

# Community-Focused Monitoring in California: Building Bridges between Community Members and Industrial Facilities

**Josette E. Marrero**

Hilary Hafner and Clinton P. MacDonald

Air Sensors International Conference, Pasadena, CA

May 12, 2022

# Outline

- Why community-focused monitoring?
  - Government regulations
  - Role of industrial facilities
- Key components of an effective community monitoring plan
- Benefits for communities and industry alike
- Case studies and lessons learned



# Background – Air Quality in Communities

- There's growing awareness among the general population that air pollution, even at low levels, can impact human health
  - Communities at the fenceline of large industrial sites are worried about potential exposures to routine emissions and periodic upset conditions
  - They are increasingly demanding transparency regarding potential exposure, even as regional concentrations of toxics decrease
- The social causes of today have focused on historically underserved communities (concept of Environmental Justice)
- Governments at the local, state, and federal level are actively considering or passing legislation focused on air monitoring in these overburdened communities

# California State and Regional Regulations



- AB 617 (2017) aimed at evaluating and reducing exposure of criteria pollutants and air toxics in disproportionately impacted communities
  - Includes Community Air Grant Program that provides community-based organizations with assistance to better monitor and improve their local air quality

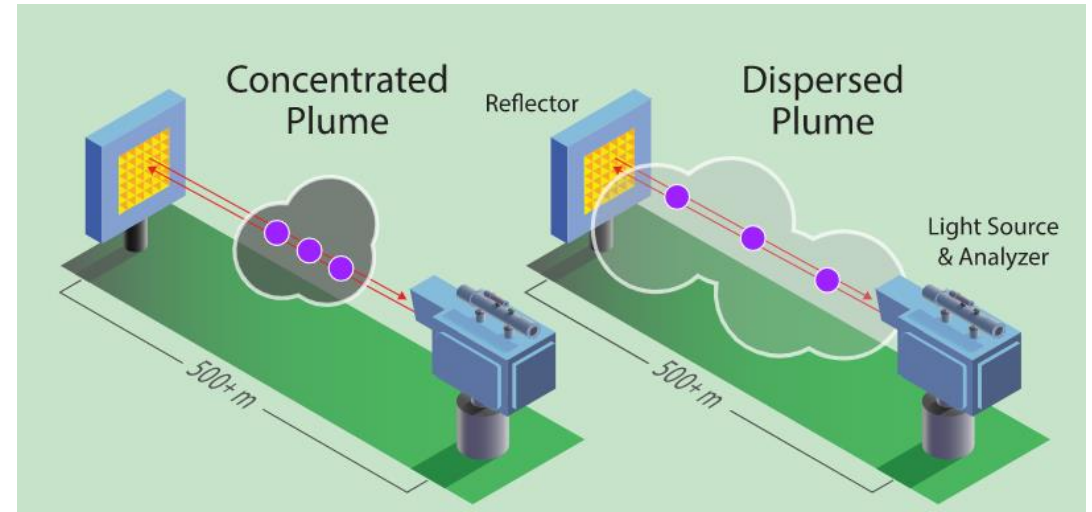
# California State and Regional Regulations

- AB 1647 (2017) requires that petroleum refineries develop and maintain fence-line monitoring systems; measurements are obtained via open-path and point analyzers
- Requires real-time data be provided to the public as quickly as possible in an easily accessible format
- Regional rules include
  - Rule 12-15 – Bay Area
  - Rule 1180 – Los Angeles Basin
  - Rule 4460 – San Joaquin Valley
  - Rule 364 – Santa Barbara County



# California State and Regional Regulations

- South Coast AQMD Rule 1180 expanded regulations by:
  - Increasing the number of pollutants reported to 20
    - VOCs; BTEX; NH<sub>3</sub>, H<sub>2</sub>S, HF, NO<sub>2</sub>, SO<sub>2</sub>, BC
  - Requiring data to be listed with health context (acute 1-hr REL)
  - Real-time public notifications when concentrations exceed health thresholds



# Role of Industry in Community-Focused Monitoring?

- Regulations are the main driver for industrial facilities to establish air monitoring networks
- However, there are benefits to a facility being actively engaged in community-focused monitoring:
  - Improving the quality of the measurements and data
  - Providing transparency
  - Building trust

# Current Approach to Community-Focused Monitoring

- Varied approach depending on available resources. Can include:
  - Use of both regulatory-grade monitors or low-cost sensors
  - Short-term stations or movable trailers
  - Mobile monitoring
- More communities are gravitating toward low-cost sensors, which – when compared to regulatory monitors – allow for:
  - More monitoring locations
  - Greater spatial coverage
  - Less need for technical expertise
  - **More data collected**





