South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765
(909) 396-2000, www.aqmd.gov

NOTICE OF SPECIAL MEETING OF THE GOVERNING BOARD
Governing Board Retreat
Thursday, September 10, 2026
9:00 a.m. to 4:00 p.m.
Inn at the Mission San Juan Capistrano
26907 Old Mission Road, San Juan Capistrano, CA 92675
Los Olivos Conference Room

Meeting will be a hybrid format
Members of the public may participate either in person or via Zoom or telephone.

A Special Meeting of the South Coast AQMD's Governing Board will be held 9:00 a.m. on Thursday, September 10, 2026 through a hybrid format of in-person attendance in the Los Olivos Conference Room and/or virtual attendance via videoconferencing and by telephone. Please follow the instructions below to join the meeting remotely.

Please refer to South Coast AQMD's website for information regarding details on how to participate:
http://www.aqmd.gov/home/news-events/meeting-agendas-minutes

ELECTRONIC PARTICIPATION INFORMATION
(Instructions provided at bottom of the agenda)
Join Zoom Meeting - from PC, Laptop or Phone
https://aqmd.zoomgov.com/j/1600528849
Meeting ID: **160 052 8849** (applies to all)
Teleconference Dial In +1 669 254 5252, 160 052 8849
One tap mobile +1 669 254 5252, 160 052 8849#

Spanish Language Only Audience (telephone)
Número Telefónico para la Audiencia que Habla Español
Teleconference Dial In/Numero para llamar: +1 669 254 5252
Meeting ID/Identificación de la reunión: **161 104 2947**
One tap mobile: +1 669 254 5252, 161 104 2947#

The audience will be allowed to provide public comment in person, through Zoom or telephone.
PUBLIC COMMENT WILL STILL BE TAKEN

AGENDA

Items may be taken in any order.

Begins at 9:00 AM	
1a. Welcome (9:00 AM to 9:15 AM)	**Chair Michael A. Cacciotti** **Vice Chair Larry McCallon** South Coast AQMD Governing Board
1b. Setting the Stage (9:15 AM to 9:20 AM) Overview of retreat topics that will be discussed.	**Wayne Nastri** South Coast AQMD Executive Officer
1c. Address to the Board (9:20 AM to 9:30 AM) (Video) In his first two years, former South Coast AQMD Governing Board member, Assemblymember José Luis Solache, Jr. has demonstrated his outstanding leadership and strong commitment to protect communities and air quality issues throughout the state. Assemblymember Solache will provide an address to the Board.	**Assemblymember José Luis Solache, Jr.** *Assembly District 62*
1d. State Legislative Update, Outlook, and Strategy (9:30 AM to 10:30 AM) Ms. Tanaka will provide an update of the 2025-26 session of the California State Legislature, focusing on key bills, and will provide our outlook and strategies as the agency prepares for the 2026-27 State Legislative session.	Introduction: **Supervisor V. Manuel Perez** South Coast AQMD *Chair Legislative Committee* Presentation: **Lisa Tanaka** South Coast AQMD *Deputy Executive Officer* *Legislative, Public Affairs and Media*
Break (10:30 AM to 10:40 AM)	
1e. Next Generation Air Monitoring Techniques and Technologies (10:40 AM to 12 Noon) South Coast AQMD is a leader in developing and implementing novel air monitoring techniques and technologies. Dr. Jason Low will moderate a panel discussion of next generation air monitoring techniques and technologies and data visualization tools to further enhance how results can be clearly presented to the public.	Introduction: **Councilmember Michael A. Cacciotti** South Coast AQMD Governing Board Chair Moderator: **Jason Low, Ph.D.** South Coast AQMD *Deputy Executive Officer,* *Monitoring and Analysis* Monitoring and Analysis Division

(Continued)	
1e. Next Generation Air Monitoring Techniques and Technologies ***(Continued)***	Panel: **Jochen Stutz, Ph. D.** University of California, Los Angeles Institute of Environment & Sustainability **Kent Johnson, Ph. D.** University of California, Riverside Center for Environmental Research & Technology (CE-CERT) **Sina Hasheminassab, Ph. D.** Jet Propulsion Laboratory Earth Science Section **Brandon Feenstra, Ph. D.** South Coast AQMD Atmospheric Monitoring Manager Monitoring and Analysis Division
Lunch Break (12 Noon to 1:30 PM)	
1f. Innovative Energy Solutions (1:30 PM to 2:45 PM) Innovative energy solutions are continuing to emerge, providing operators with quicker and lower cost infrastructure solutions than power from the grid. Dr. Katzenstein will moderate a panel showcasing innovative energy solutions for hydrogen, peak shaving, and onsite power generation.	Introduction: **Mayor Carlos Rodriguez** South Coast AQMD *Chair Technology Committee* Moderator: **Aaron Katzenstein, Ph.D.** South Coast AQMD *Deputy Executive Officer* *Technology Advancement Office* Panel: **Bala Ramamurthy** *Chief Executive Officer* *Critical Loop* **Tim Fogarty** *Chief Executive Officer* *PCC Hydrogen* **JT Steenkamp** *Vice President* *Prologis* *Technology, Front-End Engineering & Development*
Break (2:45 PM – 3:00 PM)	

(Continued)	
1g. Enhancing Our Portfolio of NOx Emission Reduction Strategies (3:00 PM to 4:15 PM) With political and economic challenges and limited authority to regulate mobile sources, it is critical that in addition to a robust regulatory program, that all approaches be considered to reduce NOx emissions. Dr. Rees will lead a discussion on innovative approaches that the agency can consider to further enhance its portfolio of NOx emission reduction strategies.	Introduction: **Councilmember Larry McCallon** South Coast AQMD Governing Board Vice Chair Presentation: **Sarah Rees, Ph.D.** South Coast AQMD *Deputy Executive Officer* *Planning, Rule Development and Implementation*
1h. Closing Remarks (4:15 PM to 4:30 PM)	**Chair Michael Cacciotti**
No General Public Comment Period at a Special Meeting Members of the public may address this body concerning any agenda item before or during consideration of that item. (Government Code Section 54954.3(a)). If you wish to speak, raise your hand on Zoom or press Star 9 if participating by telephone or if in-person please provide a Request to Address the Board card to the Clerk of the Board if you wish to address the Board on an agenda item. Speakers may be limited to three (3) minutes total for all agenda items. At a special meeting, no other business may be considered, there is public comment only for items on the agenda, and there is no general public comment period. (Government Code Section 54954.3(a)). The agenda for this meeting is posted at South Coast AQMD Headquarters, 21865 Copley Drive, Diamond Bar, California and at the Inn at the Mission San Juan Capistrano, 26907 Old Mission Road, San Juan Capistrano, California, at least 24 hours in advance of the meeting.	
ADJOURNMENT	

Americans with Disabilities Act and Language Accessibility

Disability and language-related accommodations can be requested to allow participation in this Special Governing Board meeting. The agenda will be made available, upon request, in appropriate alternative formats to assist persons with a disability (Government Code Section 54954.2(a)). In addition, other documents may be requested in alternative formats and languages. Any disability or language related accommodation must be requested as soon as practicable. Requests will be accommodated unless providing the accommodation would result in a fundamental alteration or undue burden to the South Coast AQMD. Please contact Clerk of the Boards at 909-396-2500 from 7:00 AM to 5:30 PM Tuesday through Friday or send the request to cob@aqmd.gov.

INSTRUCTIONS FOR ELECTRONIC PARTICIPATION

Instructions for Participating in a Virtual Meeting as an Attendee
As an attendee, you will have the opportunity to virtually raise your hand and provide public comment.

Before joining the call, please silence your other communication devices such as your cell or desk phone. This will prevent any feedback or interruptions during the meeting.

Please note: During the meeting, all participants will be placed on Mute by the host. You will not be able to mute or unmute your lines manually.

After each agenda item, the Chair will announce public comment.

A countdown timer will be displayed on the screen for each public comment.

If interpretation is needed, more time will be allotted.

Once you raise your hand to provide public comment, your name will be added to the speaker list. Your name will be called when it is your turn to comment. The host will then unmute your line.

Directions for Video ZOOM on a DESKTOP/LAPTOP:

If you would like to make a public comment, please click on the **"Raise Hand"** button on the bottom of the screen. This will signal to the host that you would like to provide a public comment and you will be added to the list.

Directions for Video Zoom on a SMARTPHONE:

If you would like to make a public comment, please click on the **"Raise Hand"** button on the bottom of your screen. This will signal to the host that you would like to provide a public comment and you will be added to the list.

Directions for TELEPHONE line only:
If you would like to make public comment, please **dial *9 to raise your hand** to signal that you would like to comment and **dial *6 to toggle mute and unmute**.

Back to Agenda

AGENDA NO. 1d

STATE LEGISLATIVE UPDATE, OUTLOOK, & STRATEGY



Governing Board Retreat

September 10, 2026

OVERVIEW

- Political Environment
- Legislative Strategy – Turning Challenges into Opportunities
- 2025 – 2026 Actions & Results
- Outlook for 2027
- Building on Strategies

DYNAMICS AFFECTING LEGISLATION







Response for Air Related Incidents

Affordability





STATE CHALLENGES & ISSUES

- Over 30% turnover in Legislature
- High staff turnover
- 35 bill limit per Legislator
- Budget deficit
- External pressures: uncertain economy and global politics
- More bills that reflect increased concern and impact of air agencies
- California defending against federal actions

FEDERAL CHALLENGES & ISSUES

- Divided Congress with narrow majorities
- Administrative Actions: Executive Orders, rescinding & changing regulations, programs & grants
- Retroactive application of Congressional Review Act
- Uncertain economy
- Mid-term elections

TURNING CHALLENGES INTO OPPORTUNITIES



Legislative Strategy

- Strategic shift on how we build and maintain relationships with elected officials, agencies & other stakeholders
- Make South Coast AQMD the trusted source for technical information
- Increase understanding of air quality issues, impacts on public health, clean technologies contribution to economy & jobs

STRATEGIES & ACTIONS



Cross-Agency & Stakeholder Engagement

- Coordinate with local, regional and statewide agencies
- Lead policy discussions
- Educational discussion with local stakeholders



Presence & Visibility

- Present at hearings
- Advocacy in Sacramento
- Local Government Affairs Committees



Education & Engagement

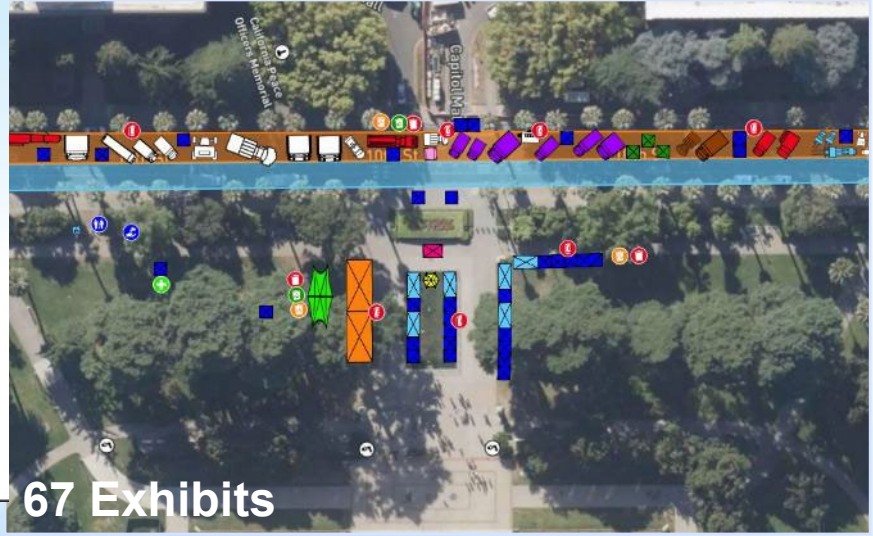
- Webinar series
- Clean Air Day in Sacramento
- District Tours



Legislative Partnerships

- Resource on legislation and local issues
- Support District activities

Clean Air, Clean Solutions Showcase





67 Exhibitors



12 Air Districts



500+ attendees











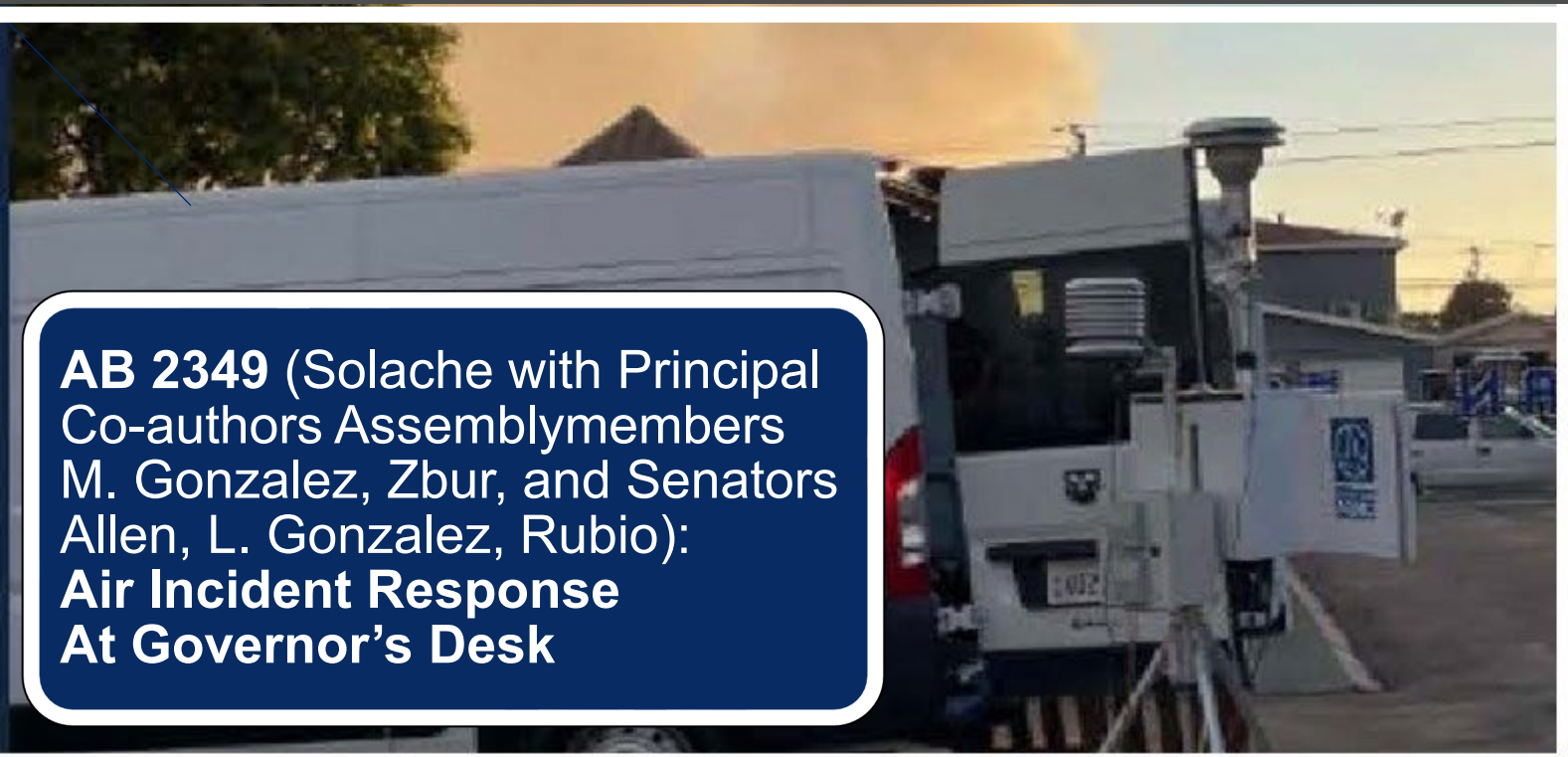




CAPCOA

Over 30 Legislators

RESULTS: 2025-26 SPONSOR BILLS



AB 2349 (Solache with Principal Co-authors Assemblymembers M. Gonzalez, Zbur, and Senators Allen, L. Gonzalez, Rubio):
Air Incident Response
At Governor's Desk

- **AB 1338 (Solache):** Metal Shredding Facilities. Gut and amended
- **AB 907 (Chen changed to Solache):** CARB Board Compensation. Held in Senate Appropriations Committee
- **AB 1106** (M. Rodriguez): Air Incident Reponse. Held in Assembly Appropriations Suspense File





POSITION BILLS: 2025-26 HIGHLIGHTS

Support

- **AB 1661 (Bryan):** Oil and Gas: Baldwin Hills – Sent to Governor
- **SB 1213 (Reyes):** Zero and near-zero medium- and heavy-duty vehicles – Sent to Governor

Oppose

- ***SB 34 (Richardson):*** *South Coast AQMD: Ports - Vetoed*
- ***AB 1791 (Sanchez):*** *State Air Board & South Coast AQMD: prohibit zero-emission regulations – Failed deadline*
- ***AB 2752 (Avila Farias)****: Oil Refineries – No vote in Committee, failed deadline*
- **SB 1075 (Reyes):** AB 617 – Held in Senate Appropriations

Non-Legislative Solution

- **AB 1266 (Solache):** Administrative Procedures Act
- **SB 526 (Menjivar):** Accountability for Aggregate Facilities

BUDGET: AIR QUALITY HIGHLIGHTS



Community Air Protection Program (AB 617)

- **2025-26:** $100M
- **2026-27**: Approximately $229M
  - $150M General Fund
  - $20M GGRF Tier 2
  - $59M GGRF Tier 3



Carl Moyer

- **2025-26**: $130.7M
- **2026-27**: $130.7M



Clean Truck & Bus Voucher Incentive Program (HVIP)

- **2025-26**: $132M
- **2026-27**: $135.5M

STATE OUTLOOK FOR 2027

Opportunity to Lead/Shape Narrative

- Cap-and-Invest authorized through 2045
- August GGRF auction was better - $860M
- House and/or Senate could flip changing dynamic inside and outside beltway
- Momentum built from last year and improved relationships
- New Governor

Challenges

- Affordability
- Economy?
- CA Budget structural deficit
- GGRF auctions? Uncertainty on amendments to Cap-and-Invest (Manufacturers Decarbonization Incentive)
- Energization and zero-emission infrastructure
- Instability from polarized legislating and regulatory environment
- Elections on all levels
- 21 open legislative seats, all 80 Assembly seats and 20 of 40 Senate (odd numbered) are on ballot
- Air incidents

POTENTIAL LEGISLATION OR OTHER ACTIONS

State

- Funding & policy for Community Air Protection Program (AB 617)
- Funding for Air Incident Response
- Cost recovery for air monitoring – unfunded mandates
- Energization issues
- Address administrative issues related to state incentive programs to facilitate program implementation

Federal

- Pending litigation and Congressional efforts to repeal California Clean Air Act Waivers
- Legislation seeking to weaken Clean Air Act or amendments to address current challenges
- Fiscal Year 2027 Appropriations – current continuing resolution expires December 11, 2026
- Reauthorization of Surface Transportation Act
- Pending changes to Office of Management and Budget regulations for grant administration

SOUTH COAST AQMD TIMELINE

October

- **Legislative Committee**:
  State & Federal Guiding Principles
  RFP for Specialized representation in Washington, D.C. for Clean Air Act related issues

November

- **Governing Board**:
  State & Federal Guiding Principles
  RFP for Specialized representation in Washington, D.C. for Clean Air Act related issues
- **Legislative Committee**:
  Consider concepts for potential state sponsor bills and/or issue areas of focus
  Update on Congressional Elections & Preliminary Outlook

December

- **Governing Board**:
  Concepts for potential sponsor bills and/or issue areas for focus
- **Legislative Committee**:
  Update on State Elections & Preliminary Outlook

BUILDING ON STRATEGIES:

Achieving outcomes

- Introduce South Coast AQMD to newly elected Members & Leadership
- General and focused Legislator and Committee discussion on critical issues such as incident response, funding
- District Tours
- Continue Webinar series on strategic topics
- Partner with UCLA on Policy Forum for Community Air Protection Program





The Work Continues

Turning challenges into opportunities and positioning for the future

Next Generation Air Monitoring Techniques and Technologies

Moderator: Dr. Jason Low
Deputy Executive Officer
Monitoring Analysis Division

Governing Board Retreat
September 10, 2026

Dr. Jochen Stutz

Department of Atmospheric and Oceanic Sciences
University of California, Los Angeles

Dr. Jochen Stutz is a Professor in the Department of Atmospheric and Oceanic Sciences at the University of California, Los Angeles (UCLA), where his research focuses on atmospheric chemistry, spectroscopy, and environmental monitoring. His research focus includes urban air pollution at night; impact of halogen species on tropospheric ozone; development of new spectroscopic methods for atmospheric studies; atmospheric spectroscopy, including LP-DOAS, PhotoSpec, and CO_2 eddy covariance systems; and field studies on air pollution, wildfires, plant photosynthesis, and the influence of ground and snow on atmospheric composition.



