus on older sources not recently addressed
- Focus on cost-effective emission reduction measures

Priority Rule Development Projects

	Rule Development Projects	PM	NOx	ROG	SO_2
1	Hydrocarbon Storage Tanks			X	
2	Refinery Wastewater Treating			X	
3	Cement Manufacturing	X			X
4	Refinery Fluid Catalytic Crackers and CO Boilers	X			X
5	Refinery Equipment Leaks / Heavy Liquids			X	
6	Internal Combustion (Reciprocating) Engines			X	
7	Fiberglass Manufacturing	X	X		
8	Landfills			X	
9	Carbon Calcining		X		

Other Potential Rule Development Projects

- 15 additional potential rule development projects
  - e.g. catalyst mfg., jet engine testing, sulfur plants, wallboard mfg.
  - Will consider these sources as part of local Community Emission Reduction Plans

Project Plan

- Publish Concept Paper and Scope of 9 Rule Development Projects
- Begin Draft Environmental Impact Report
- Meet with stakeholders
- Share BARCT plan in local community meetings
- Refine BARCT plan: publish workshop report and Rule Development Project concept papers
- Conduct workshops in July/August

Project Plan - 2

- Finalize Expedited BARCT Implementation Schedule
  - Most projects take about 12 months
  - Complete all projects by end of 2020
- Finalize staff report, EIR, Socioeconomic analyses
- Public Hearing for Board of Directors approval in December, 2018

Summary

- On-track to complete Expedited BARCT Implementation Schedule by 12/31
- 9 Rule Development Projects likely
- Consider remaining Rule Development Projects during development of local Community Emission Reduction Plans
- Questions?

AGENDA: 4

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

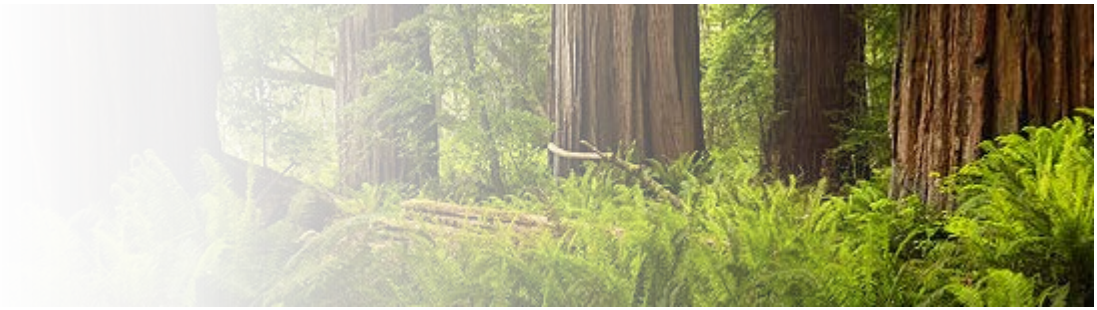
Update on the Air District's Basin-Wide Methane Strategy

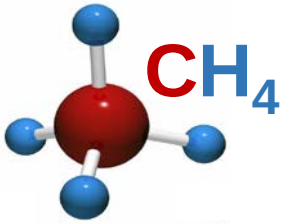
May 21, 2018

Idania Zamora, PhD, Senior Engineer
Office of Rules and Strategic Policy

Outline

- Methane Strategy Overview
- Update on key efforts
  - Methane Emissions Inventory
  - Organic Recovery Strategy
  - Regulatory Efforts





Why Focus on Methane?