# Drawbacks of Using Low-Cost Sensors for Community-Focused Monitoring

- Compounds generally emitted from industrial processes not measured by small sensors
  - PM and NO<sub>2</sub> well represented, but VOCs and air toxics are not
  - **This means public concerns may not be adequately addressed**
- Reduced data quality compared to more sensitive analyzers
- It can be difficult to change public perception once data exist, regardless of the quality
- **May lead to public scrutiny and adversarial interactions between communities and industrial facilities**

# Components of a Well-Designed Community Monitoring Plan

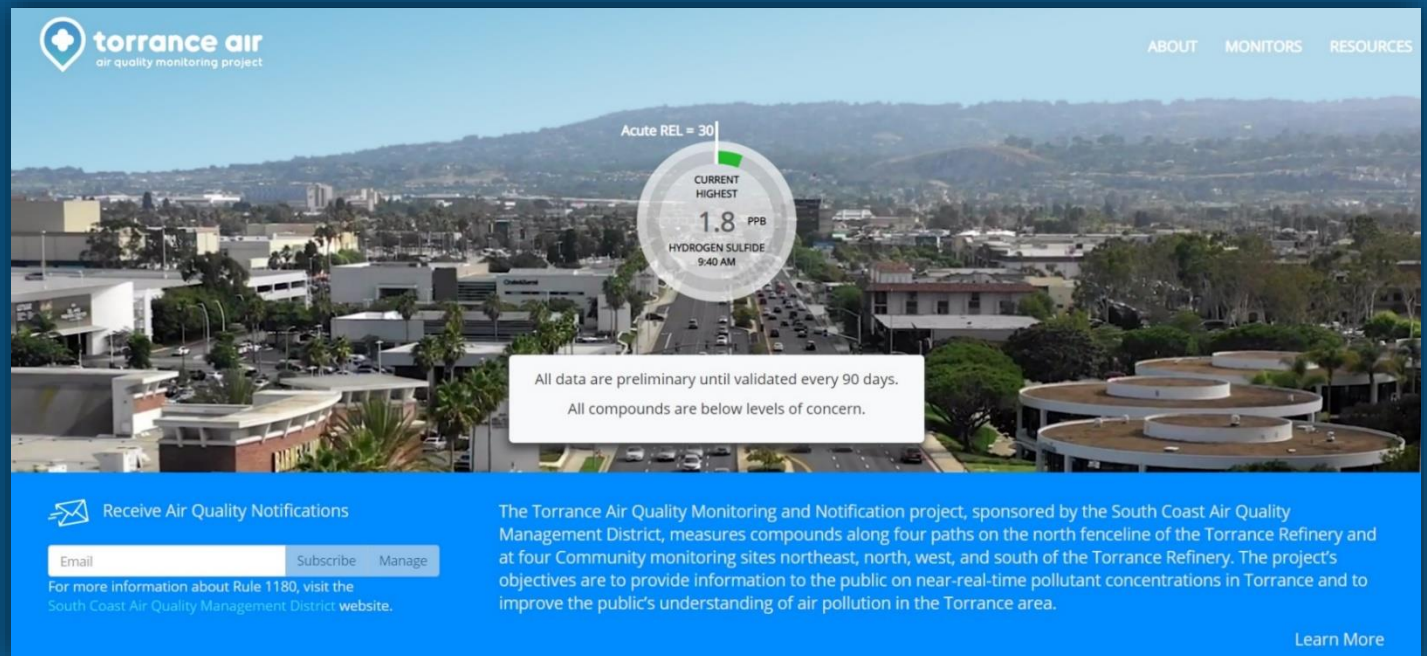
- Combination of high-precision and low-cost sensors
  - Balance between spatial coverage and high-quality data
- Facilities engagement with community members during planning
  - Get input from community members, elected officials, environmental agency representatives, etc.
  - Meet with communities to better understand their concerns
- Outreach and educational programs
  - Focus on both students and adults

# Components of a Well-Designed Community Monitoring Plan

- Effective communication of information to the public
  - Regularly updated websites
  - Summary reports of the collected data
  - Community hotline, email, or other feedback tools
- **Benefits:**
  - Provide an objective basis for conversations about air quality
  - Manage expectations and create a more predictable forum for engagement
  - Provide community with assurance and build trust

# Refinery Fenceline and Community Monitoring: Torrance Air Project

- Selected as California Supplemental Environmental Project in 2017, funded by South Coast AQMD
- Project anticipated many Rule 1180 requirements:
  - Fenceline & community monitoring sites
  - Real-time community data access via website
  - Notification system for REL exceedances