Dr. Kent Johnson

University of California, Riverside

Dr. Kent Johnson has worked at University of California, Riverside for over 30 years and is internationally recognized as a leader in emissions from combustion sources, specifically under real world conditions. He directed, organized, and hosted an annual international conference on in-use testing for 15 years and has been a guest on two television programs (MythBusters) to serve as an expert witness for in-use testing. He has his Ph.D. in Chemical and Environmental Engineering, an MS Degree in Electrical Engineering, and a BS Degree in Mechanical Engineering



Dr. Sina Hasheminassab

Research Scientist
Jet Propulsion Laboratory

Sina Hasheminassab is a Research Scientist at the Jet Propulsion Laboratory (JPL) and Deputy Principal Investigator for NASA's Multi-Angle Imager for Aerosols (MAIA) mission, a satellite investigation focused on understanding the health impacts of particulate air pollution. He has over a decade of experience conducting applied air quality research in Southern California and globally, with a strong focus on integrating advanced monitoring techniques with data-driven methodologies to study air pollution sources, trends, and their societal impacts.

Prior to joining JPL, Sina spent over five years at the South Coast AQMD, where he led numerous air monitoring projects in disadvantaged communities across Southern California. He also holds a visiting appointment at Caltech and has served as an Air Quality Fellow with the U.S. State Department.

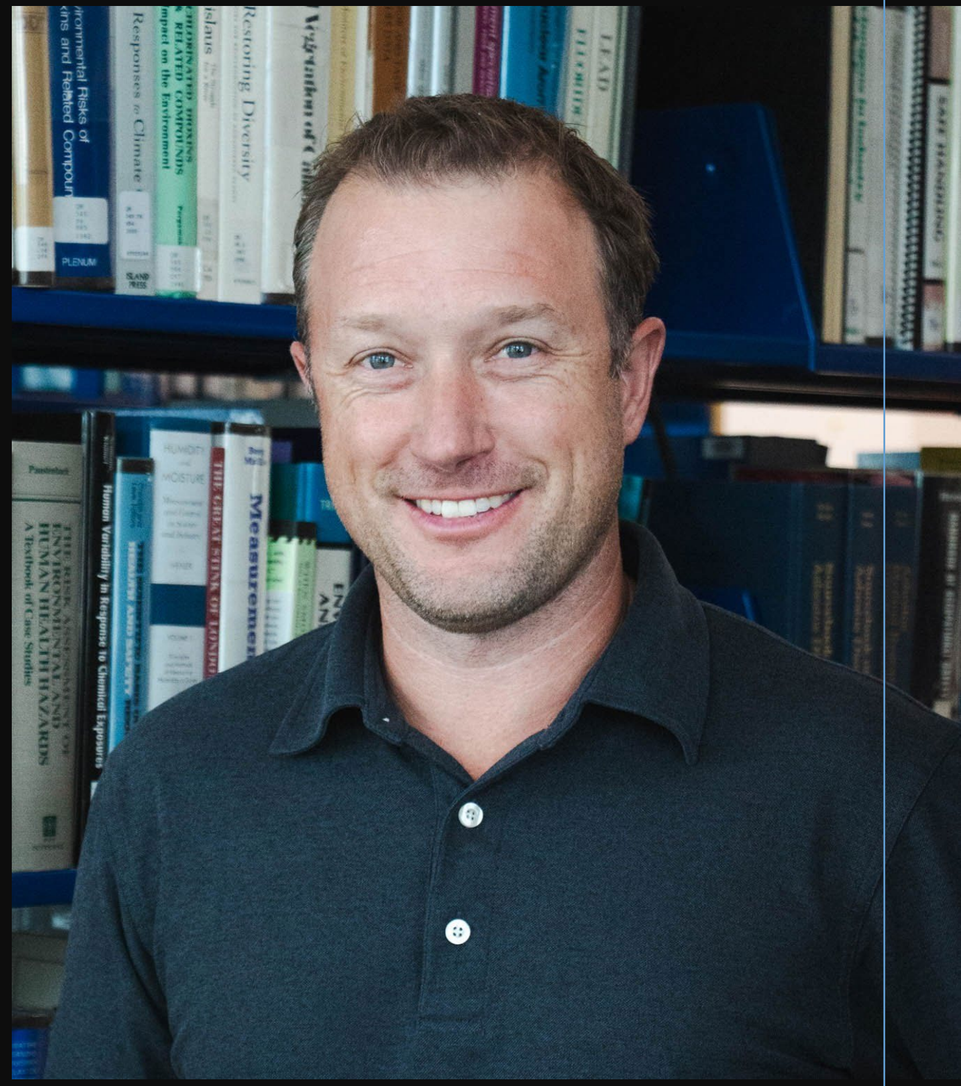


Dr. Brandon Feenstra

Atmospheric Measurements Manager
South Coast AQMD

Dr. Brandon Feenstra is an Atmospheric Measurements Manager in the Monitoring & Analysis Division at South Coast AQMD, overseeing the agency's Monitoring Network program.

He leads a team of Air Quality Instrument Specialists and manages more than 30 monitoring stations that produce high-quality regulatory data used to assess compliance with the National Ambient Air Quality Standards. Brandon has served as the Quality Assurance Manager and in the Air Quality Sensor Performance Evaluation Program (AQ-SPEC). Brandon also leads the development of AQ-Portal in collaboration with the Information Management team. AQ-Portal is designed to provide a single, unified access point for all data collected by the Monitoring & Analysis Division.



Attachment 1

The Optical Tent:
The Next Generation of Open Path Optical Remote Sensing

Jochen Stutz[1]

Santo F Colosimo[1], Sol Cooperdock[1], Olga Pikelnaya[2] and Andrea Polidori[2]

(1) University of California Los Angeles, Department of Atmospheric and Oceanic Sciences, Los Angeles, CA, United States,

(2) South Coast Air Quality Management District, Diamond Bar, CA, United States



contact: jochen@atmos.ucla.edu

Identification and mitigation of unwanted trace gas releases from industrial facilities remains a continuing challenge

We need a reliable system for measurement of trace gases including air toxics such as benzene, toluene, ethyl-benzene, xylenes (BTEX), monitoring to:

- Warn residents of unwanted releases
- Provide data to regulators on trace gas levels
- Help refineries to locate and fix equipment malfunctions.

Rapid identification, warnings, and mitigation of elevated pollutant levels reduces overall emissions and exposure

Residents Near Chevron's Richmond Refinery Face Higher Risk of Cancer, Air District Says

People living close to the Chevron Refinery in Richmond face an elevated risk of developing cancer over a lifetime, according to a preliminary assessment the air regulator released Tuesday.

Aug 25, 2026 Updated Aug 27, 2026

By **Julie Small**

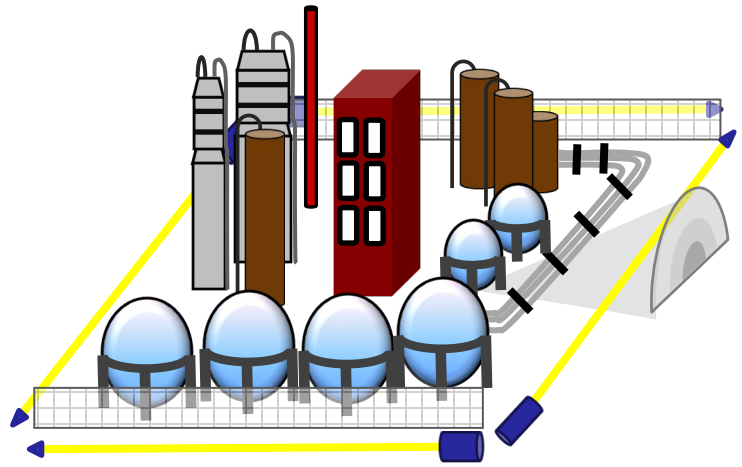


The Chevron Richmond Refinery seen from the Point Richmond neighborhood in Richmond on June 3, 2025. *(Beth LaBerge/KQED)*

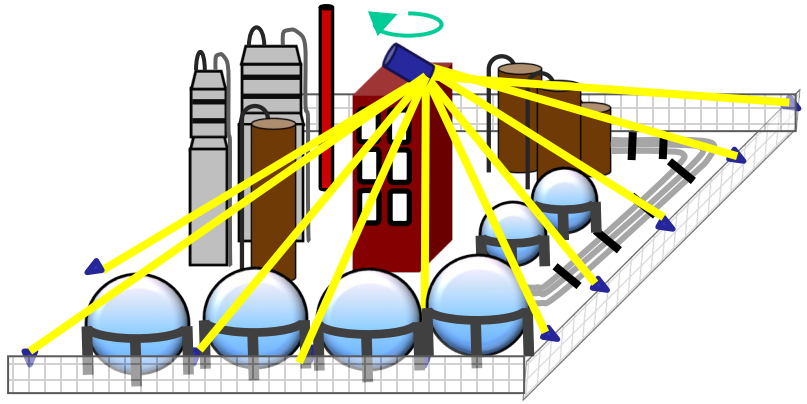
KQED, 6/27/2026

What if we could help communities, regulators and refineries better identify and control emissions?

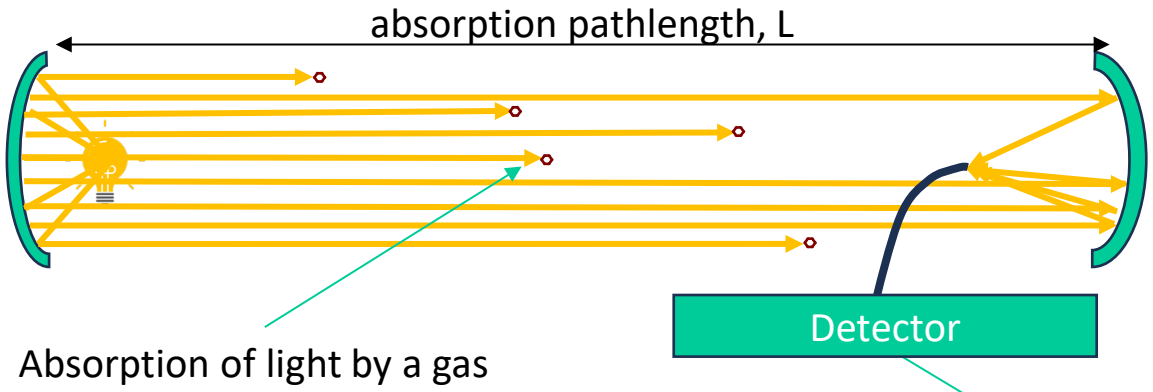
- Open-path optical remote sensing (OP-ORS) offers this opportunity.
- However,
  - There is a lack of trust in the data from commercial OP-ORS/ DOAS systems
  - Fenceline systems are limited in their ability to locate BTEX releases and help in their mitigation.



- The Optical Tent (OT) is a South Coast AQMD funded project to demonstrate the technical feasibility and reliability of such a system and to study its usefulness.



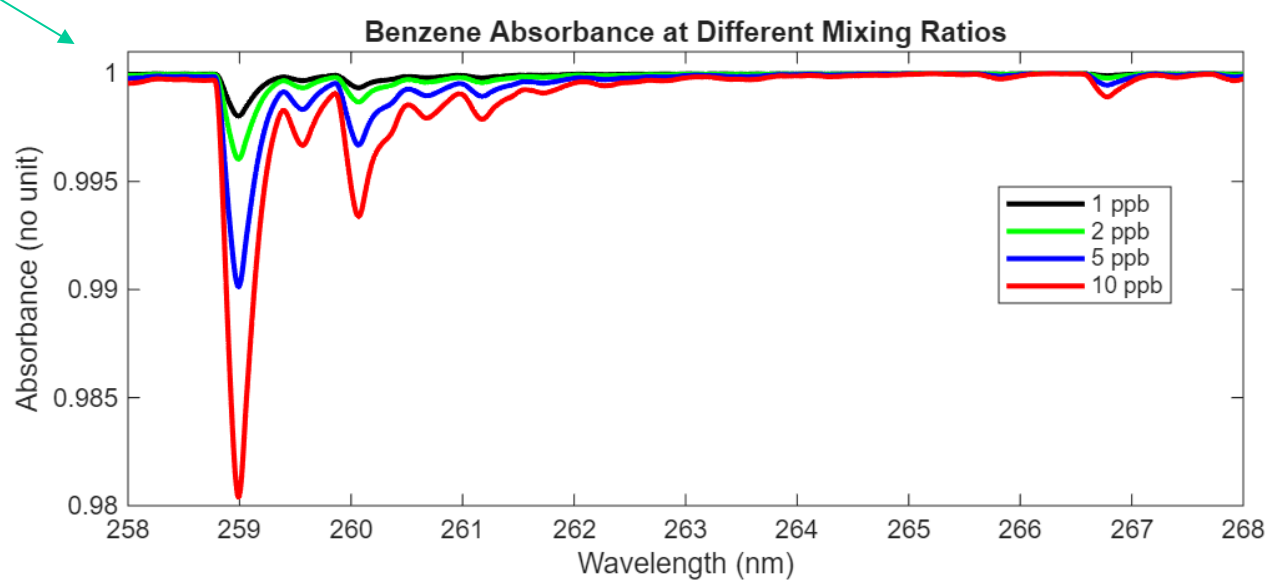
Principle of Open Path Optical Remote Sensing:



A beam of light is sent through the **open atmosphere**. Gases absorb light along the way.

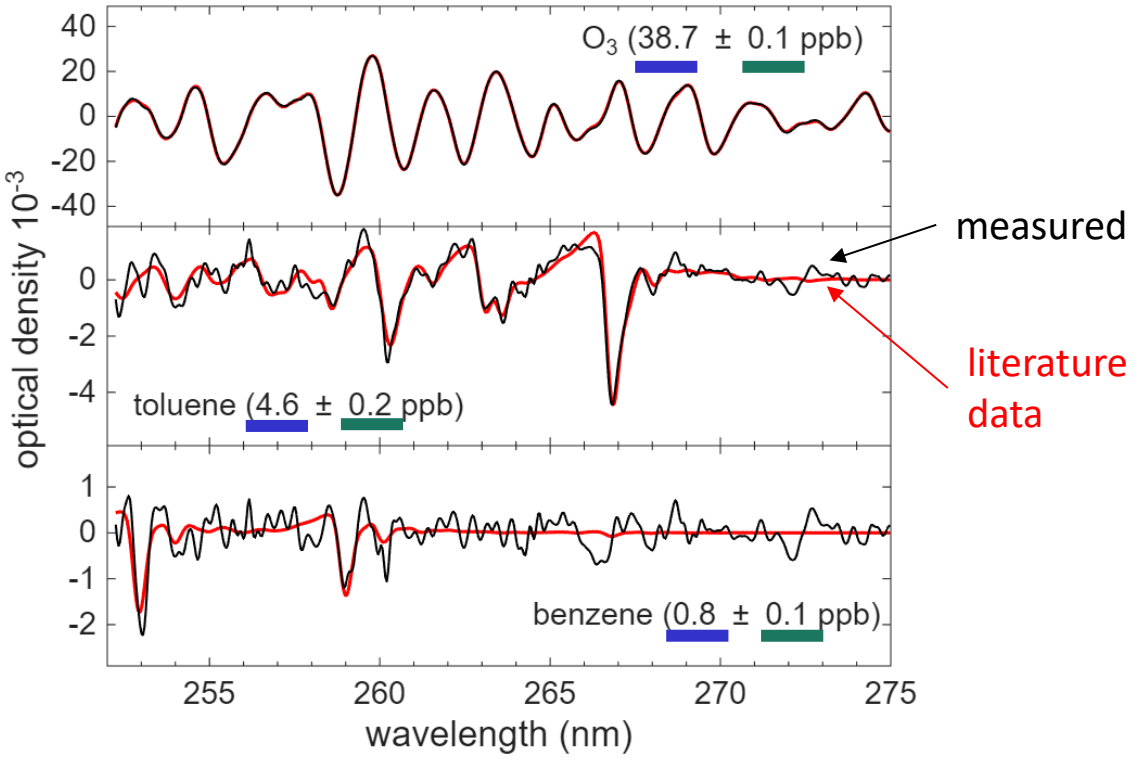
Identification: Absorption depends on wavelength (color) of light and is unique to each gas

Quantification: The strength of the absorption depends on the gas concentration

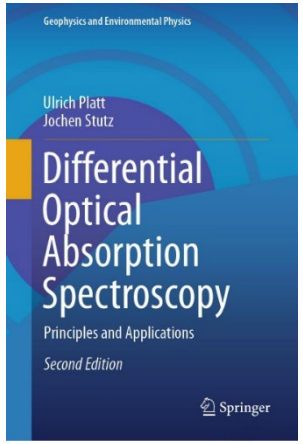


The OT uses research-grade Differential Optical Absorption Spectroscopy (DOAS) to measure BTEX

- Overlaying absorptions are mathematically separated to determine **concentration** and **uncertainties** for each absorbing gas.
- Absorption structure and strength is obtained from published literature: **No calibration is needed.**
- Gases with structured absorptions can be measured: **BTEX, ozone, naphthalene, phenol, furfural**, SO_2, NO_2, NH_3, …
- Known gases (oxygen) are used as QA/QC.