A High Impact Strategy to Slow the Rate of Climate Change

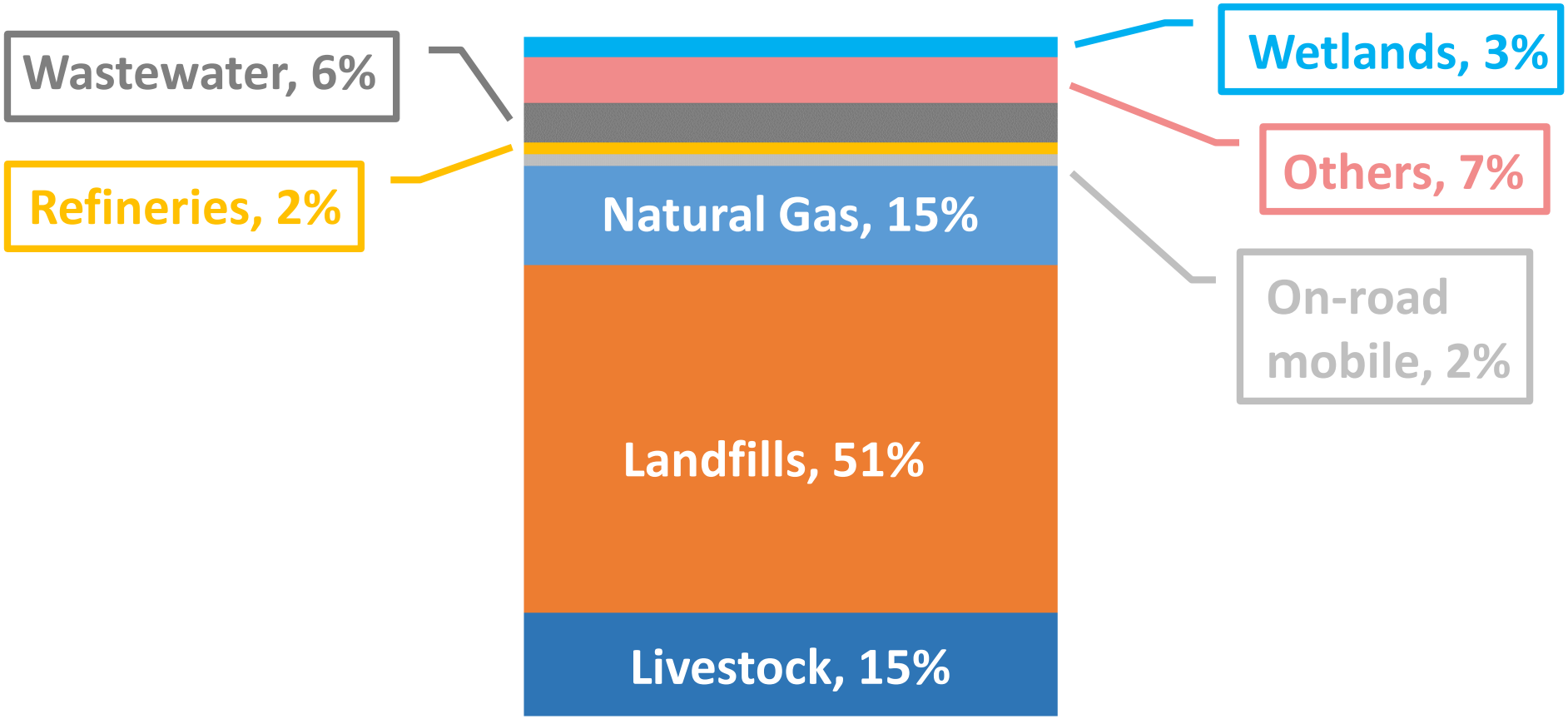
- Methane is 34 times more potent than CO_2
- Methane is removed faster from the atmosphere (12 years vs. a range of 20 – 200 years for CO_2)

- Public health and further climate benefits from reduction of climate, criteria and toxic co-pollutants
- Economic benefits from recovered energy and products

- Air Districts have critical role in meeting State's methane emissions reduction goal of 40% by 2030 (SB 1383)
- Air District has full suite of actions within its authority

Methane in the Bay Area

Current Inventory



Estimated 2015 Emissions =

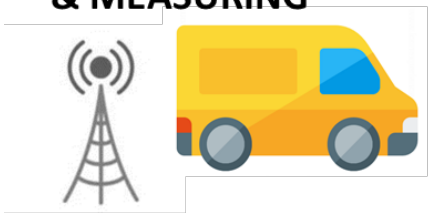
10 Million MT CO_2e (20-yr GWP)

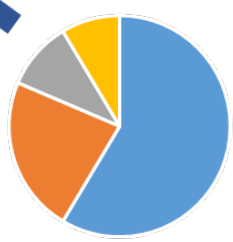
Basin-Wide Methane Strategy

Coordination Framework

AIR DISTRICT RESEARCH PRIORITIES

GHG MONITORING & MEASURING





METHANE EMISSIONS INVENTORY

ENGINEERING

- Permits

ENFORCEMENT

- Compliance and Enforcement

RULE DEVELOPMENT

- Rules and Regulations
- Best practices

PLANNING & CLIMATE

- Model Ordinances
- Climate Action Plans
- External Funding
- CEQA Guidance

STRATEGIC INCENTIVE & TIO

- Grants and Incentives
- Disruptive Technologies

Outline

- Methane Strategy Overview
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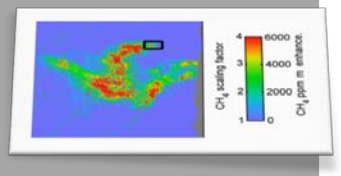
Methane Emissions Inventory

