

Proposed Rule 364

Refinery Fenceline & Community Air Monitoring

Community Advisory Council Meeting

Santa Barbara County Air Pollution Control District

Timothy Mitro, Air Quality Engineer
Joel Cordes, Principal Monitoring Specialist

February 26, 2020



air pollution control district
SANTA BARBARA COUNTY

Presentation Outline

- Quick review of AB 1647 materials from January meeting
- Additional information in response to CAC questions:
 - 1) Open-path Monitoring Installations
 - 2) Pollutant Identification & Potential Interferences
 - 3) Permits from Other Agencies
 - 4) Community Monitor Siting Criteria
- Rule 364 & Guideline changes since January CAC

Assembly Bill 1647 (2017-2018)

- Concerns about public health and air quality impacts from refineries.
- AB 1647 approved by the Governor of California on October 8, 2017.
 - Applicable to all refineries statewide, with only 1 refinery within Santa Barbara County.
- AB 1647 requires the following:
 - 1) Petroleum refineries install, operate, and maintain a fenceline air monitoring system.
 - 2) Air districts install, operate, and maintain a refinery-related community air monitoring station.
 - 3) Real-time data is made accessible to the public.
 - 4) Refineries are responsible for the costs to implement the requirements.

Proposed Refinery Fenceline Monitoring

- OEHHA Analysis of Refinery Chemical Emissions [March 2019] identified the prime chemicals from refineries statewide.

TABLE 1 - POLLUTANTS FOR FENCELINE AIR MONITORING

<i>Air Pollutants</i>
Benzene
Toluene
Ethylbenzene
Xylene
Sulfur Dioxide (SO ₂)
Hydrogen Sulfide (H ₂ S)

Proposed Refinery Fenceline Monitoring

- **Open-path Monitoring Technologies**
 - Collect measurements over a large area.
 - Fourier Transform Infrared Spectroscopy (FTIR)
 - Ultraviolet Differential Optical Absorption Spectroscopy (UVDOAS)



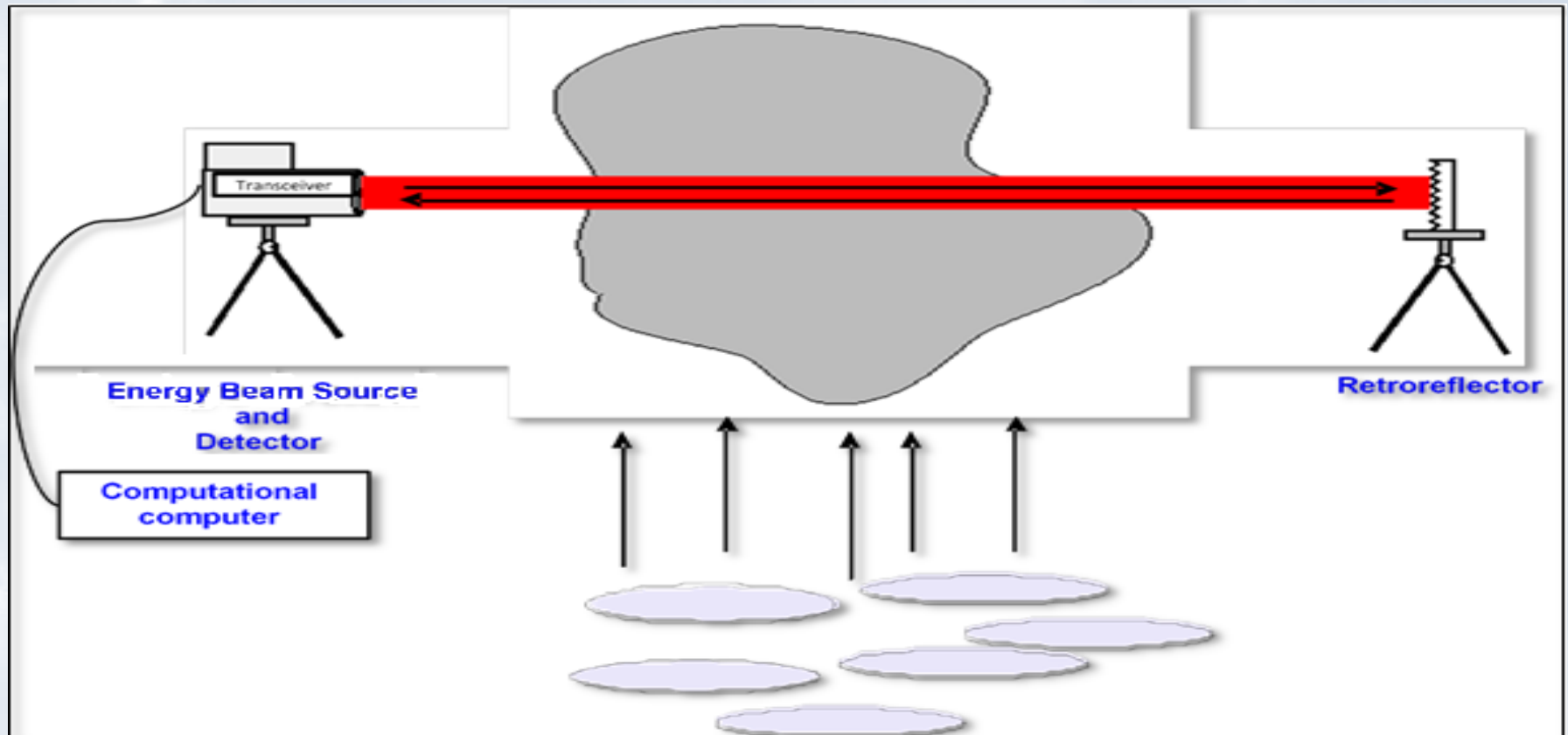
Open-path Monitoring Technology

- Open-path systems commercially available since the 1990s.