Research-grade* DOAS provides absolute, traceable BTEX measurements.

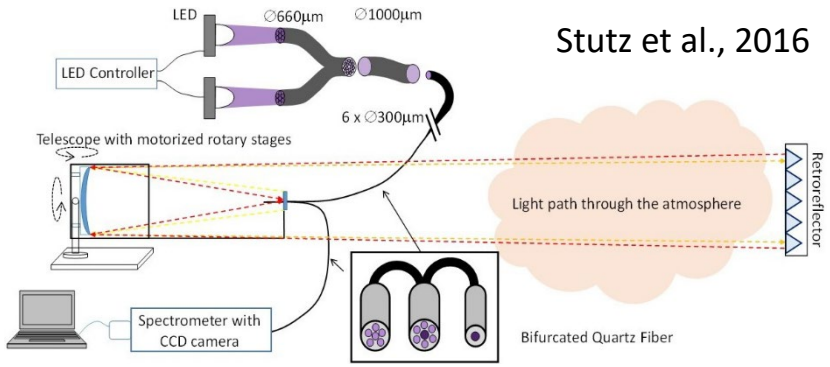


*Note that commercial "DOAS" systems use a different approach.

The Optical Tent



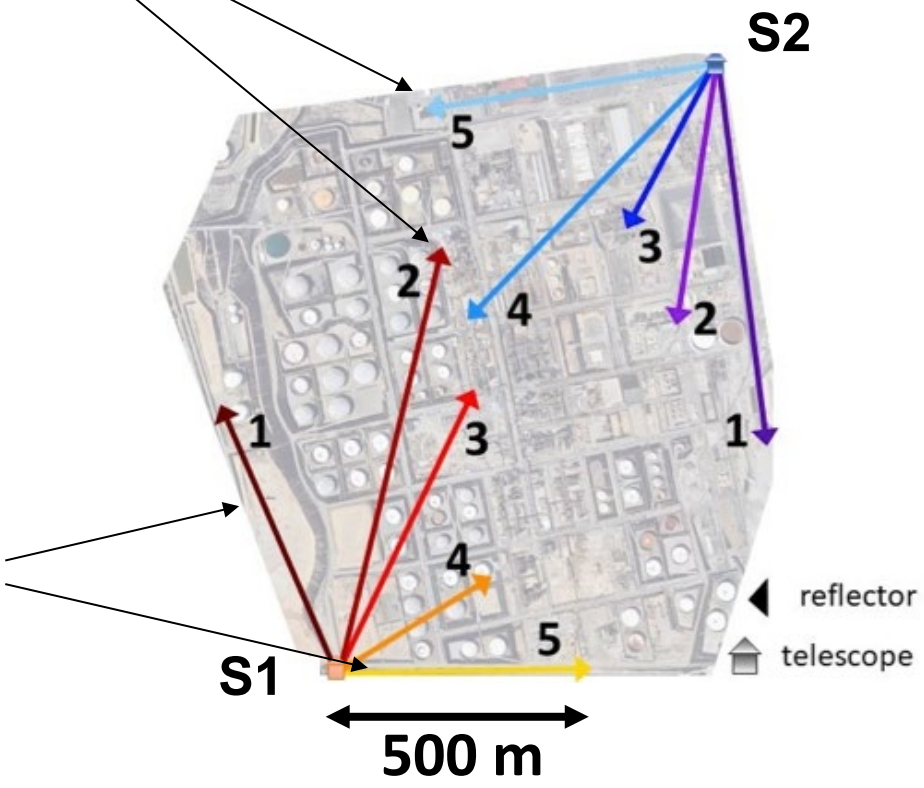
reflector



Stutz et al., 2016



telescope

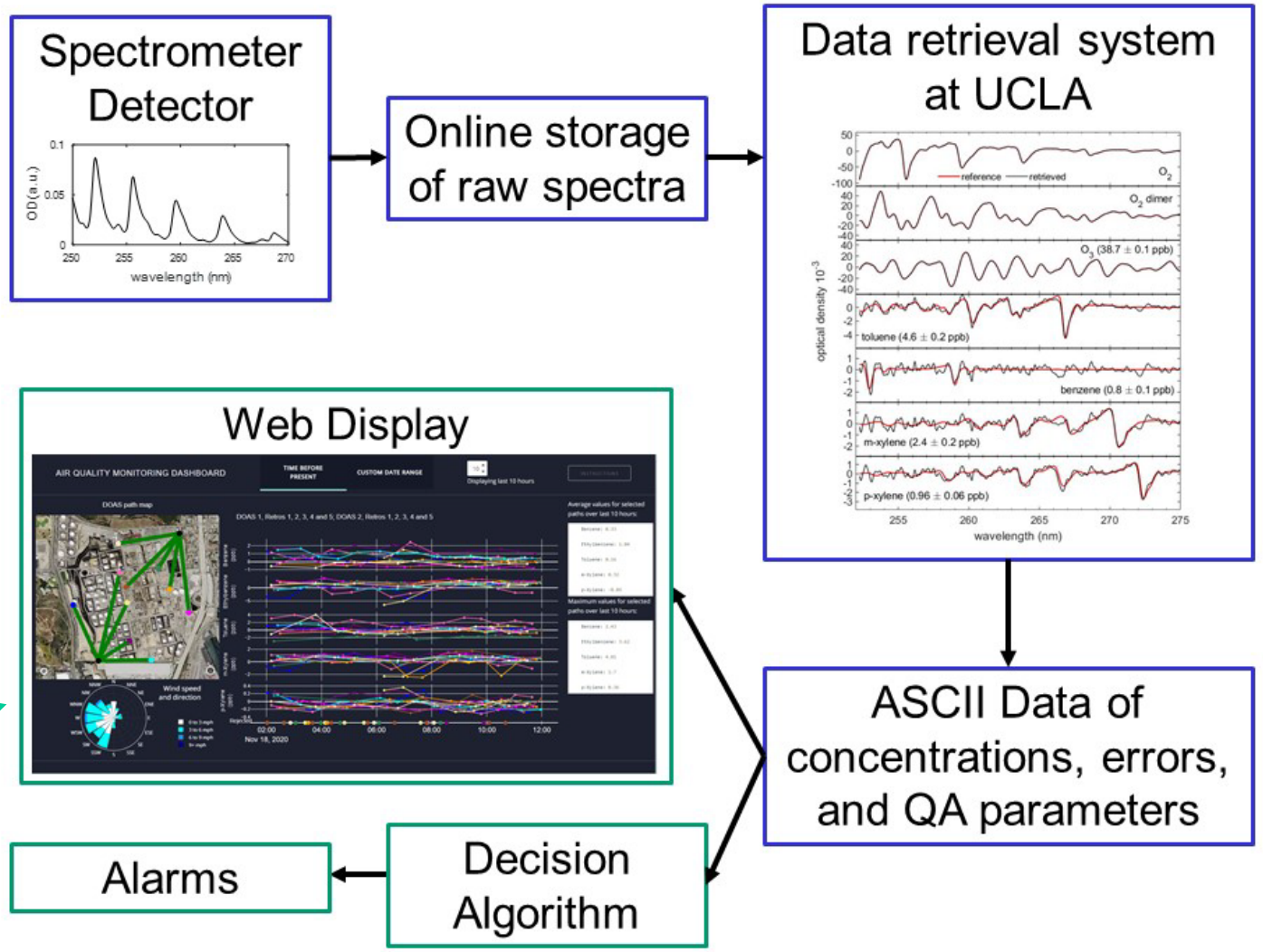


Fenceline

Each telescope sequentially aims at five reflectors

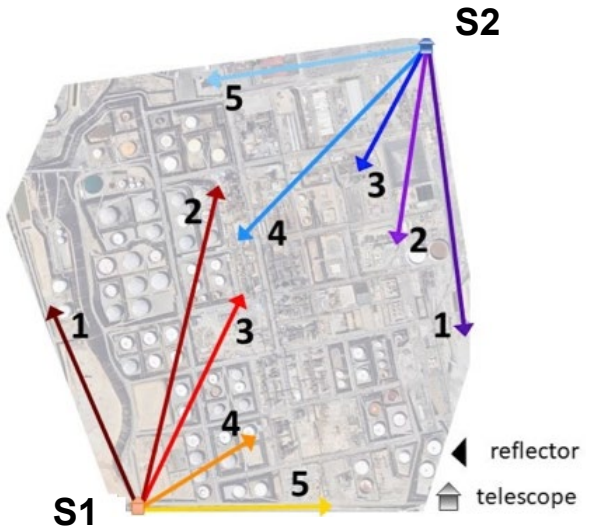
The Optical Tent (OT) has operated successfully since Summer 2020

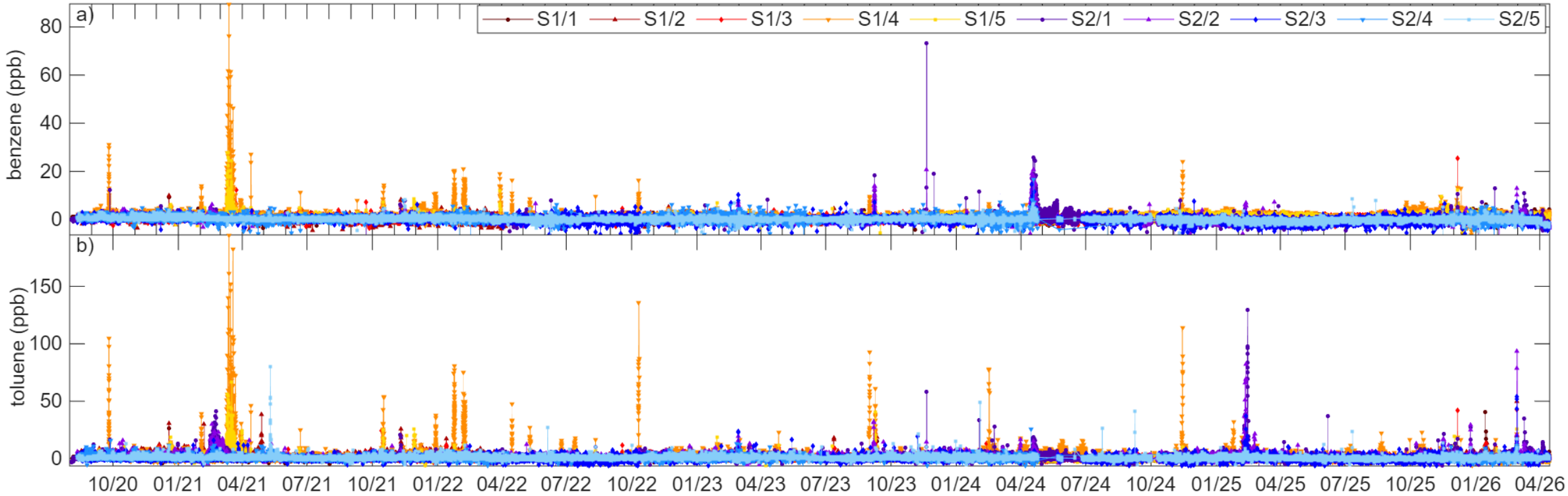
- Low maintenance and no major instrument failures.
- Data gaps are mostly due to reduced visibility (fog).
- BTEX detection limits below 1 ppb comply with Rule 1180.
- Fenceline data is reported to refinery public website.
- All data is visible to UCLA, South Coast AQMD, and the refinery in real time.



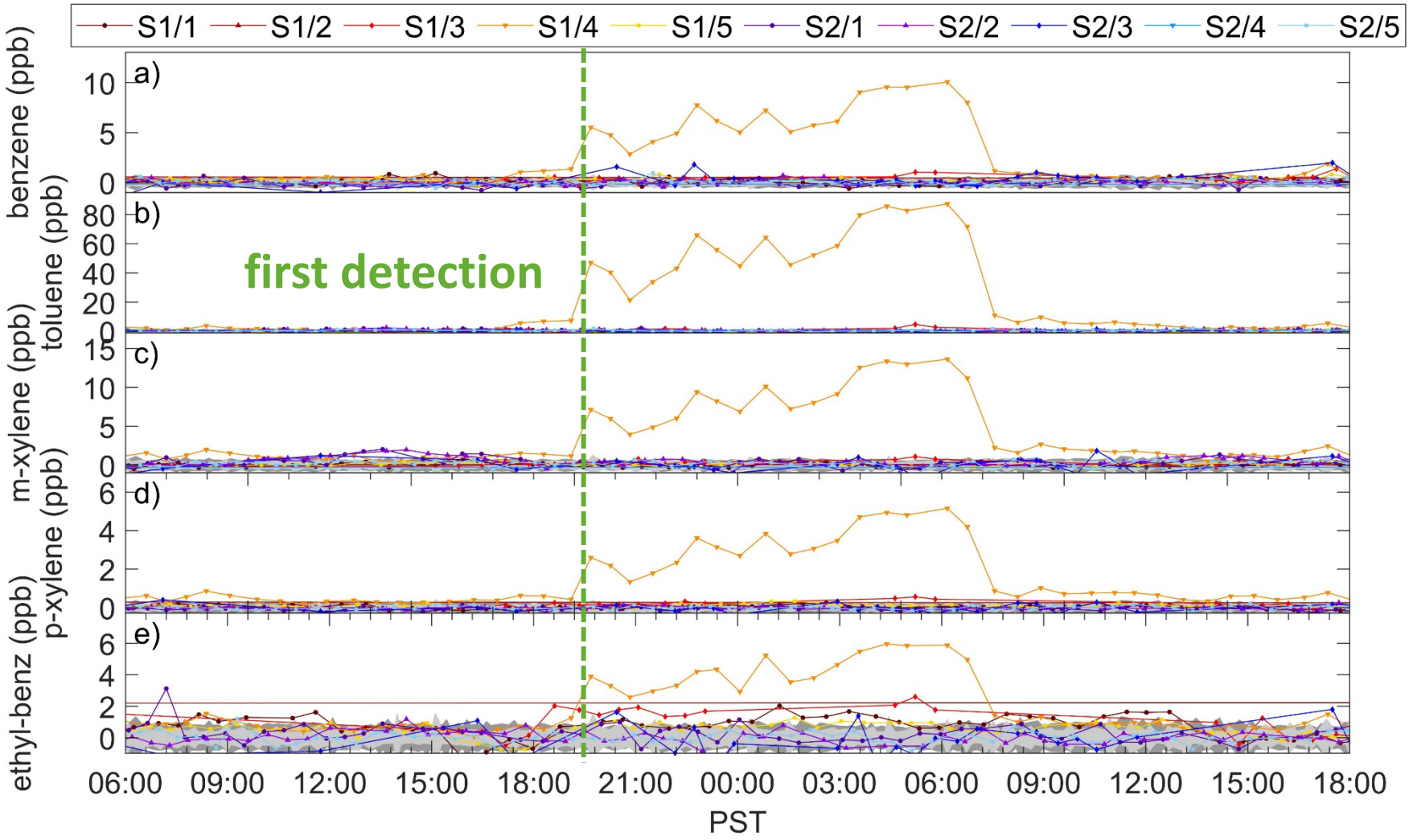
Long-term data provides unique insights into refinery BTEX

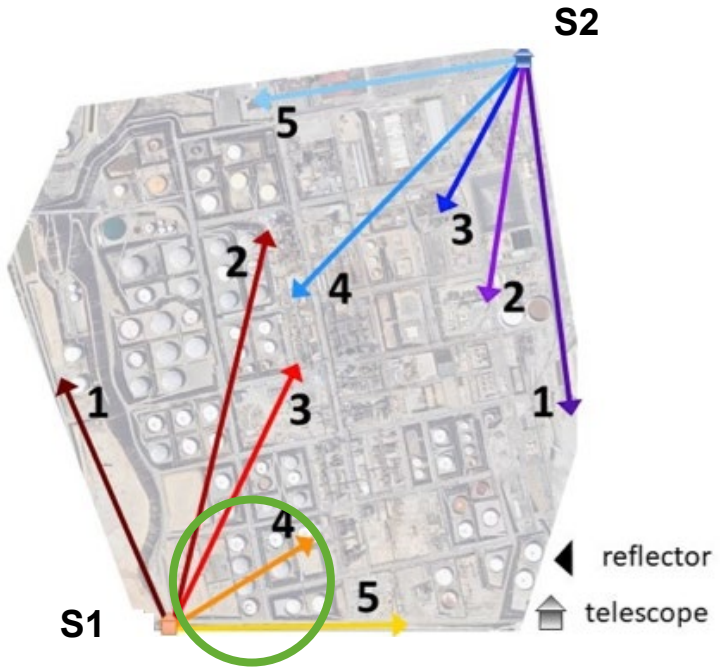
- Elevated BTEX in refinery is sporadic and in most cases due to equipment malfunctions.
- Several public alerts have been issued from fenceline data.
- 6 times more BTEX detects inside the refinery than at fenceline.
- The tank farms is the main area of elevated BTEX.