Identifying Underestimated CH_4 Sources

TIERED APPROACH

Aircraft-based flux estimates with in situ measurements

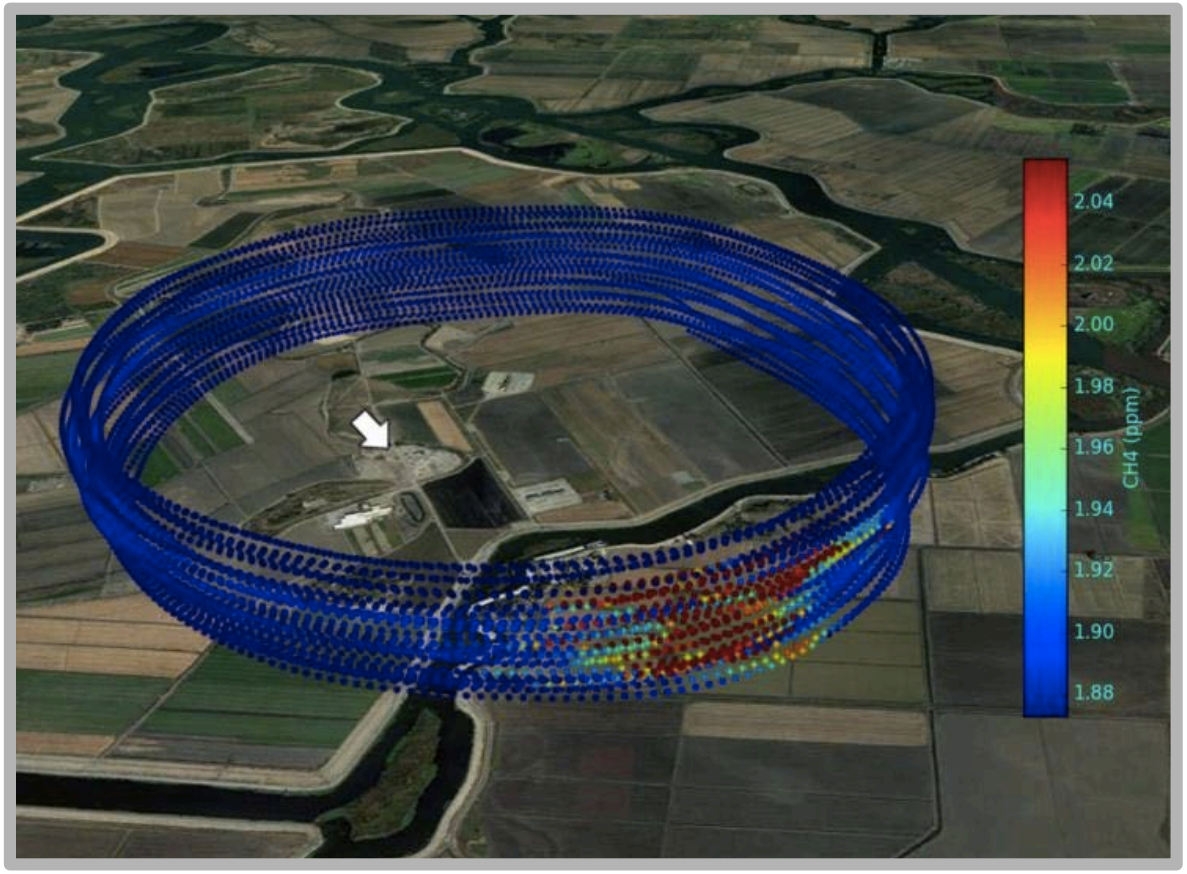
Aircraft surveys with visible/infrared imaging spectrometer (AVIRIS-NG)



On-site leak detection (mobile van) and flux evaluation (infrared cameras)

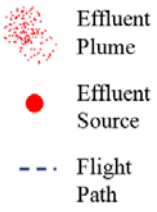
Tier 1: Estimating Facility-wide Emissions