Refinery	Year Installed	Benzene Minimum Detection Limit (MDL)
Phillips 66 – Rodeo	1997	≈3 ppb
Chevron – Richmond	2013	≈2 ppb
Remaining 3 Bay Area refineries	2019	<1 ppb

- EPA Optical Remote Sensing Handbook (2011) and Update (2018)
 - Instrument Performance, Strengths & Limitations
 - Vendor lists: Argos Scientific, Opsiis, Spectrex, Cerex, ENVEA, ETG
- Open-path systems comply with Federal benzene monitoring requirements at major refineries.

Open-path Monitoring Technology



Example Set-ups



UVDOAS Analyzer



UVDOAS Retroreflector

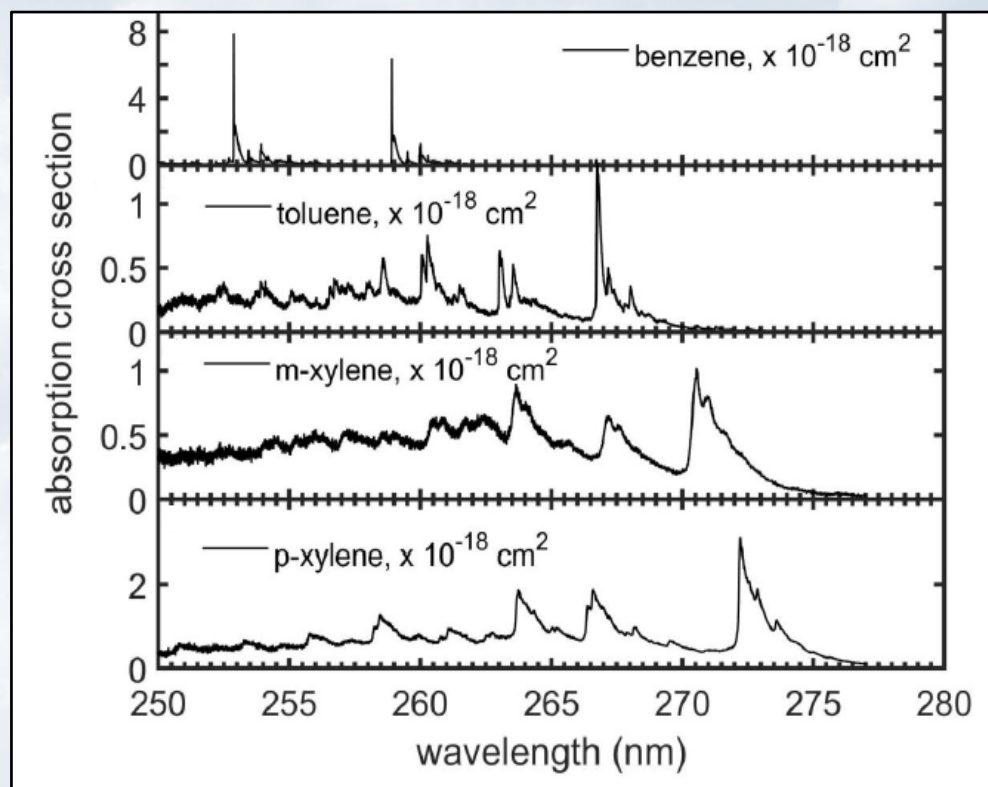
Example Set-ups



- Location adjustments may be necessary
 - Reduce potential interferences
 - Security measures
 - Topography

Pollutant Identification

- Each compound has a unique absorption pattern with peaks at specific wavelengths.
- The concentration of the pollutant is measured by the height of the patterns.
- UVDOAS is calibrated by challenging the system with a gas calibration cell on a regular basis.