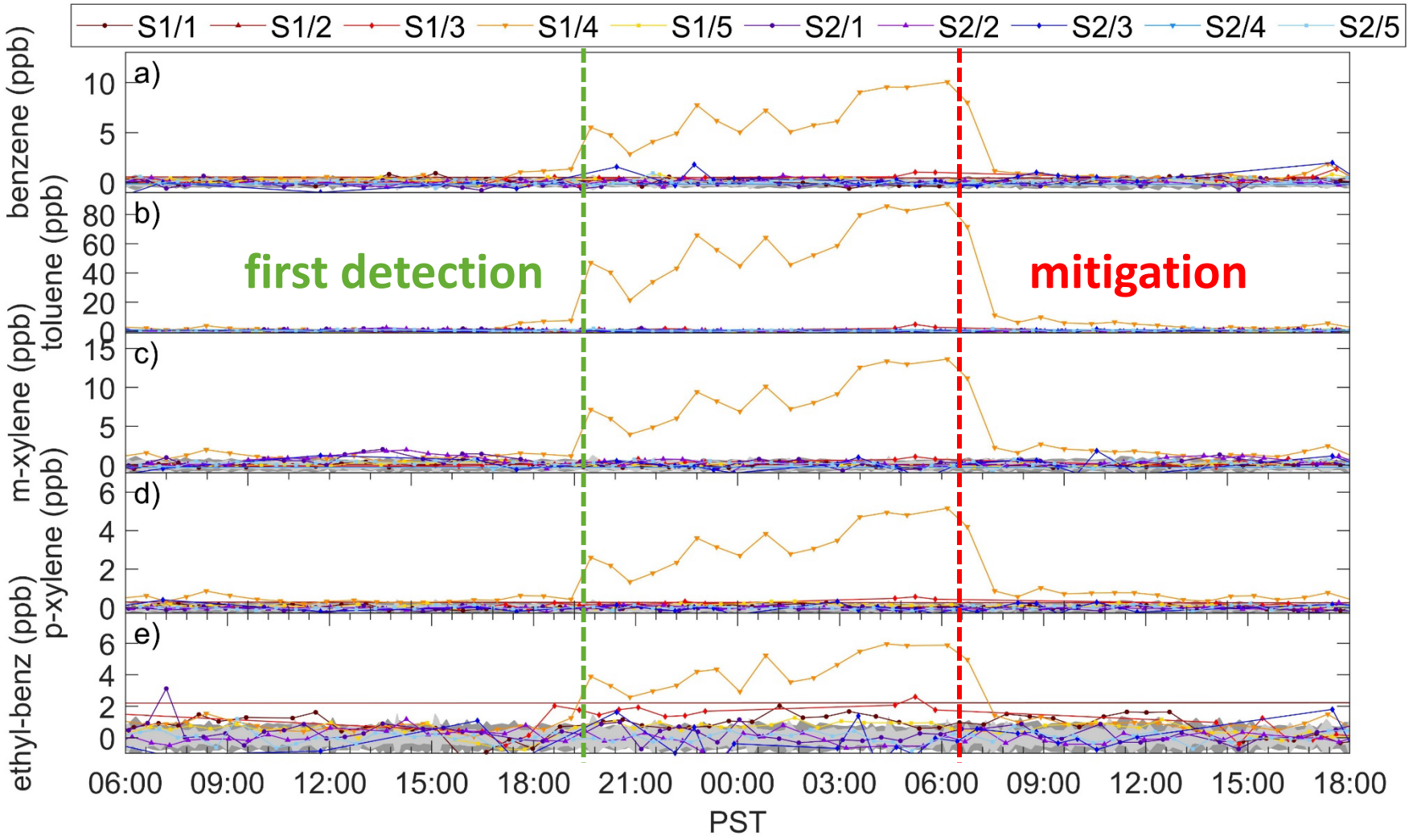


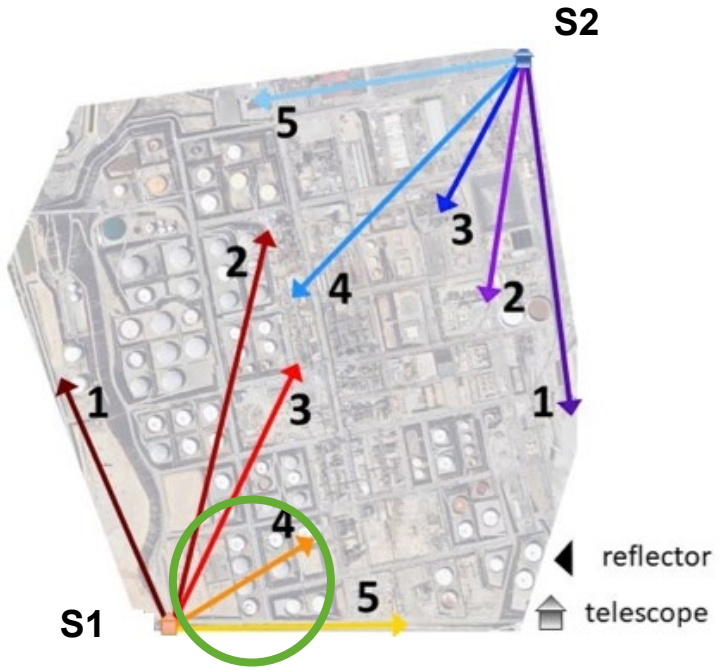
OT identifies and locates elevated BTEX



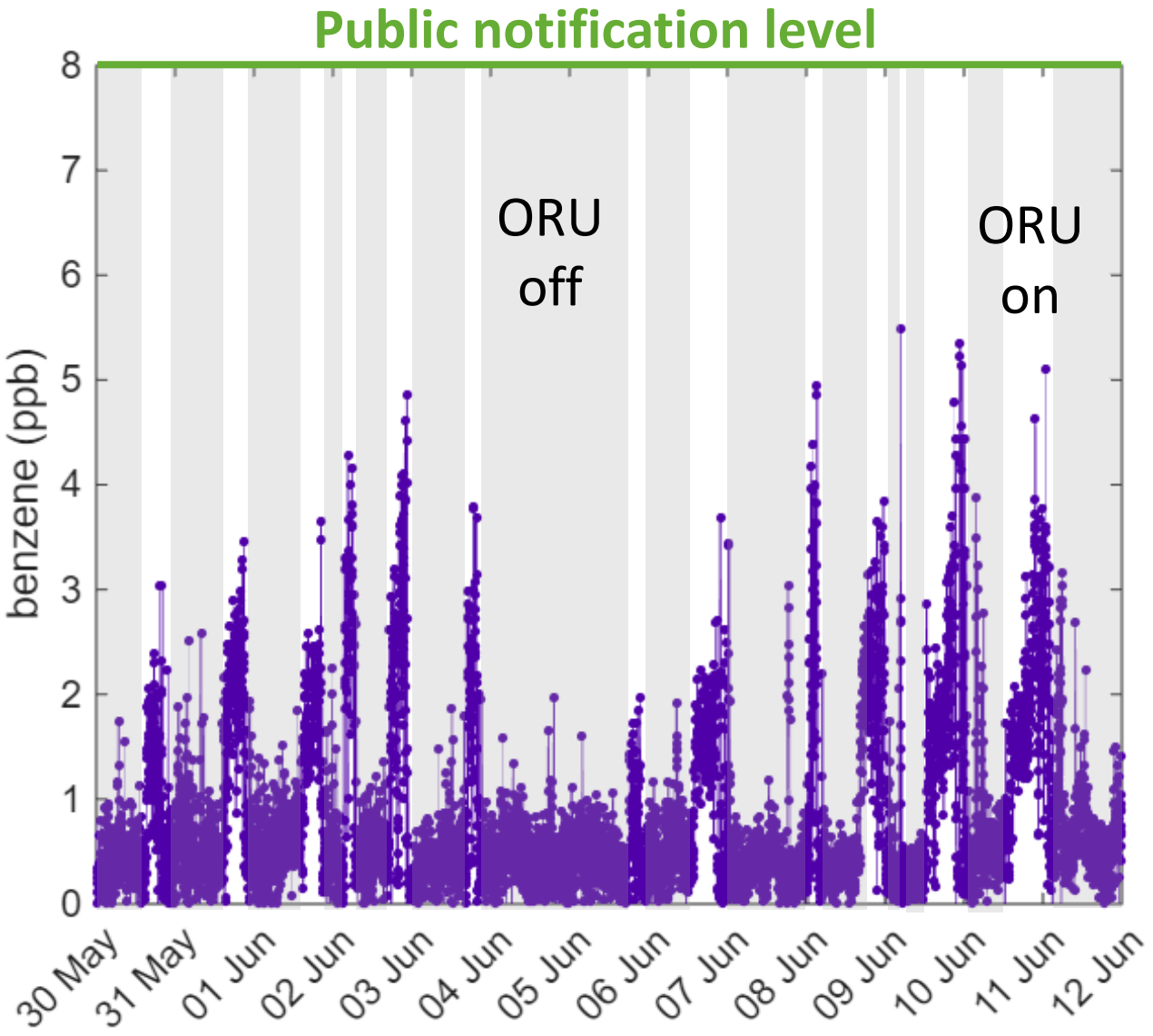


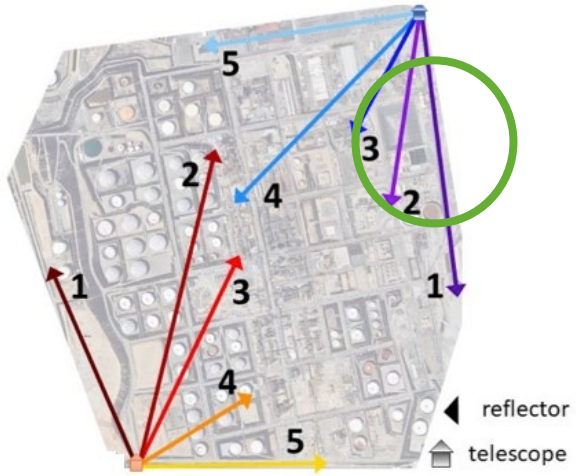
Refinery mitigates equipment issues quickly





Refinery operators have used the OT as a tool to manage BTEX level inside the facility





OT realtime data was used to regulate wastewater treatment (Oil Recovery Unit) to keep benzene below fenceline reporting threshold

Conclusions

- Research grade DOAS instrument measures BTEX reliably, sensitively, accurately, and in real time.
- OT observations inside a refinery allow faster source identification and mitigation, leading to lower overall emissions.
- The Optical Tent provides long-term BTEX data that is trusted by communities, regulators, and the refinery.
- Operation of the OT does not require much maintenance and no calibration, offsetting its cost of ~$400k.
- The OT has become a valuable tool to monitor and manage BTEX inside and around a refinery.

UCLA
Atmospheric Spectroscopy

What is next for OT and OP-ORS technology?

- Optimization of OT, for example by including the refinery operator in path arrangement, will further improve its usefulness.
- The optical tent scanning approach can be extended to other gases and other open path technology, such as open-path FTIR or TDLS.
- UCLA and South Coast AQMD are developing a reference UV-DOAS system to provide a much-needed validation method for commercial DOAS instruments.
- Scientific grade open path DOAS technology is now commercially available though a new startup using UCLA's technology: Syrionex.

UCLA
Atmospheric Spectroscopy

Attachment 2

A Real Time Portable Emissions Monitoring Project Using Drones

South Coast AQMD Board Retreat: September 10, 2026

Kent Johnson, Don Collins, GSR Minghao Han and GSR Yasaman Mohammadi

CE-CERT

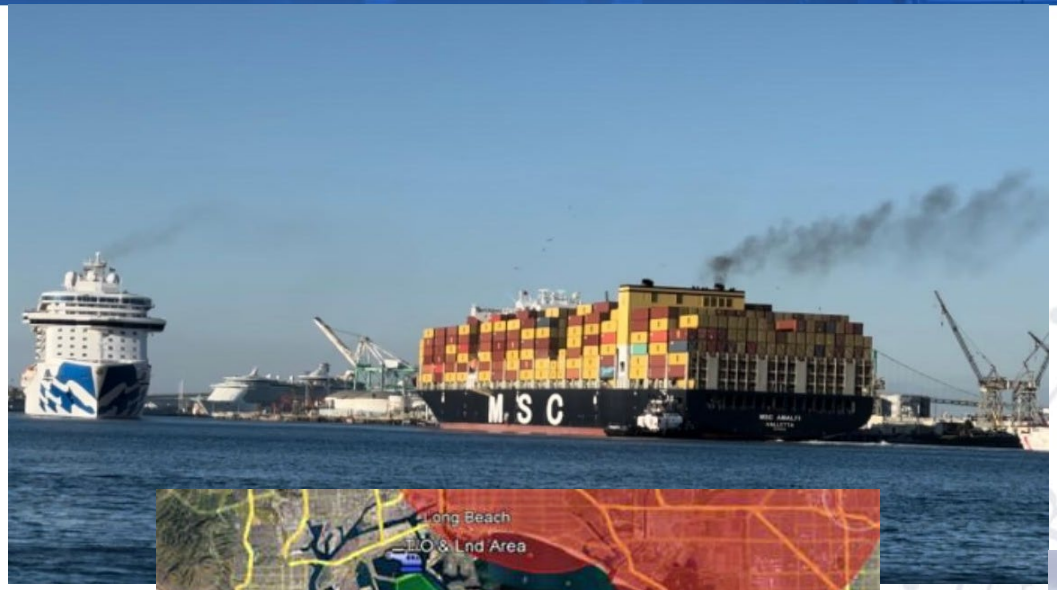
UC RIVERSIDE UNIVERSITY OF CALIFORNIA





The Ports of Los Angeles and Long Beach complex is one of the busiest parts in the world with over 15 million containers passing through each year. As a result, the port complex is a major source of air pollution, contributing to the levels of air quality issues in the region. The demand for effective air emission monitoring is needed and shipping companies are implementing reductions to their environmental impact.

Emission data is critical to understand and quantify changes to technology on ocean going vessels (OGVs) and their impact on the community





With advanced drones, the UCR team plans to gather real time emission data flying directly through plumes from ships and from the Ports of Los Angeles and Long Beach over a full year

This system will be able to screen emissions that were several times higher then their certified values.



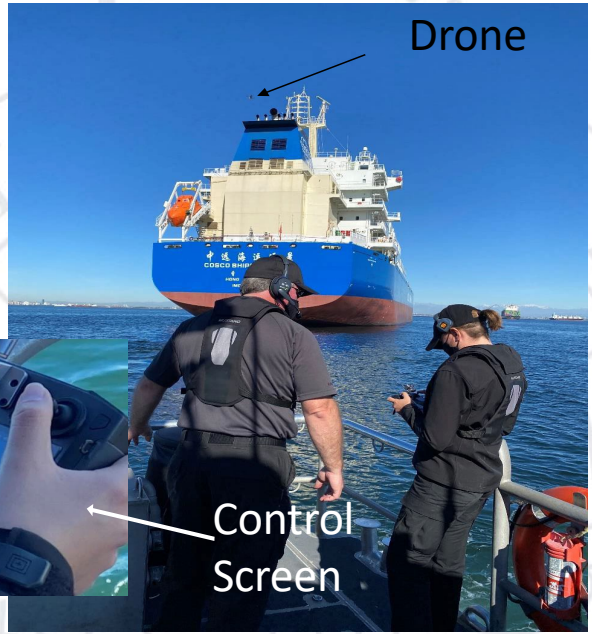
UC RIVERSIDE UNIVERSITY OF CALIFORNIA

Previous Experience

View from the Drone using Standard Video Camera

- Launch from land or from a vessel
- Access vessels was easy to complete and within the authority of the port area





- The previous sensor system was mounted to the drone
- This worked well, but was limited to some gaseous emissions.
- The revised system will capture a much broader range of species of interest to community exposure and health



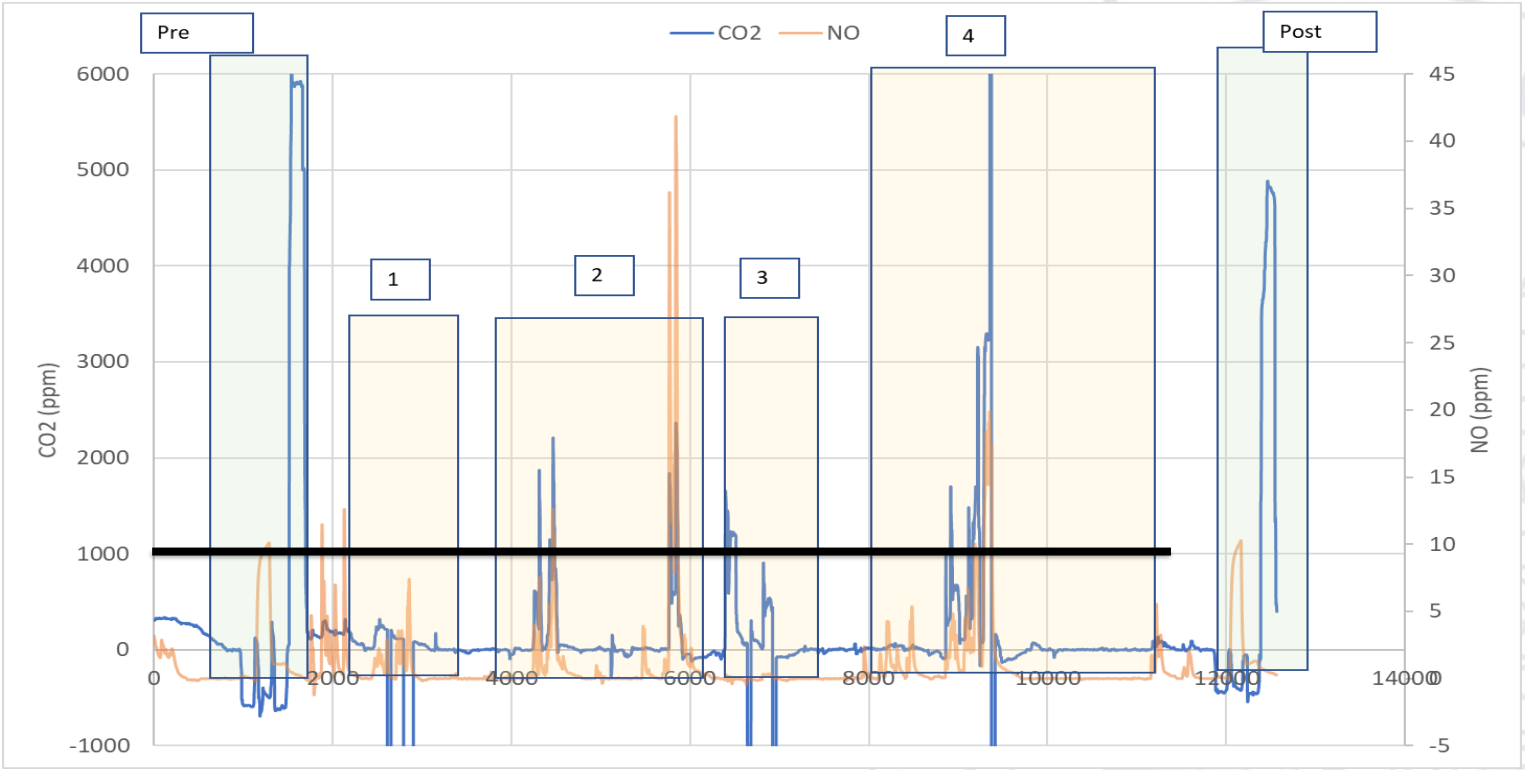


Sensor Package (NO, NO2, CO2 and SO2)



- Exhaust plume easy to see
- Main engine and auxiliary engines can be sampled separately with small drone
- In transit emission did not work. The issue was a limitation of the sensor antenna and larger distances to manage the in-transit testing.