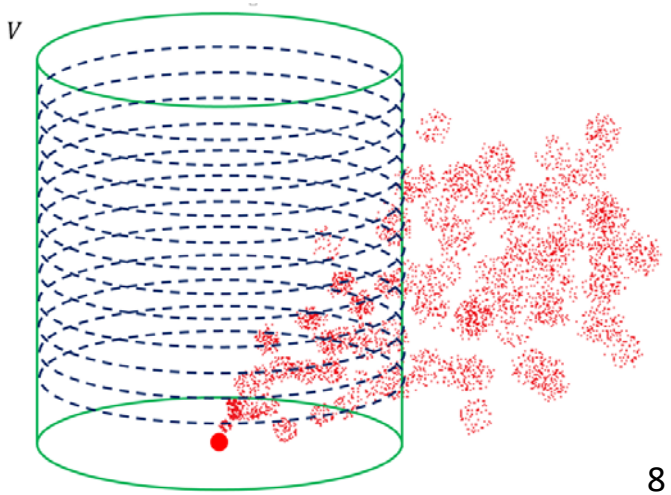
Curtain flights



Methane emissions from facility are carried downwind while being mixed upward by turbulent air motion

All methane emissions pass through the curtain, eventually!





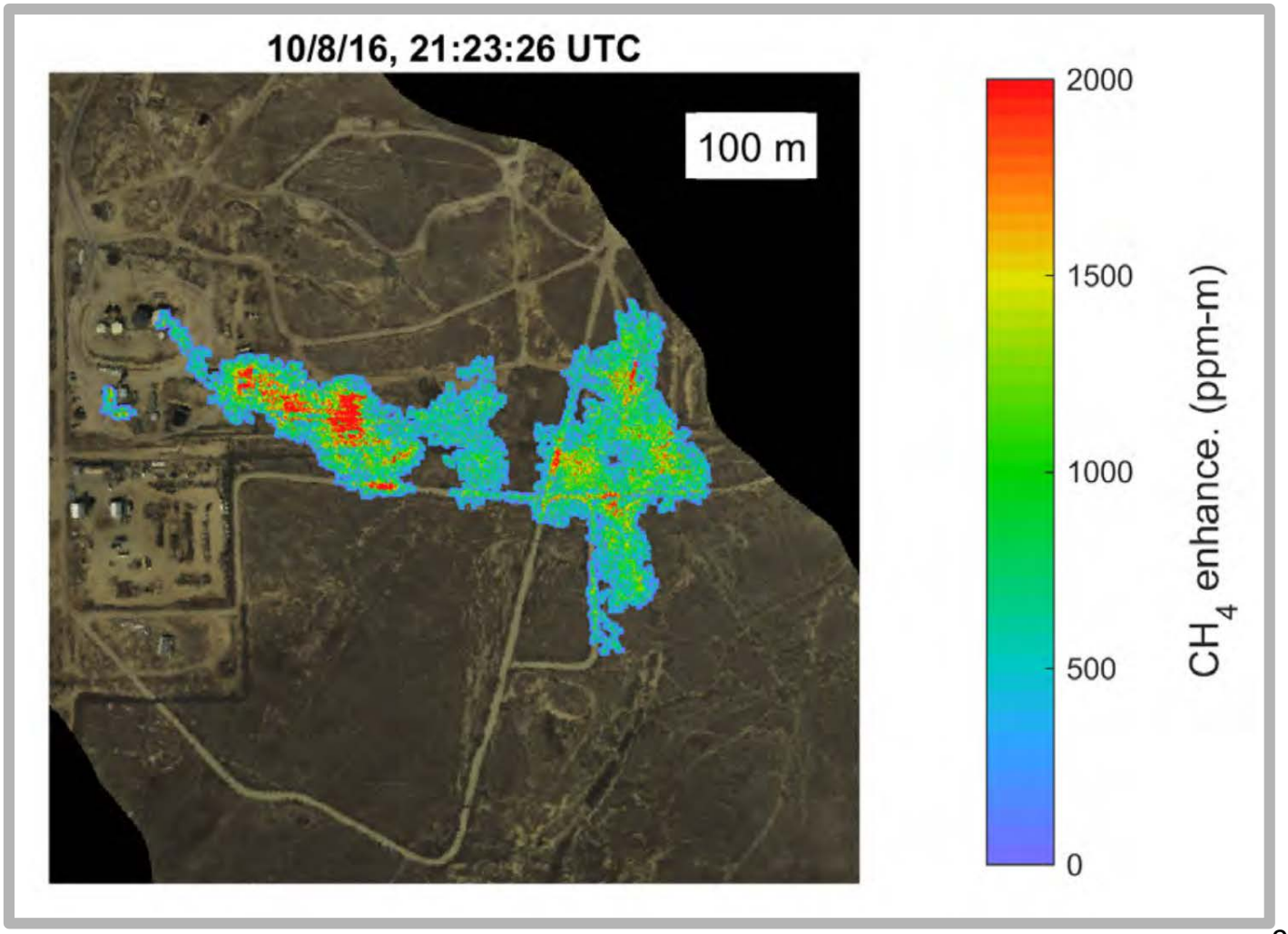
Conley et al., 2017

Tier 2: Locating Emissions Inside Facilities

NASA JPL Flights with AVIRIS-NG

Typical methane plume

Picture: Natural gas storage tank at Kern Front oil field



Duren et al., 2017

Tier 3: Measuring Source Emissions