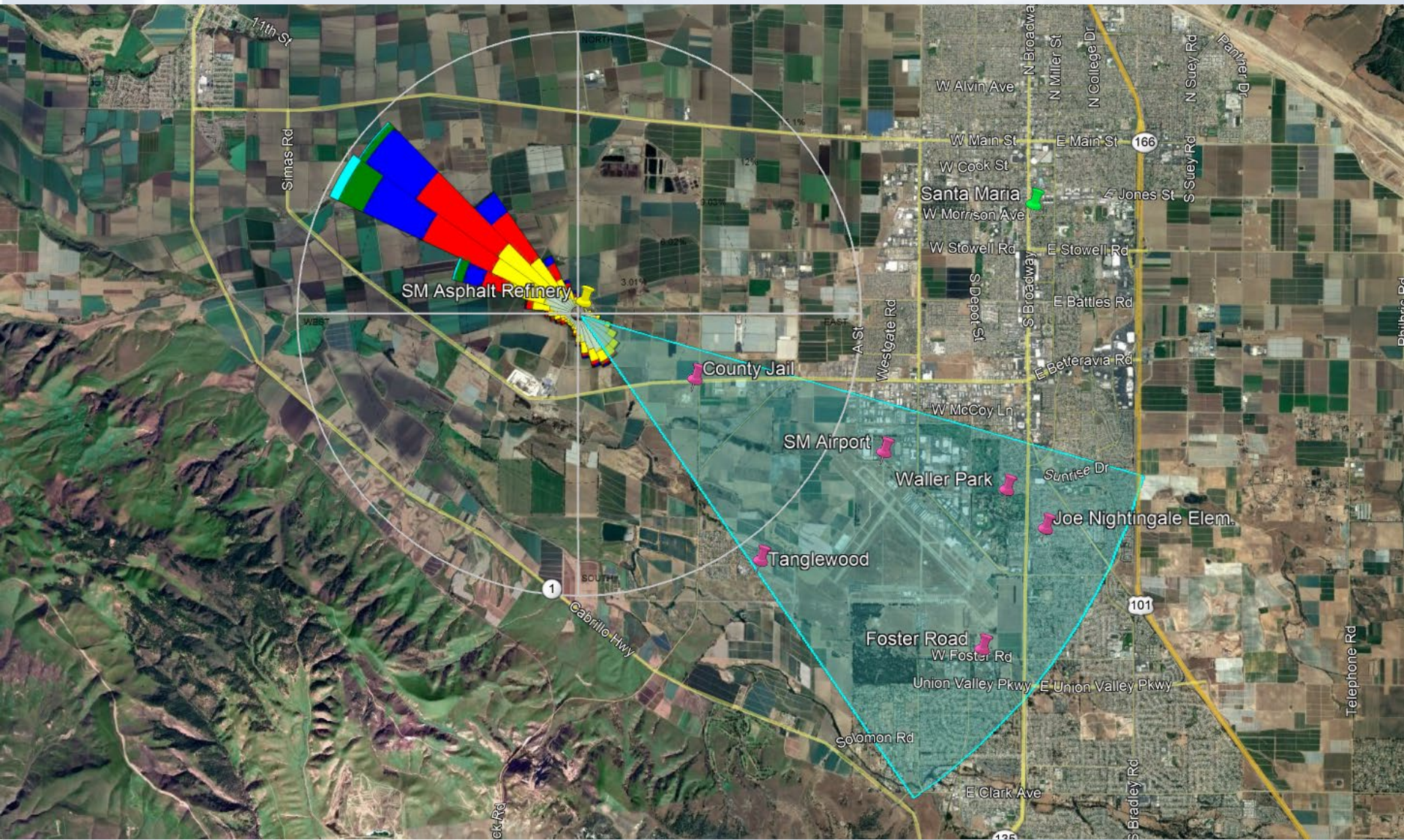
Potential Interferences

- System's analytical software programmed to prevent compound interference.
- Heavy fog and dust may prevent data from being collected.
 - Reduces visibility and scatters light beams.
- Total equipment uptime of 90% or higher added to the monitoring guidelines.



Permits from Other Agencies

- Electrical & Concrete pad building permits
- Land-use permits
- Meteorological Tower: Height of 10 meters
 - Not anticipated to be affected by the Federal Aviation Administration (FAA) requirements.
- Proposed rule change:
 - Increased implementation time from 270 days to 365 days.



Site Selection for Community Air Monitor

- EPA siting criteria contained in 40 CFR Part 58
- Select best location to meet monitoring objectives
- Spatial scale: Micro → Middle → Neighborhood → Urban → Regional
- Evaluation Factors:
 - Local sources
 - Wind patterns
 - Roadways/Traffic
 - Obstructions/Buildings/Trees
 - Accessibility
 - Power
 - Safety/Security
 - Cost



Changes to the Rule 364 Guidelines

- 1) Clarified that the refinery's data website should contain a weblink to the District's monitoring website.
- 2) Added a refinery fenceline data recovery efficiency of 90% or higher.

Proposed Additional Revisions to Rule 364

- 1) Increase the implementation time for the refinery fenceline monitoring system from 270 days to 365 days.
- 2) Delay the timeline for the community air monitoring station fee payment from 3 months to 6 months after rule adoption.
- 3) Change from \$7,500 fee to cost-reimbursement basis for modifications to District-approved monitoring plans.
- 4) Attach the fenceline air monitoring guidelines to the rule.
- 5) Clarify that the community air monitoring system is required as long as the refinery is operational.
- 6) Additional clarification in Section H related to co-location and cost-sharing fees.

Questions?

Contact Info

Timothy Mitro

Air Quality Engineer

805-961-8883

MitroT@sbcapcd.org

Joel Cordes

Principal Monitoring Specialist

805-961-8816

CordesJ@sbcapcd.org



air pollution control district
SANTA BARBARA COUNTY