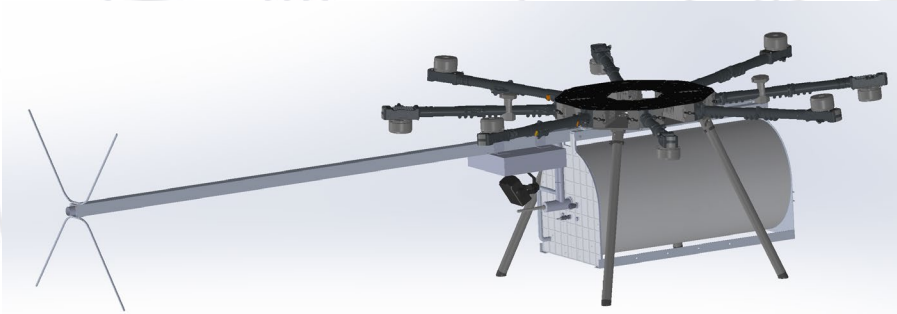
The sensor package worked well for the full day and provided valuable information. The grab sample improvements will allow for improvements between shipping emissions and community exposure



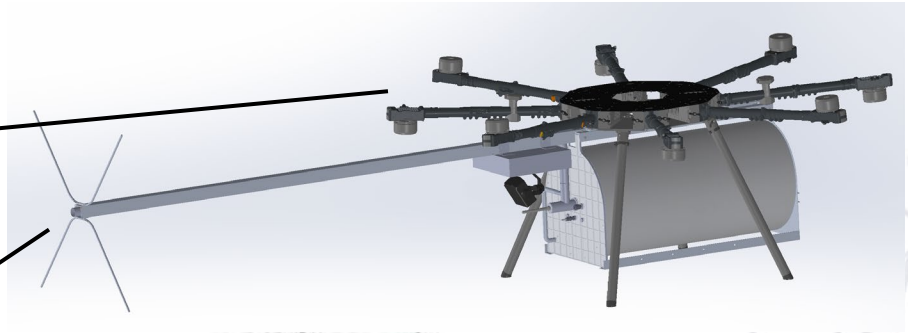


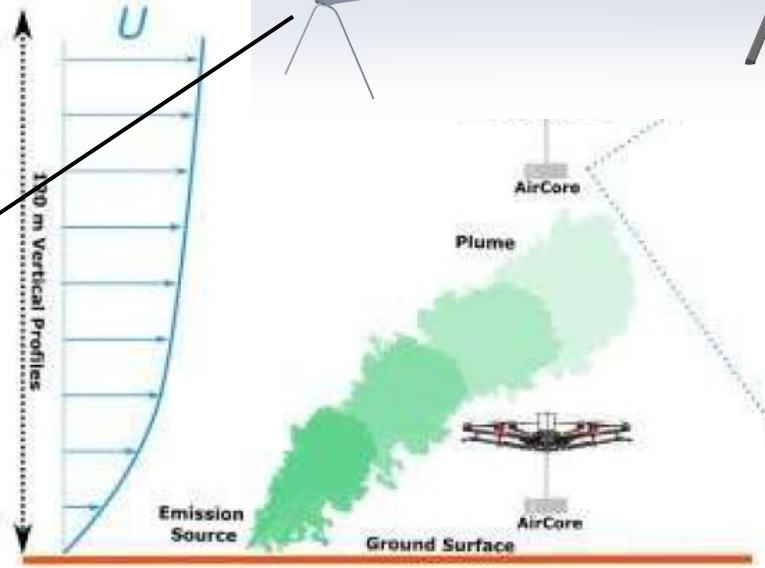
UCR learned from previous drone testing and has improved on the sampling methodology to better characterize the emissions resulting from OGVs exiting and entering the port











The revised approach uses a grab sample and not just in-flight sampling.

Improved ability to collect high-quality data while applying laboratory-grade methods not feasible for in-situ measurement

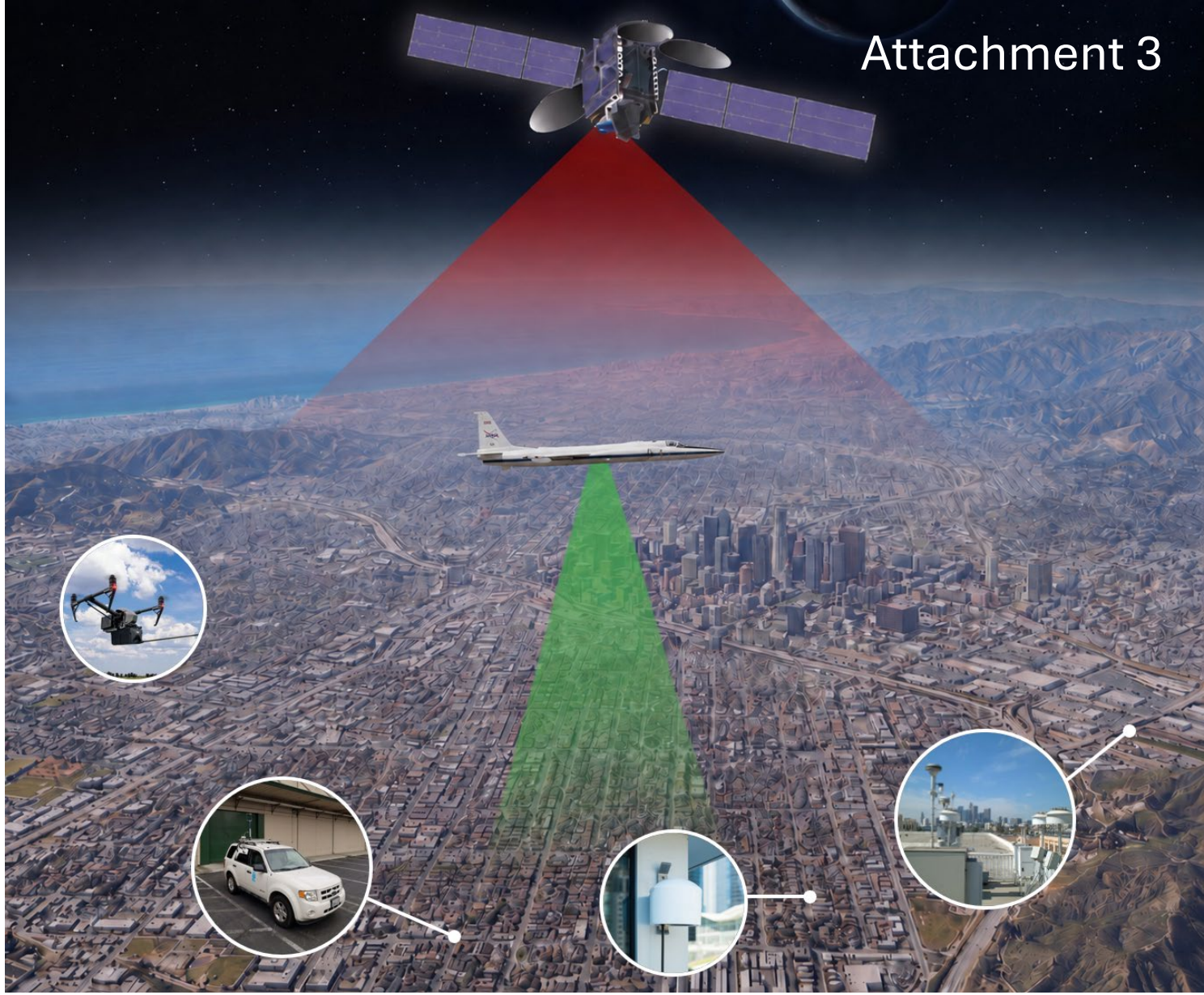
***Figure 15**. Example of sample collection and return using a drone during a prior UCR project that was focused on methane emissions from dairies*

- Our team has had discussions with the ports and authorities for conducting these drone operations
- The time frame for this work is expected to start in 2027 and continue for one year with weekly sampling.



Satellite and Airborne Observations for Air Quality Monitoring

Attachment 3



Sina Hasheminassab, PhD
NASA Jet Propulsion Laboratory

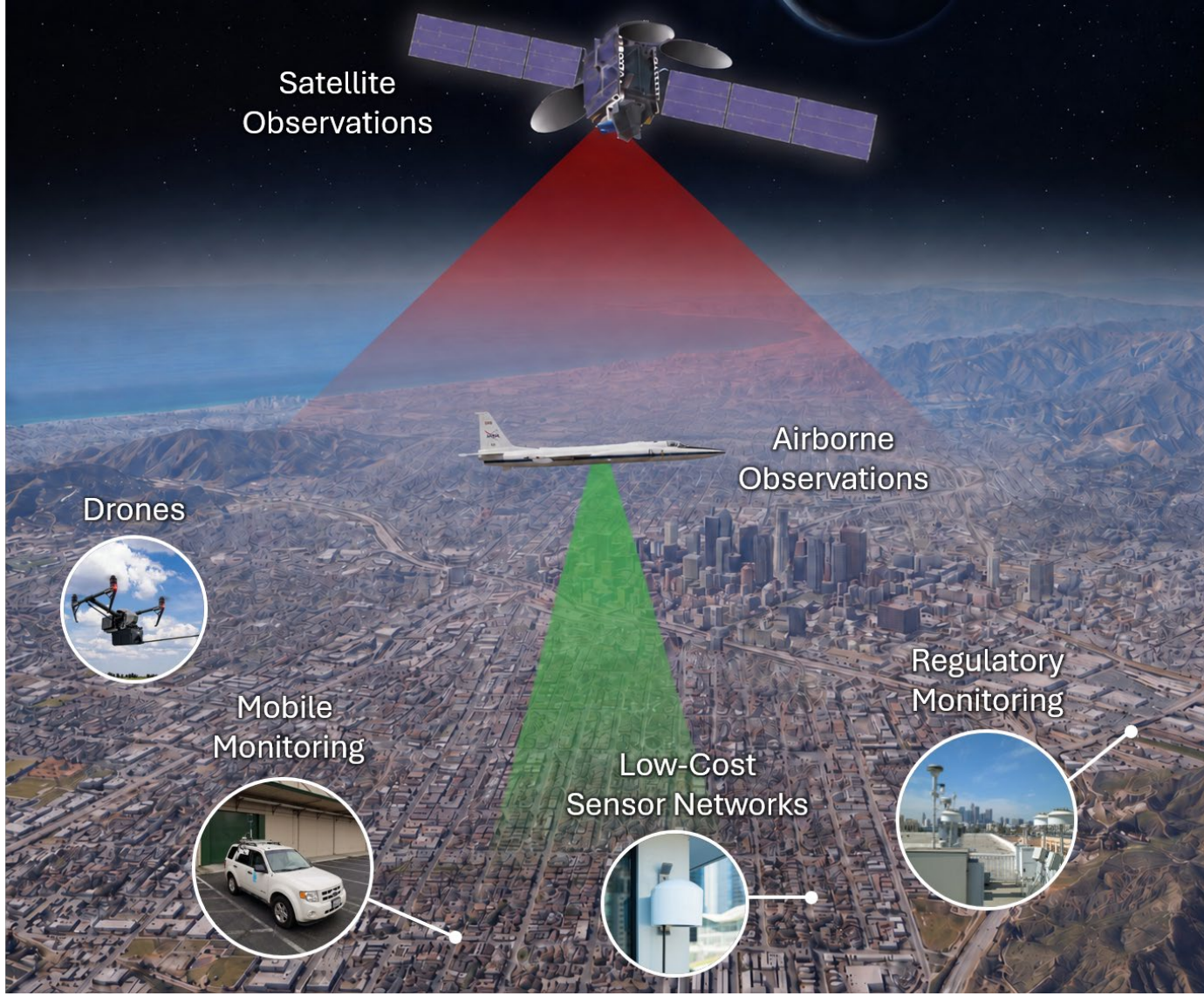
10 Sep 2026

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Government sponsorship acknowledged.

Jet Propulsion Laboratory
California Institute of Technology

Integrated Observing System

- **No single observing system answers every air quality question**. Platforms differ in coverage, resolution, frequency, and accuracy.
- **Satellites provide the regional picture** of pollution patterns, transport, and change over time, but near-surface concentrations are derived rather than directly measured.
- **Airborne measurements provide finer spatial detail** for facilities, neighborhoods, and plumes, but coverage is episodic and resource intensive.
- **Ground networks provide continuous, well-characterized measurements** at specific locations, but with limited spatial coverage.



Satellite
Regional Context/ Transport

Airborne
Targeted facilities/ neighborhood scale

Ground
Community exposure/ regulatory evidence

Tropospheric Emissions: Monitoring of Pollution (TEMPO)

(a geostationary satellite)

- TEMPO observes **North America hourly** during daylight at approximately **2 x 4.75 km^2** spatial resolution.
- Measures key air pollutants and precursors, including **nitrogen dioxide (NO2)**, **ozone (O3)**, **formaldehyde (HCHO)**, **sulfur dioxide (SO2)**, and **aerosols**.
- Routine science operations began in **2023**.
- During the January **2025 Los Angeles fires**, TEMPO captured enhanced tropospheric NO2 and its transport across the region.



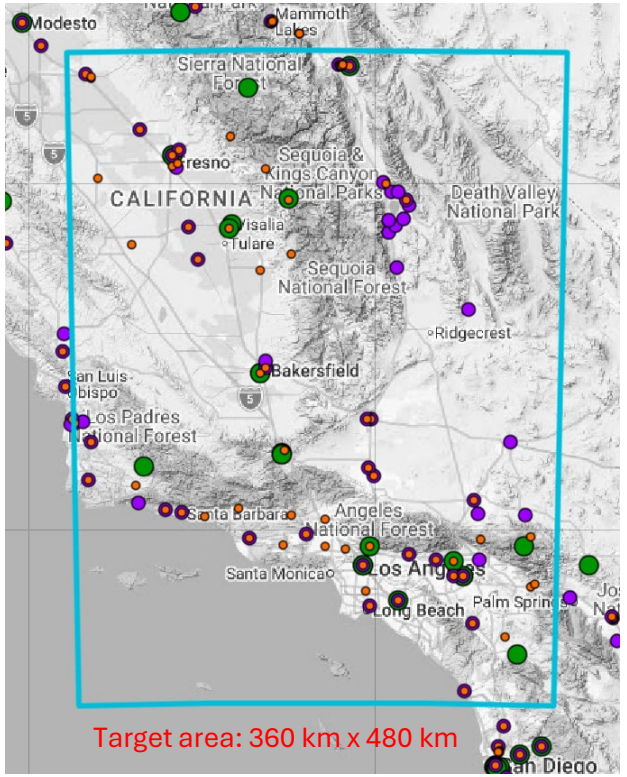
Multi-Angle Imager for Aerosols (MAIA)

(a low earth orbit satellite)

- MAIA is a planned NASA–Italian Space Agency mission, with satellite launch currently expected between **2027 and 2028**
- MAIA's objective is to link exposure to **different PM types** (mixtures of particles having different sizes, shapes, and compositions) with **human health**
- MAIA will combine satellite observations, surface measurements, and atmospheric models to produce **daily 1-km** concentration maps of **total** and **speciated PM** (elemental carbon, organic carbon, sulfate, nitrate, dust)
- MAIA is a **targeted-observation** mission. **Southern California** is one of MAIA's 12 Primary Target Areas



Southern California Target Area

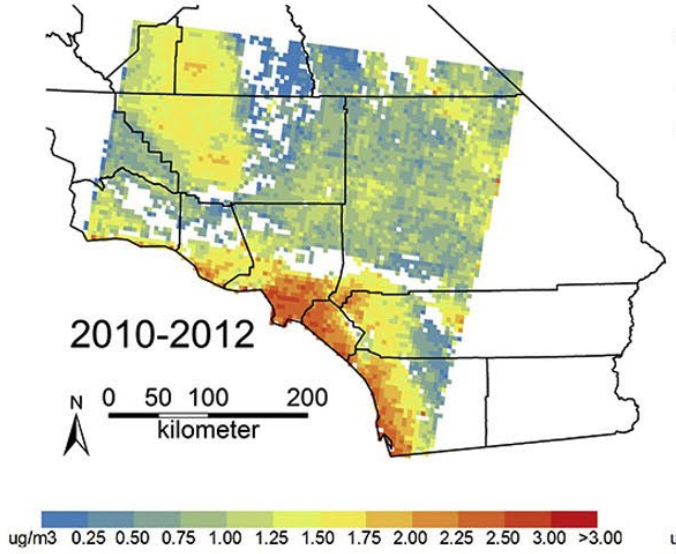


- PM10 Sites
- PM2.5 Sites
- Speciated PM2.5 Sites

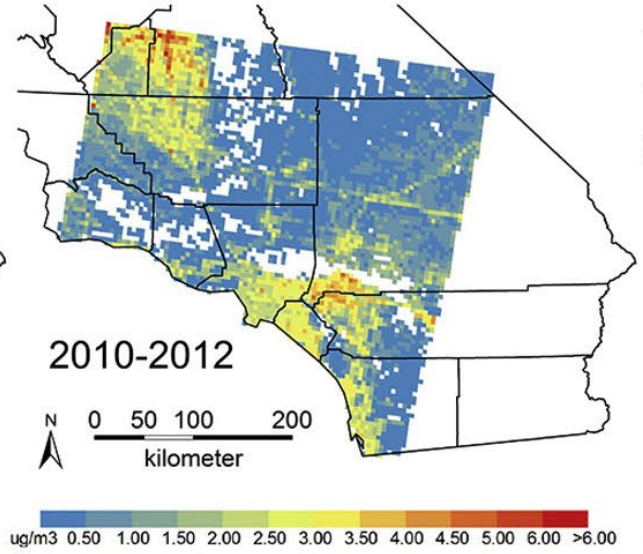
Target Area Bounding Box

Example of Satellite-Derived Ground-Level Speciated PM2.5 Mapping

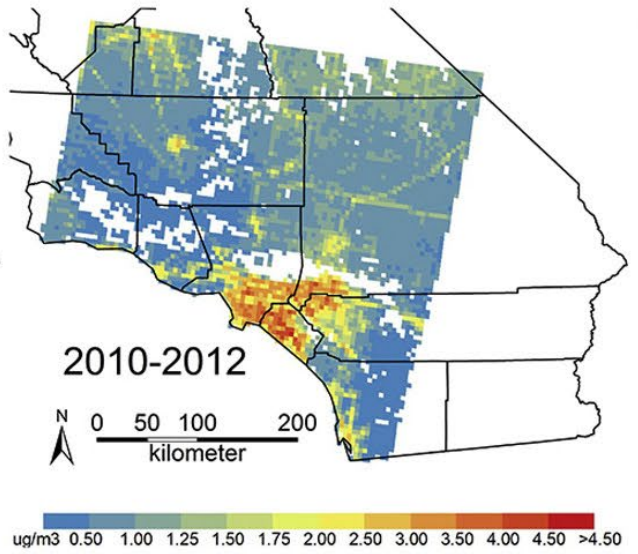
Sulfate



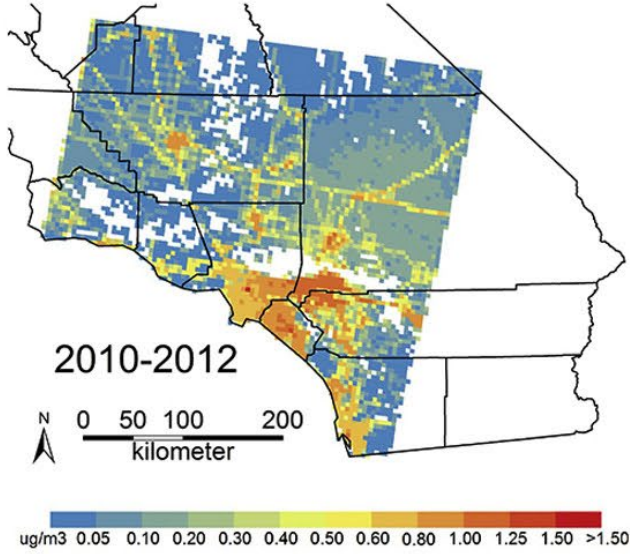
Nitrate



Organic Carbon



Elemental Carbon



Source: Meng, Xia, et al. Atmospheric Environment 181 (2018): 70-81.