Onsite Leak Detection and Quantification

Identify emission 'hotspots', perform source attribution, and quantify emissions from processes or equipment

- *FLIR Camera*
  - Screening
- *GHG Research Van*
  - Fast ambient measurements of CO_2, CH_4, & N_2O
  - Source apportionment using chemical tracers
- *Source Testing / other*
  - Quantifying emissions

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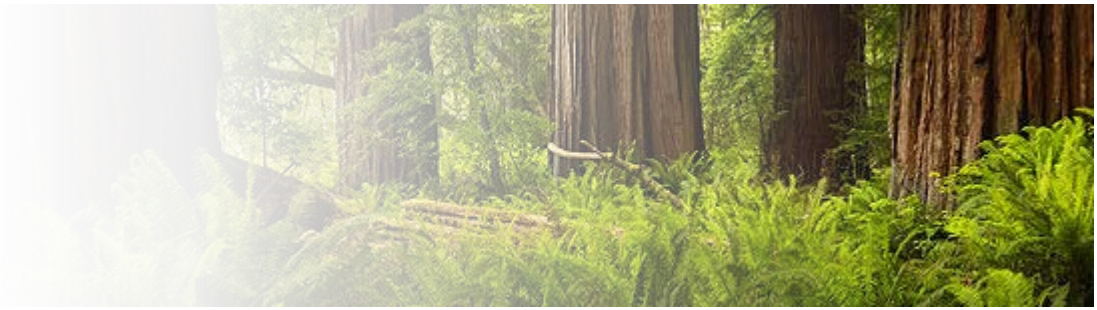
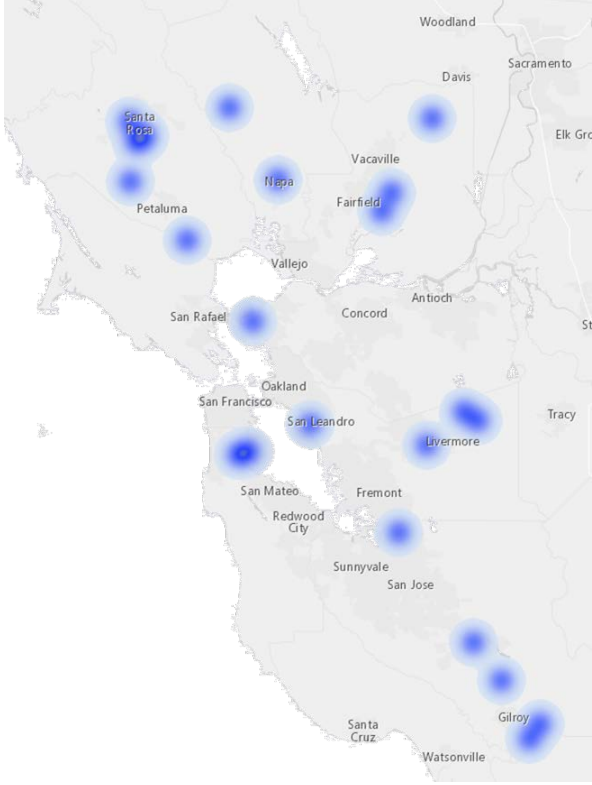