# Refinery Fenceline and Community Monitoring: Torrance Air Project

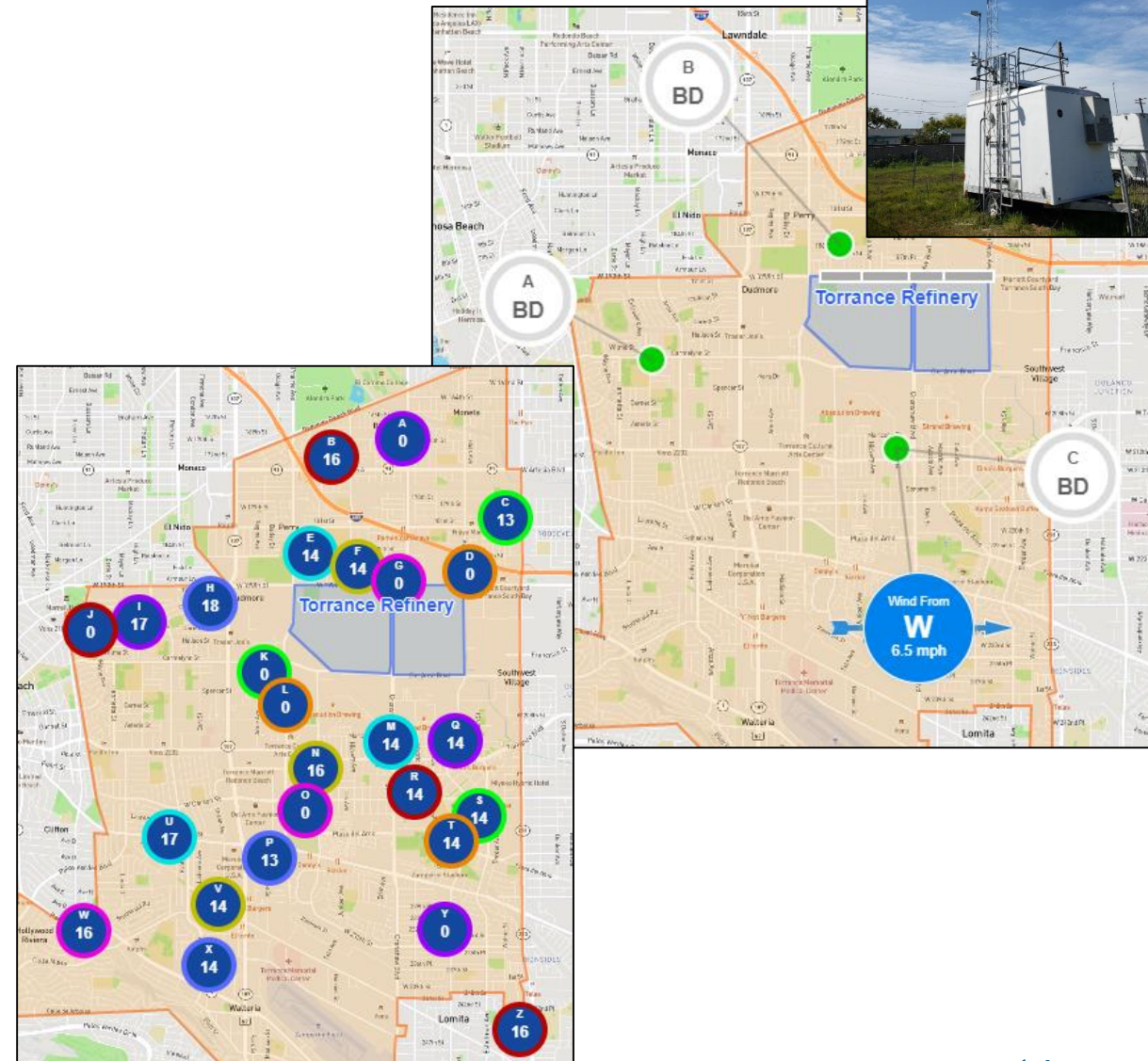
- Project was guided by a Community Advisory Committee that was made up of city officials, an advisor to a local Congresswoman, school district officials, HOA leaders, community organizers, and local business owners
- Provided input on community engagement plan, communications plan, branding, and public website through subcommittees



# Refinery Fenceline and Community Monitoring: Torrance Air Project

Successfully completed two years of monitoring

- High precision instruments at monitoring sites and 25 low-cost PM sensors distributed to community members
- Worked with refinery personnel and AQMD to disseminate data
- Open exchange with city residents who demand transparency
  - Community meetings held for project updates or major technical issues





**Josette E Marrero, PhD**  
Air Quality Scientist/  
Manager, Southern CA Field  
Measurements Group  
jmarrero@sonomatech.com



**Hilary Hafner**  
Chief Operating Officer  
hilary@sonomatech.com



**Clinton MacDonald**  
President / Chief Scientist  
clint@sonomatech.com