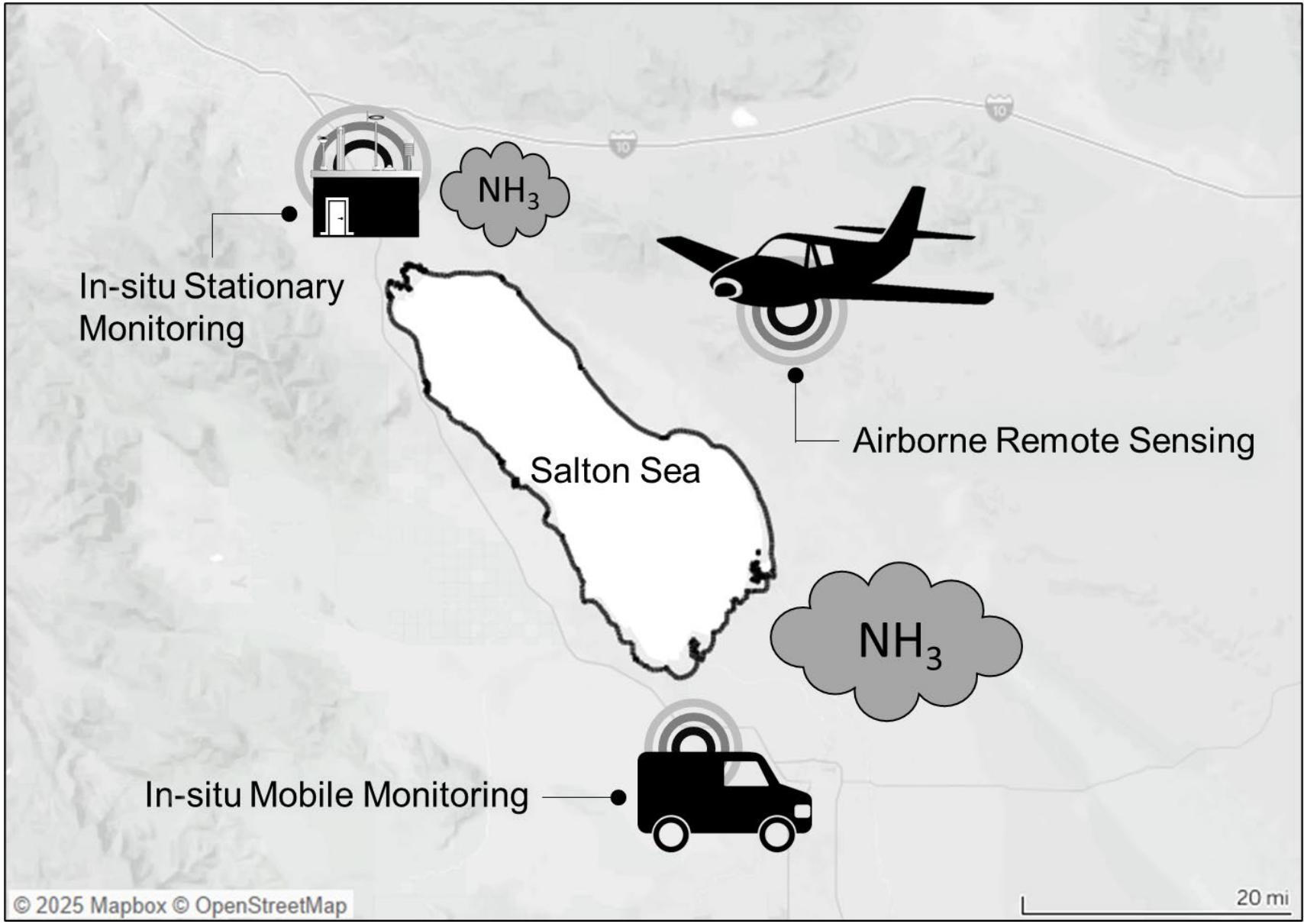
- **Satellite-derived** PM2.5 composition maps reveal **spatial gradients** and support **health research**, **exposure assessment**, and **air quality management**.

CALIFORNIA AIR RESOURCES BOARD

NASA satellite helps collect 15 years of Southern California air pollution data; results show air pollution controls working

Airborne Mapping of Ammonia in the Salton Sea Region

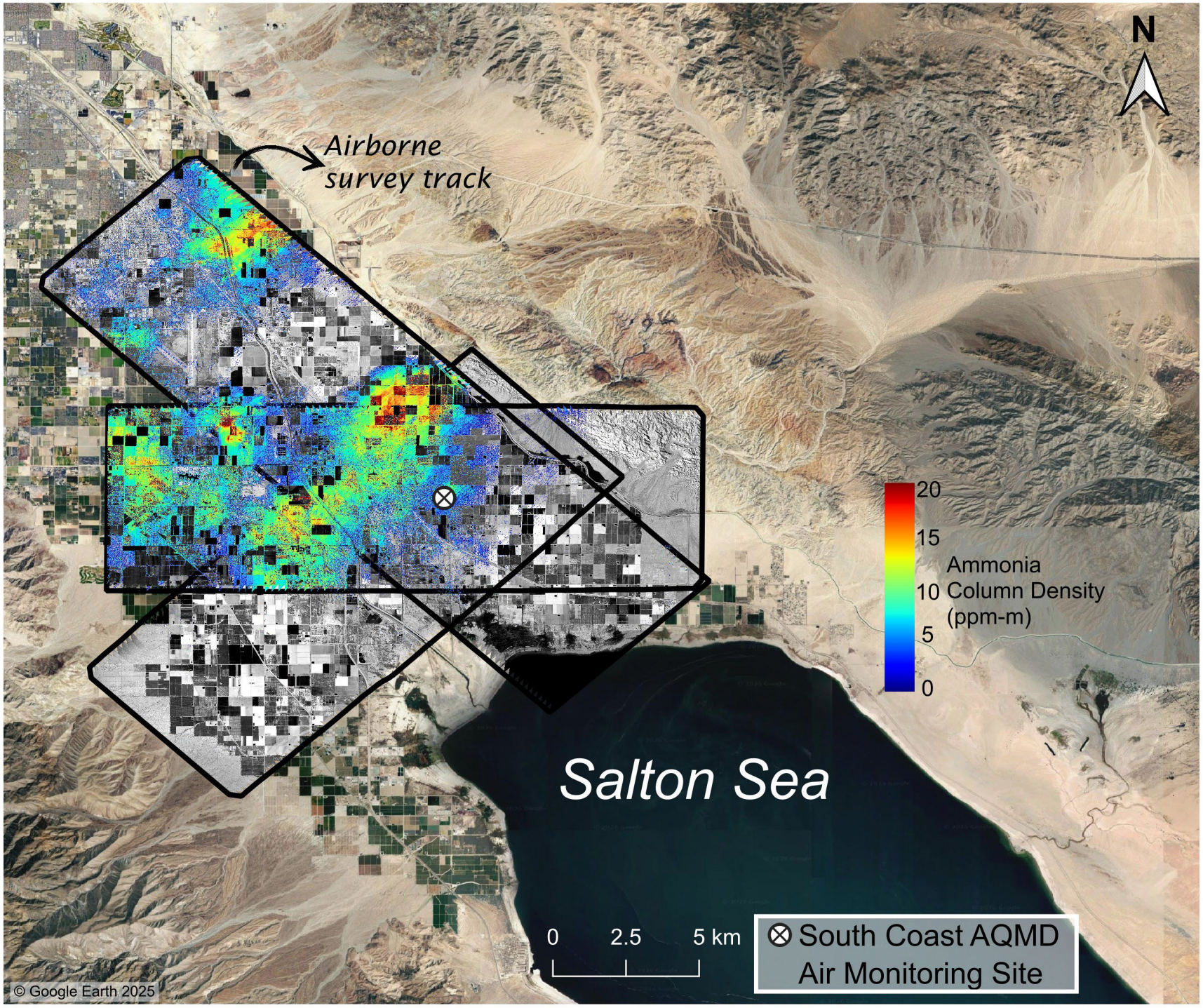
- **Ammonia (NH3)** is a key **precursor of secondary PM2.5**, but its emissions are poorly characterized.
- The **Salton Sea region** is an area of elevated ammonia in California.
- A 2023 campaign combined **airborne** and **ground measurements** to characterize ammonia in the region.



JPL AEROSPACE South Coast AQMD UC RIVERSIDE

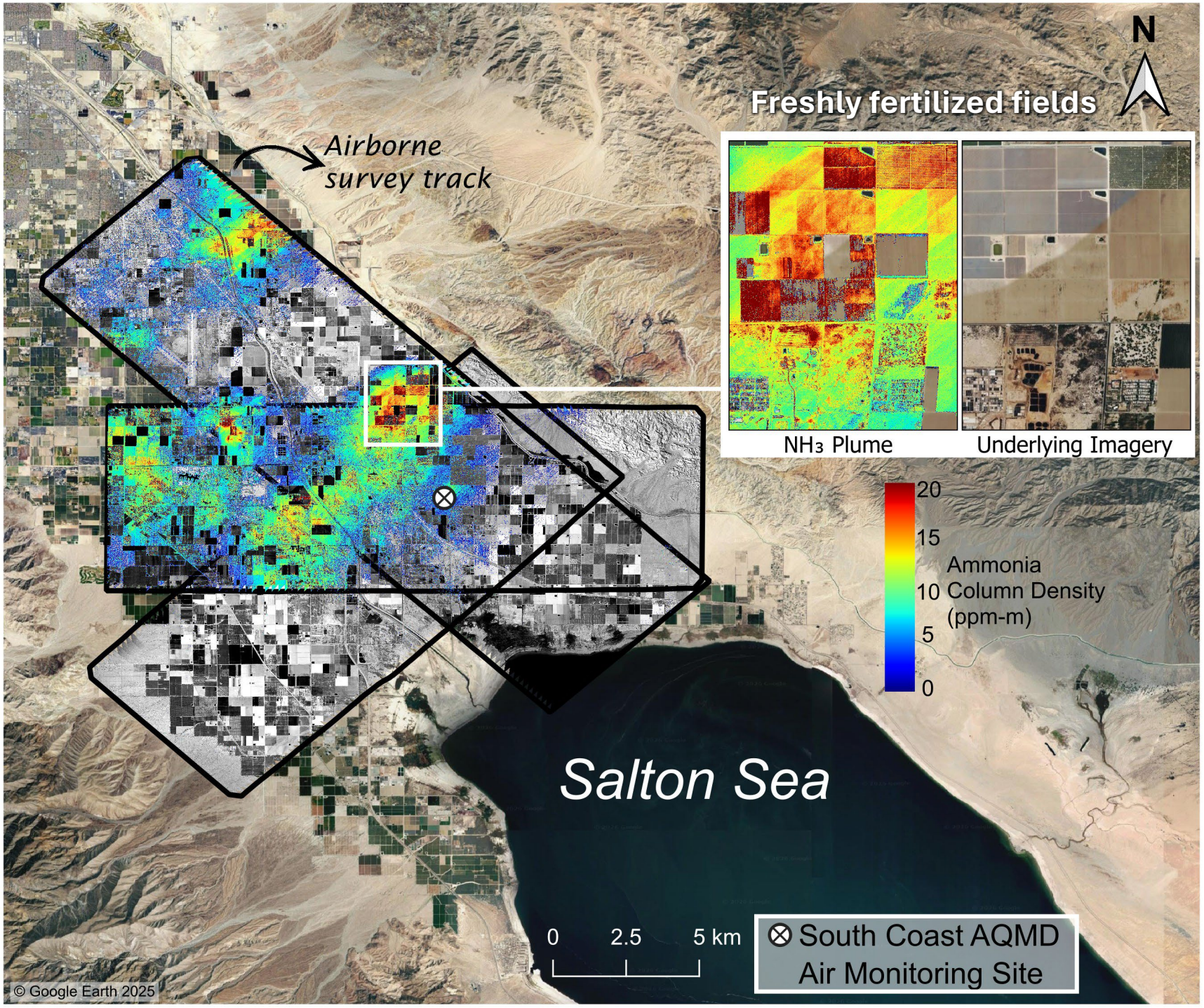
Airborne Mapping of Ammonia in the Salton Sea Region

- **Airborne observations** mapped ammonia column density at **~2 m** spatial resolution.
- Ammonia in the **Eastern Coachella Valley** was primarily associated with **diffuse agricultural sources**.
- Airborne observations **were consistent** with South Coast AQMD's **ground measurements** in Mecca.



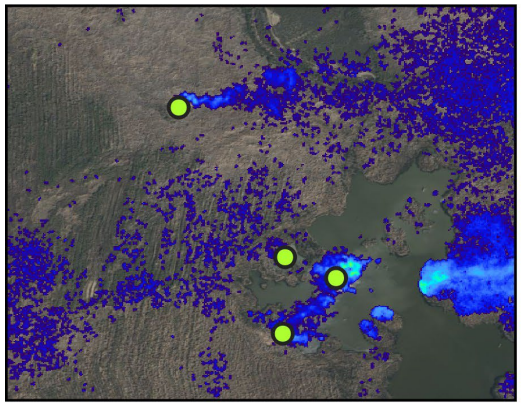
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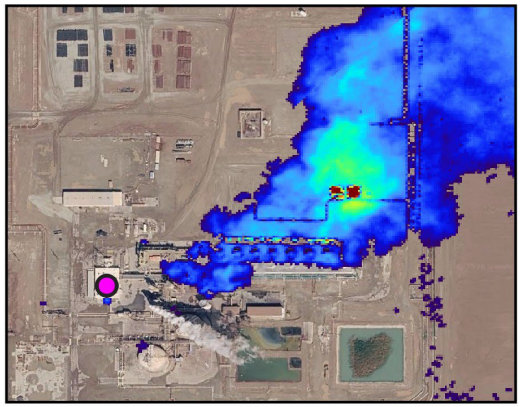
What High-Resolution Airborne Measurements Can Reveal

Fumaroles



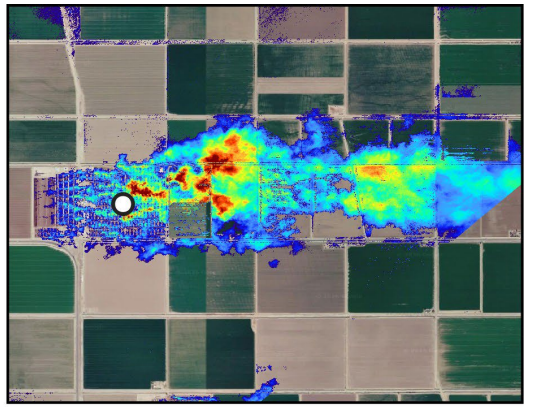
0 100 200 m

Power plant



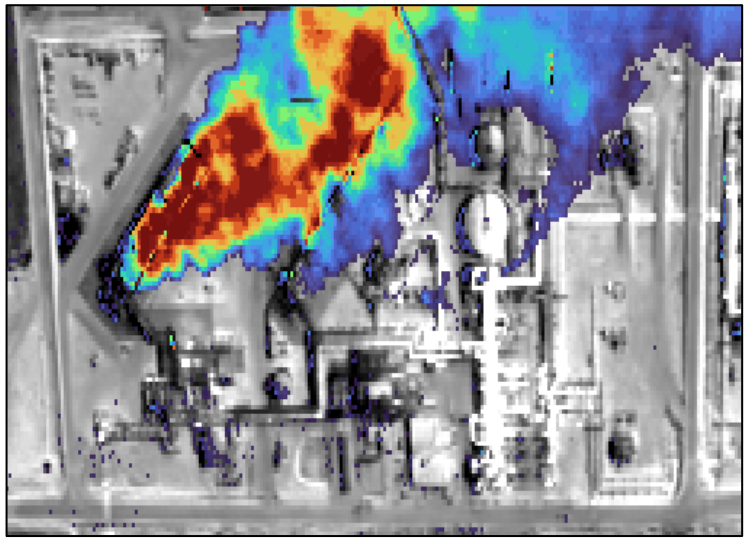
0 50 100 m

Cattle Feedlot



0 1,000 2,000 m

- **Detect localized plumes** from small sources, such as individual fumaroles.
- **Locate emission origins within facilities**, such as power plants.
- **Map the spatial extent of large plumes**, like those extending downwind of cattle feedlots.



- **Use repeated views of a facility's plume** to estimate emission rates.

Thank you!

Sina Hasheminassab
Sina.Hasheminassab@jpl.nasa.gov

Attachment 4

AQ PORTAL

A unified platform for air quality data, analytics, and public access

Brandon Feenstra, Ph.D.
Monitoring Network Manager
Monitoring and Analysis Division
South Coast AQMD

Board Retreat | September 10, 2026

Background

Many data sources → Many Points of Access

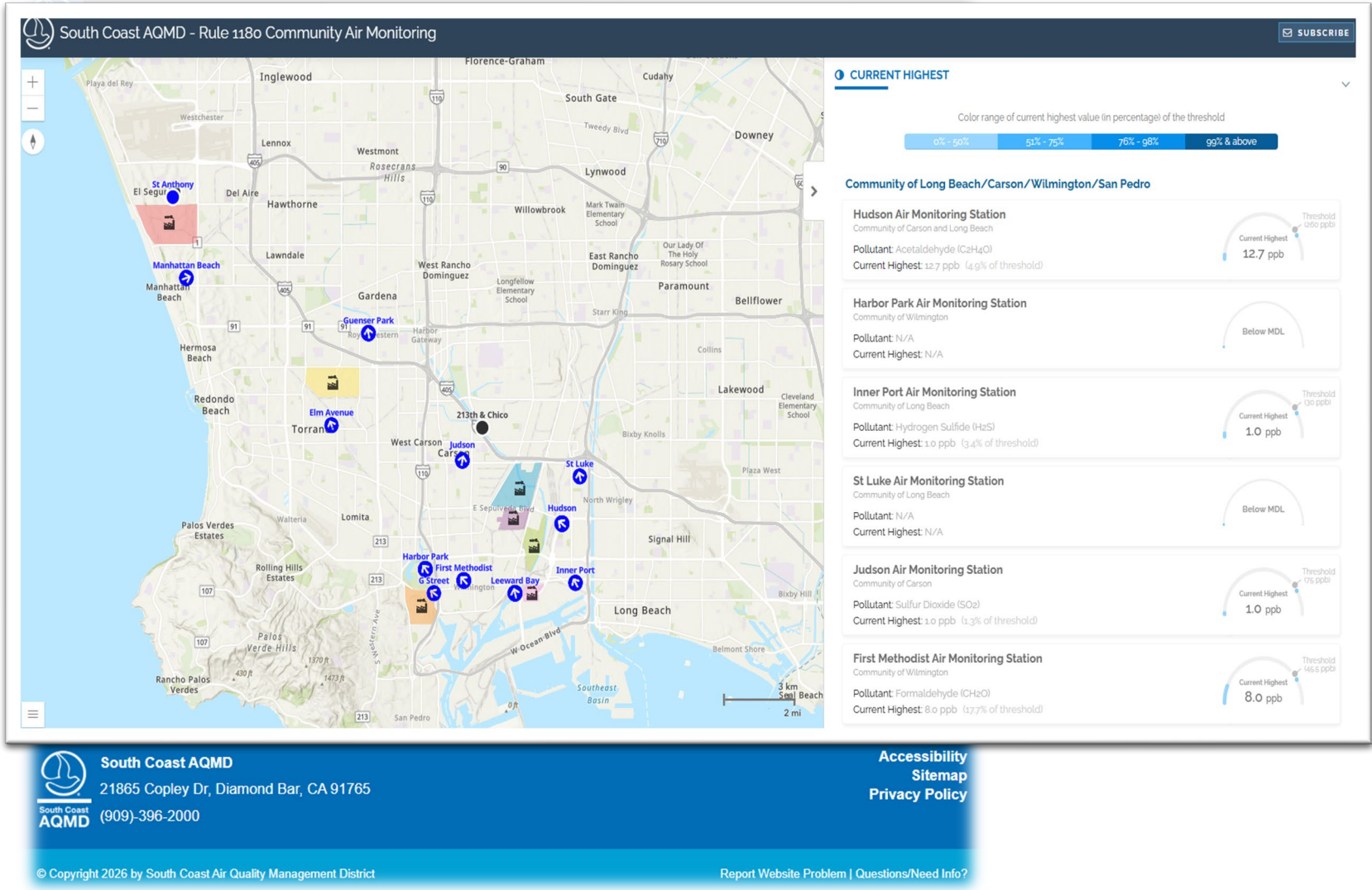
Data Sources

Internal sources

- Air Quality Index Data
- Monitoring Network
- Laboratory Sample
- Air Quality Sensors
- AB 617 Community Monitoring
- Rule 1180 Community Monitoring
- Special Monitoring Projects
- Incident Response Monitoring
- Mobile Air Quality Data

External Sources

- Air Quality Sensors
- Rule 1180 Refinery Monitoring
- Traffic count
- Meteorological
- NASA satellite Data



THE PLATFORM

Many data sources → One point of access

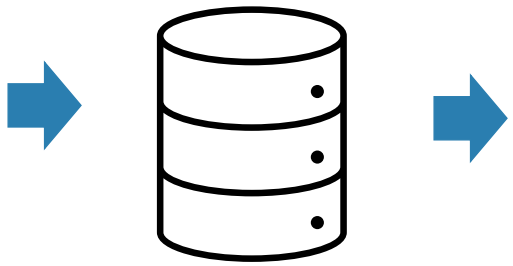
AQ Portal brings diverse air quality data together so staff and the public can access, analyze, and visualize information more easily.