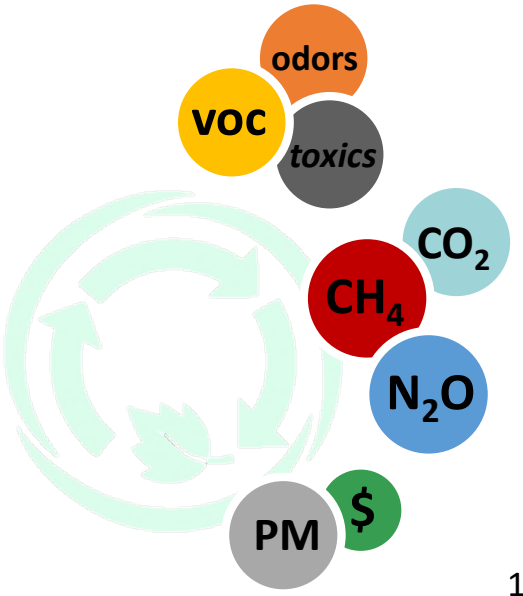
Basin-Wide Methane Strategy

Organics Recovery Strategy

- Support State goal of 75% diversion by 2025
  - 15+ new large facilities needed in Bay Area
- Prevent criteria, toxic and climate pollutant emissions, and odors
- Upcoming Regional Convening



COORDINATE ACROSS NEW SUITE OF RULES, PERMITTING, AND ENFORCEMENT TO ENABLE LOW-CARBON ORGANICS RECOVERY LIFECYCLE



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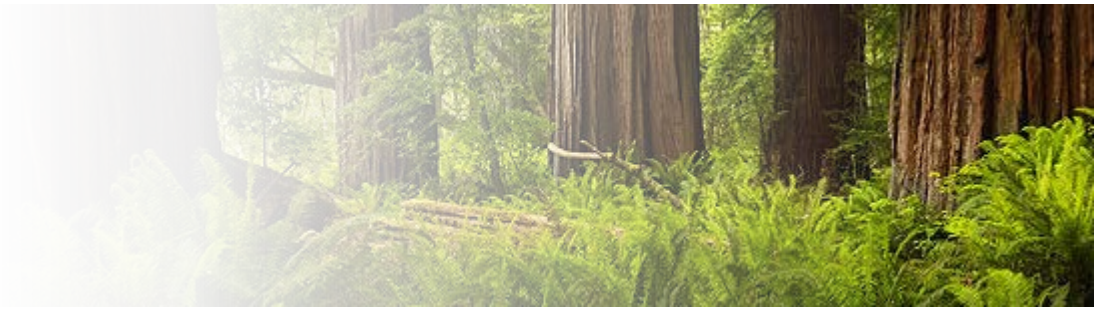


Basin-Wide Methane Strategy
Regulatory Efforts

METHANE RULE DEVELOPMENT MAP

OIL & GAS

Natural Gas Processing & Distribution [SB 1371]

Crude Oil & Natural Gas Production [Reg. 8-37]

Refineries

Significant Methane Releases [Reg. 13-1]

BIOLOGICAL

Composting

Anaerobic Digestion

Landfills [Reg. 8-34]

Wastewater

Basin-Wide Methane Strategy

2018 Methane Rules

REG 13-1 SIGNIFICANT METHANE RELEASES

PURPOSE *Allow the Air District to compel facilities to fix major leaks; will act as **backstop** while source-specific rules are adopted*

CONCEPT *Prohibits large methane releases throughout District*

SCHEDULE

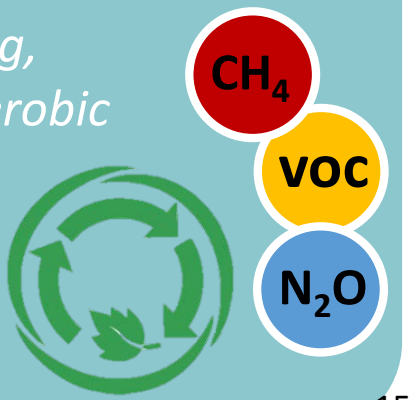
WORKSHOPS 2018 → **TO BOARD** 2018

NEW RULES COMPOSTING & ORGANIC RECOVERY OPERATIONS

CONCEPT *Adopt a suite of rules that address emissions from storing, transferring and processing organic materials at composting, anaerobic digestion and other waste-related facilities such as landfills.*

SCHEDULE *(first rule)*

WORKSHOPS 2018 → **TO BOARD** 2018



Basin-Wide Methane Strategy
2018 Methane Rules (cont'd)

SB 1371 NATURAL GAS LEAK ABATEMENT PROGRAM

PURPOSE *Prevent methane leaks from the natural gas distribution system*

CH_4

WORK WITH CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC)
during Phase II to achieve quantifiable methane emissions reductions

SCHEDULE

- **PHASE I** Completed 2017
- **PHASE II** 2018 – 2020

REG 8-37 CRUDE OIL AND NATURAL GAS PRODUCTION

PURPOSE *Address emissions from smaller oil and gas production facilities exempted by Air Resource Board's Oil & Gas Rule*

CH_4 VOC TOXICS

CONCEPT *Consider a lower leak threshold to achieve cost-effective methane and VOC emissions reductions and protect public health*

SCHEDULE

- **OIL & GAS STUDY** JAN-MAR 2018
- **WORKSHOPS** 2018
- **TO BOARD** 2018

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

Thank you!