AQ PORTAL

Harmonize & process

Azure cloud infrastructure

- Organize and manage data
- Apply QC and display logic
- Support analytics and APIs



ACCESS & INSIGHT

Make the data useful

Public + staff dashboards

- Interactive visualization
- Custom data export
- Diagnostics & advanced analysis

A single platform reduces fragmentation and creates a scalable foundation for future data sources and dashboards.

PROGRESS

Phase 1 | Foundation built

Established the core architecture and capabilities needed to operate AQ Portal.

Platform foundation

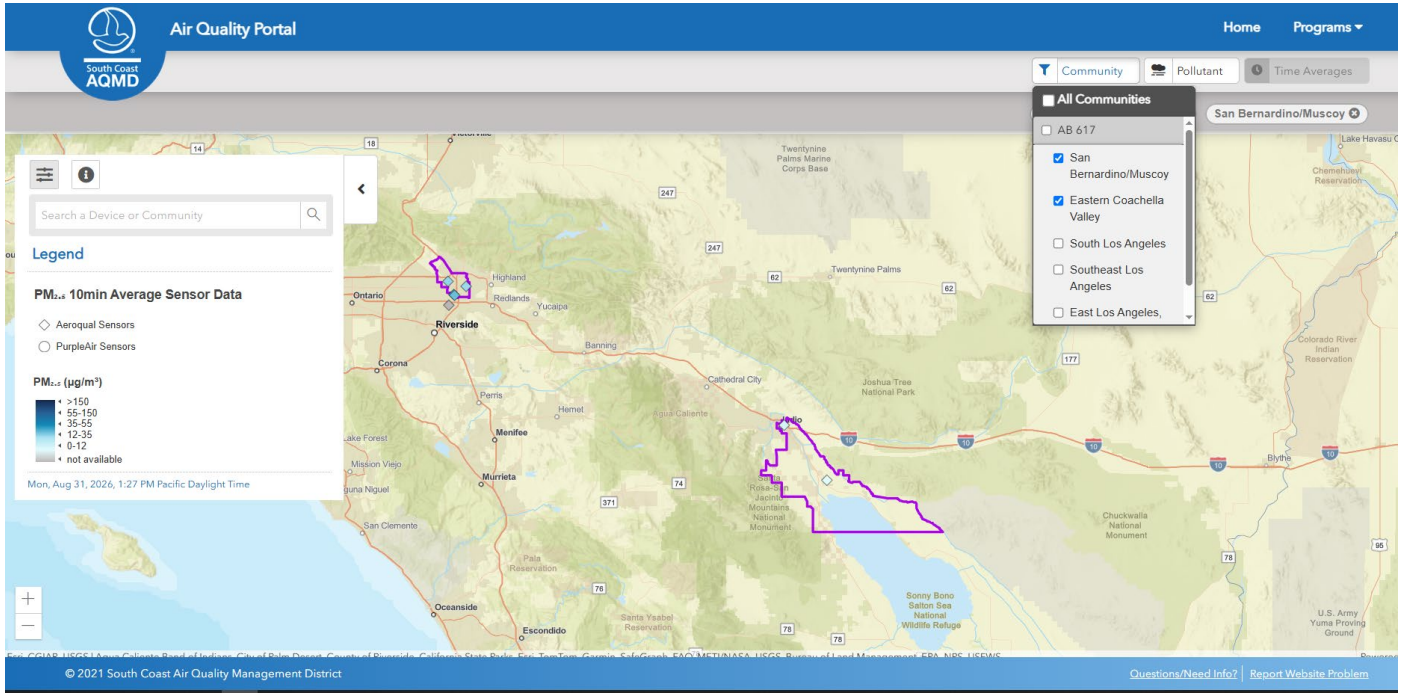
System architecture • device & data management

Data quality & display

QC rules • display logic • analytics/query capabilities

Web & integration

Websites • Microsite Builder • API access



Available at: https://aqportal.aqmd.gov/

CURRENT DEVELOPMENT & FUTURE EXPANSION

Phase 2 | Scale, expand, and unify

Focus the next phase on broader coverage, stronger public access, and deeper analytics.

1 Expand data coverage

Integrate all additional stationary monitoring databases

2 Expand public access

Global dashboard – single point of access

Standardize Monitoring Station Dashboard

3 Strengthen analytics

Enhance data visualization

Integrate advanced analytical tools

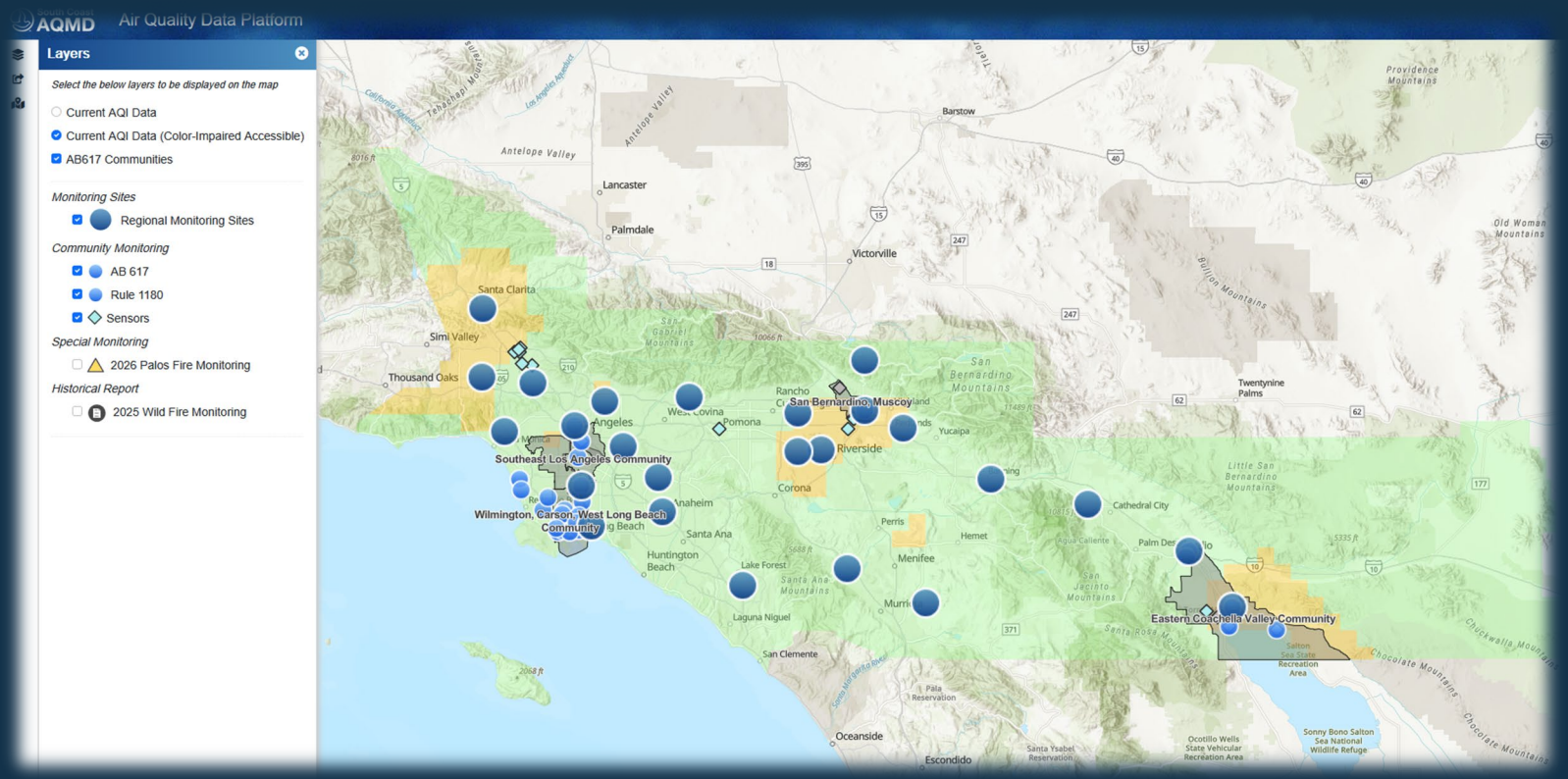
Improve data processing and display capabilities

Future expansion

Mobile monitoring • Satellite • Drone Monitoring • Traffic • Demographics

AQ PORTAL

One platform.
Many data sources.
Greater access.



Thank you

Innovative Energy Solutions

Moderator: Dr. Aaron Katzenstein
Deputy Executive Officer
Technology Advancement Office

Governing Board Retreat
September 10, 2026

Bala Ramamurthy
Chief Executive Officer
Critical Loop

As CEO and Co-Founder of Critical Loop, Bala brings over a decade of leadership in aerospace innovation. Previously, Bala served as a key leader at SpaceX, where he led the development of the human-rated Falcon 9 rocket, playing a pivotal role in the United States' return to human spaceflight. With extensive experience in engineering, operations, and safety, Bala led critical tests and the development of new hardware and software, ensuring the highest standards for crewed space missions. Bala's deep expertise in engineering technology, governing relationships, and commitment to advancing the future of energy are central to the vision and growth of Critical Loop.



Tim Fogarty
Chief Executive Officer
PCC Hydrogen

Tim Fogarty is co-founder and CEO of PCC Hydrogen and founder and CEO of Pyrochem Catalyst Company, which develops and manufactures advanced catalyst materials for emissions mitigation and fuel reforming. Over more than two decades, he has built, financed, and commercialized energy technologies. His earlier operating roles include serving as CFO of fuel-cell developer INI Power Systems and founding and co-leading Phoenix Coal Corporation, which commercialized university-licensed technology and completed an IPO. Tim earned an A.B. from Harvard University and subsequently served four years as an infantry officer in the United States Marine Corps.



JT Steenkamp
Vice President
Technology, Front-End Engineering & Development
Prologis Mobility

JT Steenkamp is the Vice President of Front-End Engineering & Development, for Mobility at Prologis; the world's largest industrial real estate company focused on distribution centers and data centers. He is accountable for EV charging and hydrogen infrastructure technology as well as project development and delivery.

JT recently led a team to deliver the largest EV truck charging project in the US at 9 MW including 18 MWh of energy storage and 3 MW of linear generation capacity.

Before Prologis JT spent 10 years at Shell developing projects in hydro pumped storage, renewable natural gas production, distributed energy storage, and EV charging programs, while also playing leading roles in country-level hydrogen, carbon capture and sequestration, and fuel cell strategies.

JT holds Bachelor's and Master's degrees in Engineering Physics from the University of Saskatchewan.



Attachment 1

Critical Loop

Delivering Megawatts in Weeks, Not Years

Bala Ramamurthy, CEO
bala@criticalloop.com

CRITICAL LOOP

The utility says “Wait 5 years”.

But manufacturers, data centers, EV charging hubs, and logistics facilities need power now.

- There is an estimated 5–7 year grid upgrade timeline
- There are millions of dollars of GPUs sitting idle
- Leased facilities are generating zero return
- Utilities are facing 200+ customer backlogs

Power scarcity is becoming America’s industrial bottleneck.



We bridge the gap between what the grid delivers today and what facilities need tomorrow.

Critical Loop deploys modular battery storage and UL-certified controls behind the meter to:

- Pull maximum grid power when available
- Switch to batteries during constrained hours
- Integrate diesel, natural gas, solar, wind, or future SMRs
- Scale down once utility upgrades catch up



How it Works

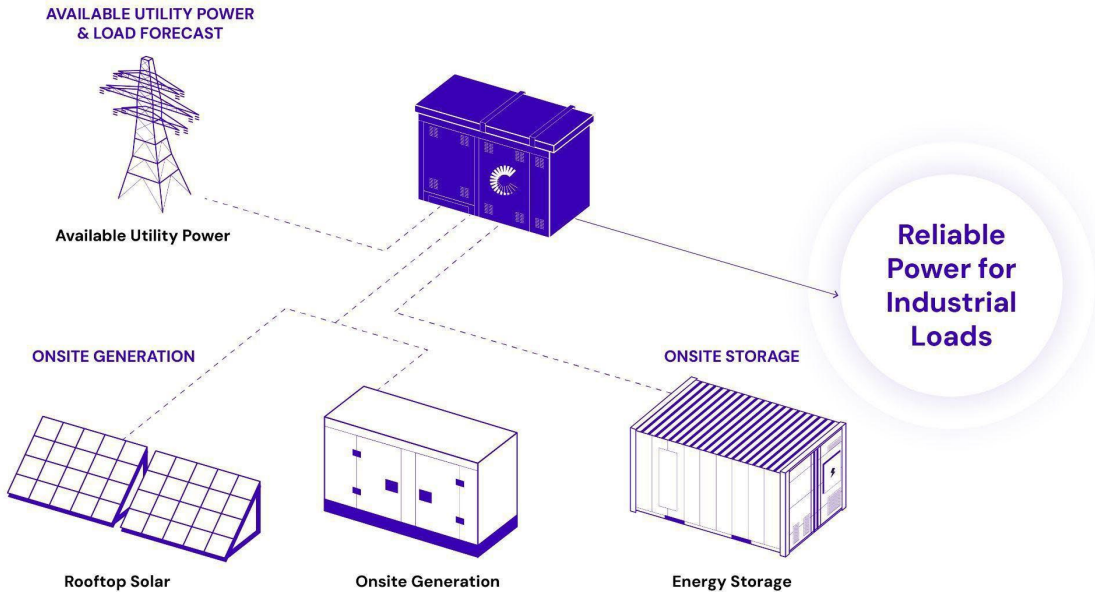
When the utility catches up, our system scales down.
You are buying time-to-power, not a power plant.

Behind your meter:

1. Available Utility Power
2. Battery Storage
3. Backup Generation

Our Cygnus controller:

- Enforces hourly utility power limits
- Pulls maximum available grid power
- Switches seamlessly to storage
- Provides real-time dashboards



What makes us different



Supplement the Grid, Don't Replace It

Unlike companies building full off-grid systems, we use 90–98% grid energy and supplement only peak constraints.



Temporary Systems That Disappear

3–5 year service agreements. No stranded 10-year power plants.



Multi-Standard Grid Platform

Certified across major interconnection standards, including UL-3141 and IEEE 2030.5.



Aerospace-Grade Execution

Engineers from SpaceX, Tesla, Rivian. Applied to the least glamorous, but most critical, infrastructure problem.

Proof at Scale

We’re not a prototype company.
We are operating infrastructure today.

67+
Control nodes

distributed across
Southern California

50
MWh

Deployed,
scaling to 100+MWh

8+ industries
served

Our configurable platform
allows versatile applications

5-year
contract

With San Diego International
Airport

San Diego Airport

Revolutionizing demand power management at the busiest single-runway commercial airport in the US

- Critical Loop is optimizing across site batteries and onsite solar for San Diego International Airport
- Millions in projected savings over 5 years for the busiest single-runway airport
- Took over 17 BESS totaling 2MW/4 MWh, with more than 4 MW of Solar
- $326,000 in savings since October 2025

Deployment window: October 2025, 5 year contract.
Setup time: <3 months to re-commission existing facility.
Power: 4 MWh x 2 MW





Terawatt: Transportation & Logistics Hub

Unlocked fast, cost-effective grid access for EV fleets at constrained sites, accelerating operations and reducing costs

- Critical Loop delivered 10 MW of flexible power across two sites through first UL-3141 certified flexible interconnection in Southern California Edison (SCE) territory.
- Energized sites to full revenue generating capacity in 6 months vs. 5 years expected utility upgrade.