AGENDA: 5

IMPLEMENTATION UPDATE REGULATION 11, RULE 18 REDUCTION OF RISK FROM AIR TOXIC EMISSIONS AT EXISTING FACILITIES

Stationary Source Committee Meeting
May 21, 2018

Carol Allen
Assistant Manager, Engineering Div.

OUTLINE

- Rule 11-18 Overview
- Implementation Workgroup
- Technical Dispute Resolution Committee
- Summary of Implementation Process
- Phase I Facilities and Schedule
- Next Steps

AIR TOXICS CONTROL PROGRAMS

REGULATION 11, RULE 18 OVERVIEW

- Adopted November 15, 2017
- The most comprehensive and health protective regulation in the Nation to address community health risks from toxic air contaminants emitted by stationary sources
- Utilizes air toxics modeling and incorporates latest science from the Office of Environmental Health Hazard Assessment (OEHHA) to establish health risks to nearby communities
- Requires facilities to either reduce their health risks below stringent risk action levels or implement best available retrofit control technologies on all significant risk sources

REGULATION 11, RULE 18 - KEY HEALTH RISK MEASURES

- **Cancer Risk** – The theoretical probability of contracting cancer during one's lifetime as a result of exposure to specific concentrations of carcinogens. Presented as the number of chances in a million of contracting cancer

- **Chronic Hazard Index -** The potential for non-cancer health impacts resulting from exposure to toxic substances usually lasting from one year to a lifetime

- **Acute Hazard Index -** The potential for non-cancer health impacts resulting from a one-hour exposure to toxic substances

REGULATION 11, RULE 18 - KEY REQUIREMENTS

Facilities above a risk action level must

- Develop a risk reduction plan for Air District approval
- Execute plan according to plan schedule

Risk reduction measures include

- Installation of Best Available Retrofit Control Technologies for Toxics (TBARCT)
- Modification of operating hours and activity levels
- Modification of emissions point characteristics

RULE 11-18 IMPLEMENTATION WORKGROUP

Purpose: To ensure transparency during the implementation of Rule 11-18

Workgroup Role:

- Guide and Improve the Implementation Process
- Raise Concerns During Implementation
- Identify Educational or Informational Needs
- Provide Industry and Community Perspectives
- Facilitate Communication with Affected Communities

RULE 11-18 TECHNICAL DISPUTE RESOLUTION COMMITTEE

Purpose: Resolve disputes over highly technical issues

Committee will Include 3 Members:

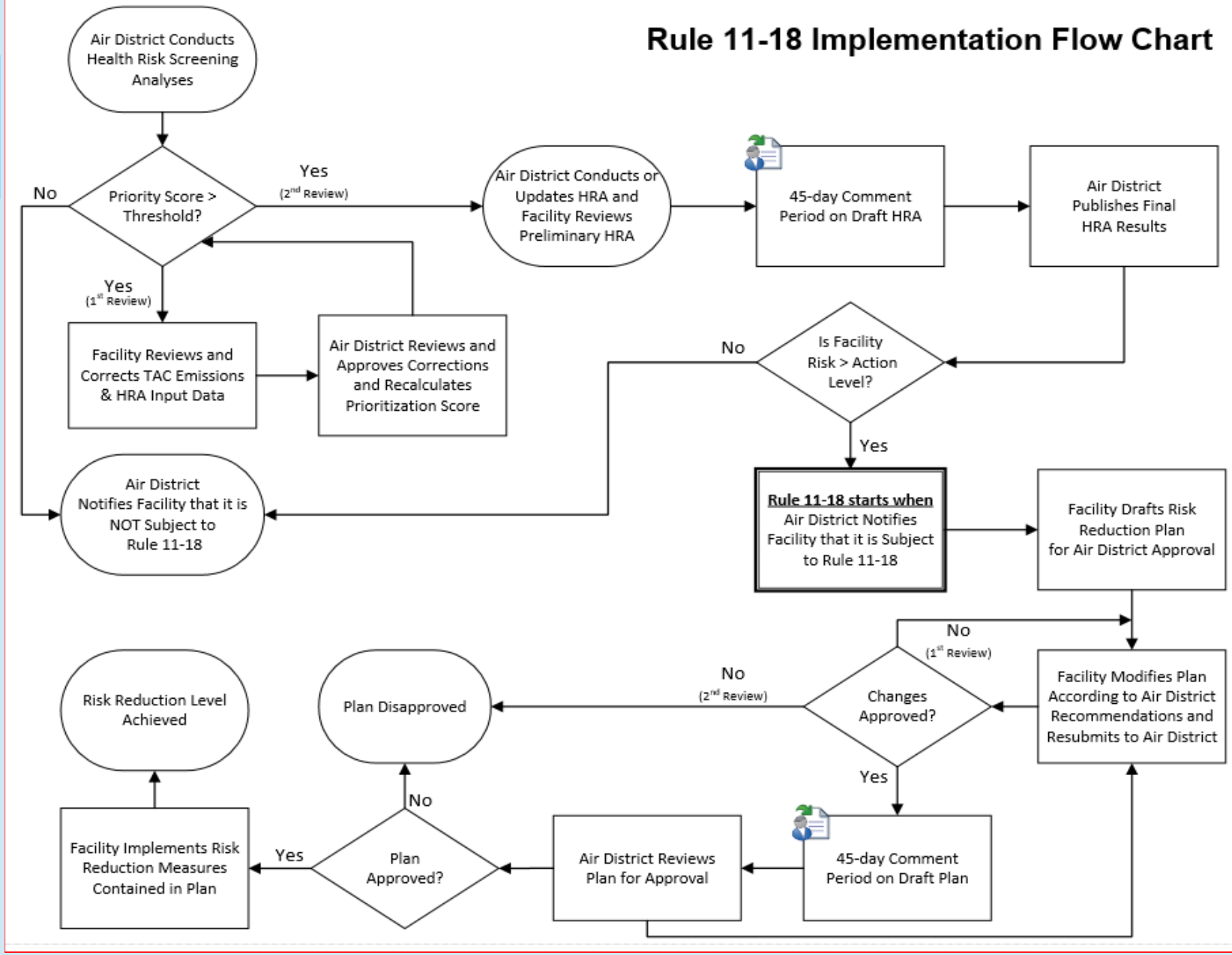
- Experts in air toxic emissions, emission controls, or health risk assessment
- Retirees or staff from other districts or related organization
- No current Air District staff members

Review and analyze technical positions from both parties

Provide Committee conclusions and remedies to dispute

RULE 11-18 IMPLEMENTATION - MAJOR STEPS

Rule 11-18 Implementation Flow Chart



DETERMINE RULE 11-18 APPLICABILITY

- **Facilities with HRA results above a Risk Action Level are subject to Regulation 11, Rule 18 and require a Risk Reduction Plan**

Risk Action Levels	2018	2020
Cancer Risk	25 per million	10 per million
Non-Cancer Hazard Index (Chronic HI or Acute HI)	2.5	1.0

APPROVE AND IMPLEMENT RISK REDUCTION PLANS

- Facility submits a draft Risk Reduction Plan (RRP) within 180 days of notification from Air District
- Air District reviews and either approves or disapproves RRP
  - If Air District finds RRP deficiencies, Facility has 45 days to correct plan
- Public comment on draft RRP (45 days)
- Air District publishes final RRP
- 5 year implementation timeline for risk reduction measures
  - 10 years with demonstration of an unreasonable economic burden or to address technical feasibility

SCHEDULE FOR PHASE I SITES

Implementation Steps:	2018				2019				2020				2021-2025
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Build Additional Infrastructure													
Review, Correct, Approve Emissions and Input Data													
Conduct and Review HRAs													
Notify Sites Subject to Rule 11-18													
Review and Approve Risk Reduction Plans													
Implement Risk Reduction Measures: Phase I (43 Sites)													

Key:

- Air District Infrastructure Activities
- Phase I Sites - Prior to Rule 11-18 Applicability
- Phase I Sites - After Rule 11-18 Becomes Applicable

NEXT STEPS

- **Updating Web Site:**
  - Reorganizing Locations
  - Updating Information
  - Consolidating Documents
  - Creating a Searchable Facility Status Report
- **Organizing the Technical Dispute Resolution Committee**
- **Reviewing Emissions Data Corrections from Facilities**
- **Preparing General Air Dispersion Modeling Protocol**
- **Conducting First Health Risk Assessments**