Deployment window: Q3 2025, ongoing
Setup time: <1week
Power: 10 MW

Coming Soon

Two Commercial Real Estate Deployments



THE PROBLEM

- Hard deadlines to firm power in order to retain high power businesses
- Grid-constrained sites, utility delivery delayed 36 months
- Generators a non-viable option given air quality requirements

OUR SOLUTION

- Grid: ~9 MW (firm + flexible)
- Battery: 12MW / 60 MWh via CLB 5100s
- Backup: 3.5 MW diesel, emergency only

WHY CRITICALLOOP

- Only certified stack: UL 3141+ IEEE 2030.5
- Only provider at this scale
- US-made hardware
- 95% lower cost: $9M for 18mos / 6 buildings vs. $9M for 6 mos / 1 building with generators + fuel

Thank you

Bala Ramamurthy, CEO
bala@criticalloop.com

CRITICAL LOOP

PCC Hydrogen

September 2026

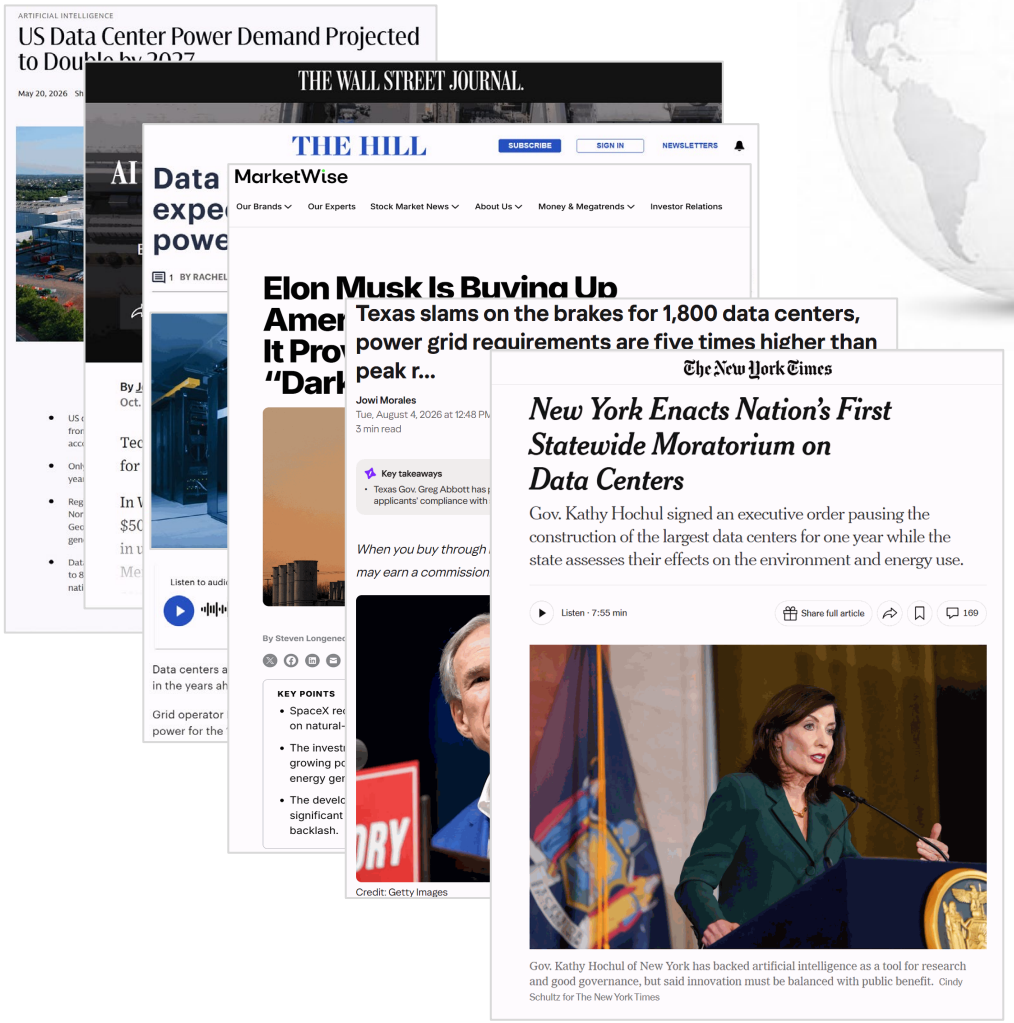
Tim Fogarty
CEO
tfogarty@pcchydrogen.com



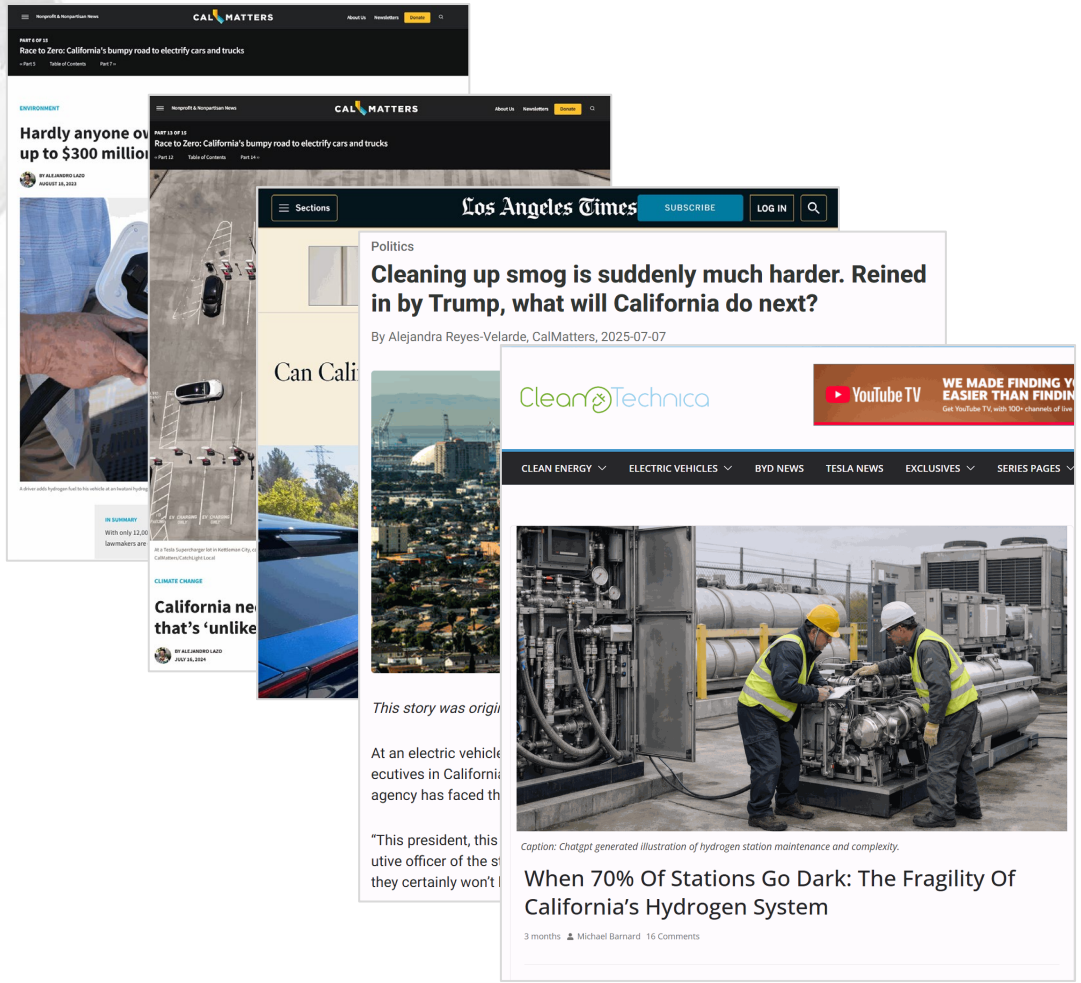
The Market is Desperate for a Solution Today

PCC Hydrogen

POWER GENERATION



HYDROGEN MOBILITY



PROBLEM
WHAT WE DO
COST
PROJECTS

The Energy Dilemma – Hydrogen can be The Solution

Clean H_2 can be the immediate solution to these problems

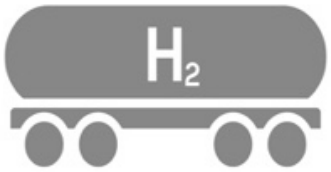


ENTRY BARRIER

01
Price

$$$

02
AVAILABILITY & STORAGE



03
CARBON INDEX



The Energy Dilemma – Hydrogen can be The Solution

PCC Hydrogen



PROBLEM
WHAT WE DO
COST
PROJECTS

WHY IT WINS · AT A GLANCE

Lower cost
than delivered H_2 or diesel power
Hydrogen made at the point of need, without the cost of moving it

Months
not years
To deploy on site, with no wait in a grid interconnection queue

Up to 20 MW
building blocks
Power generation capacity, scaled site by site

Weeks
of feedstock on site
Ethanol stored on site, delivered by existing rail and truck

Zero
NOx and PM
Combustion-free, unlike diesel generation

Local – Resilient – Scalable – Available – Secure

What We Do – Distributed Energy

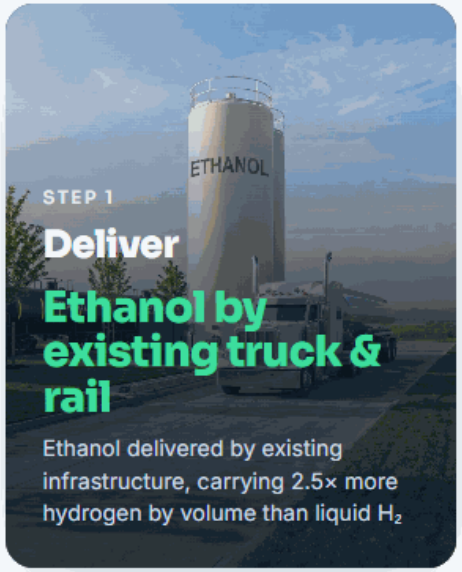
PCC Hydrogen

PROBLEM
WHAT WE DO
COST
PROJECTS

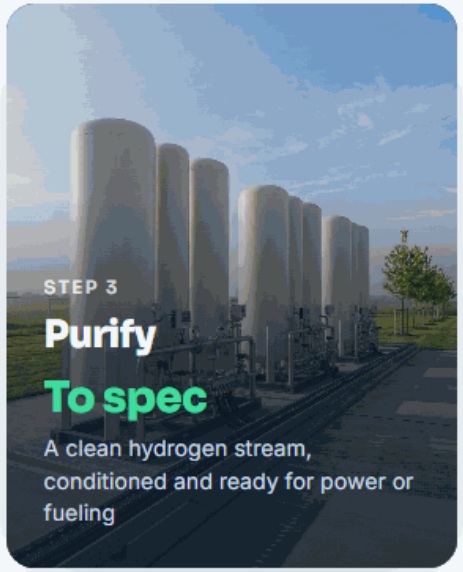
WHAT WE DO

One Distributed Process. Multiple Products and Applications.

Ethanol in. Clean hydrogen out. No flame. A liquid already moved at scale becomes clean hydrogen, clean power, and valuable co-products at the point of use.









PCC Hydrogen

BEYOND POWER AND FUELING

Multiple Applications for Our Hydrogen and Coproducts

The same process also serves complementary uses of hydrogen (refining, e-fuels, and distributed green ammonia) and yields co-products with real market value: biogenic CO_2 for food & beverage, SAF, and eMethanol production; nitrogen for cooling; and clean water.

FOUR OUTPUT STREAMS FROM ONE FEEDSTOCK

Hydrogen
Feedstock for refining, e-fuels, e-ammonia and fertilizer, and on-site fleet operations.

Biogenic CO_2
Food & beverage, greenhouse cultivation, cold chain, sequestration, and e-fuels.

Liquid nitrogen
Cold chain, food processing, and industrial applications.

Water
A usable output stream from the hydrogen-to-power conversion process.

PCC Hydrogen

THE CORE IDEA

Pioneering a New Hydrogen Production Process to Enable Power Generation and ZEV Mobility

One low-cost hydrogen source, produced on site, deployed two ways and generating valuable coproducts.





What We Do - Power On Site



WHY IT WORKS

Weeks
of feedstock, stored on site

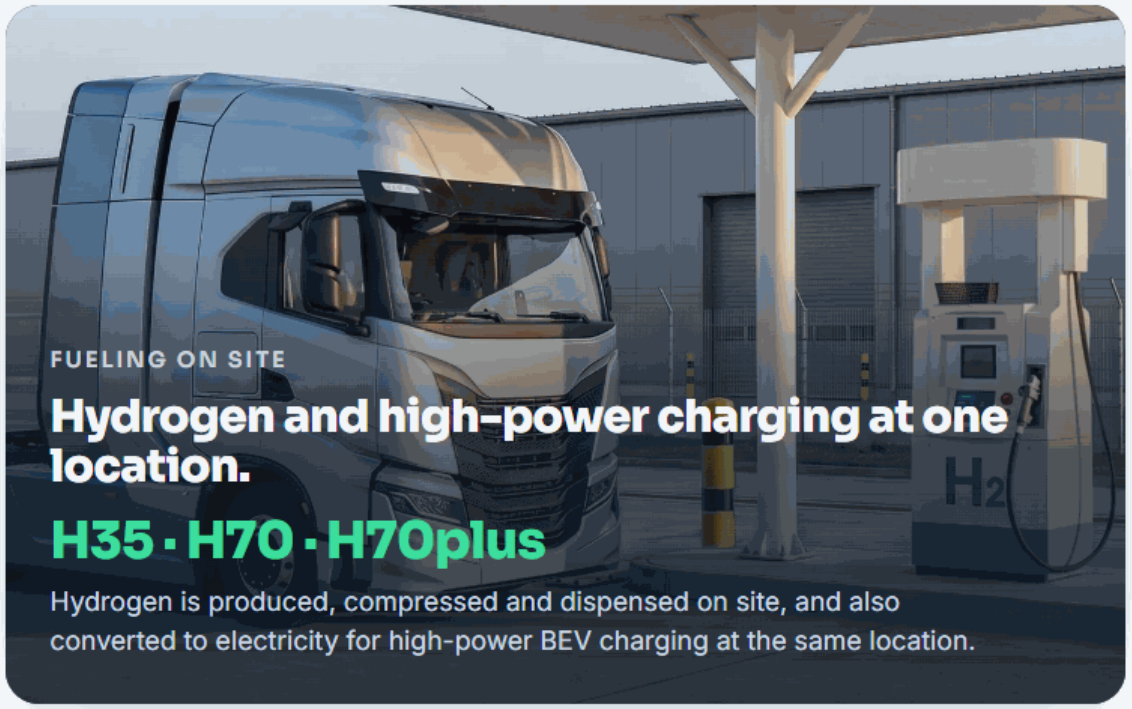
No NOx or PM
an easy path to permitting

Diesel parity
or better

Net water
generated, not consumed

Liquid N_2
on site for cooling loads

What We Do - Hydrogen and BEV charging



WHY IT WORKS

Lower cost
than delivered hydrogen

No H_2 transportation
no liquid H_2 to truck in

Tax credits
approval in process with the EPA

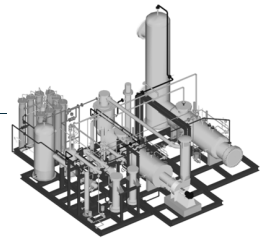
Weeks
of stored feedstock

H_2 + BEV
one site, mixed fleets

>90% avoided grid electricity

Low-Cost Hydrogen Solution - Production Cost ($/kg H_2)

PCC Hydrogen



CORE PRODUCT

BYPRODUCT SALES

TAX INCENTIVES

Hydrogen (Fuel Cell Grade)

CO_2 food grade biogenic CO_2

N_2 Nitrogen

TAX credits

$6–8

-$2

-$1

-$2

$1–3*

<$ 0.20 /kWh*

SAF

e Methanol

DROP IN FUELS

* All values on this slide are indicative and depend on ecosystem

1st Commercial Ecosystem – Cloverdale, IN

PCC Hydrogen

Objectives

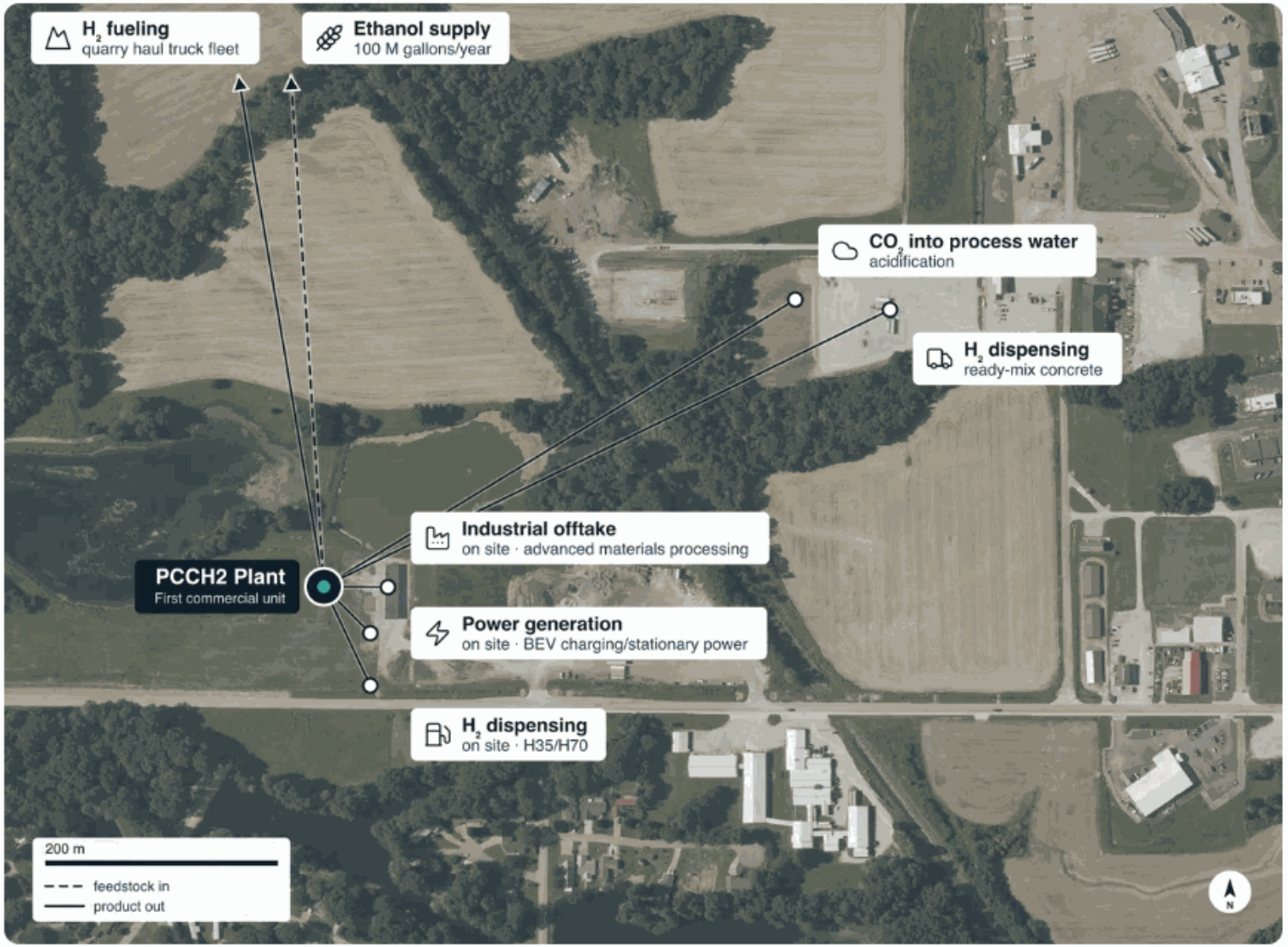
- ~~Plant operating by end of 3Q 2026~~
- Demonstrate 40x scale-up of technology
- Enable local H_2 ecosystem

H_2 Offtake

- Industrial use - resulting in >50% decrease in customer's H_2 cost
- Power generation – deployment of MPU's in Stage 0, and >500kW in Stage 1
- Mobility – LD and HD dispensing

Biogenic CO_2 Offtake

- Direct sale
- Concrete plant wastewater acidification



Cloverdale Site Map — PCC Hydrogen · aerial imagery: USDA NAIP 2023 via USGS, public domain

PROBLEM
WHAT WE DO
COST
PROJECTS

Fast Follower Ecosystem – San Bernardino, CA

PCC Hydrogen

Objectives

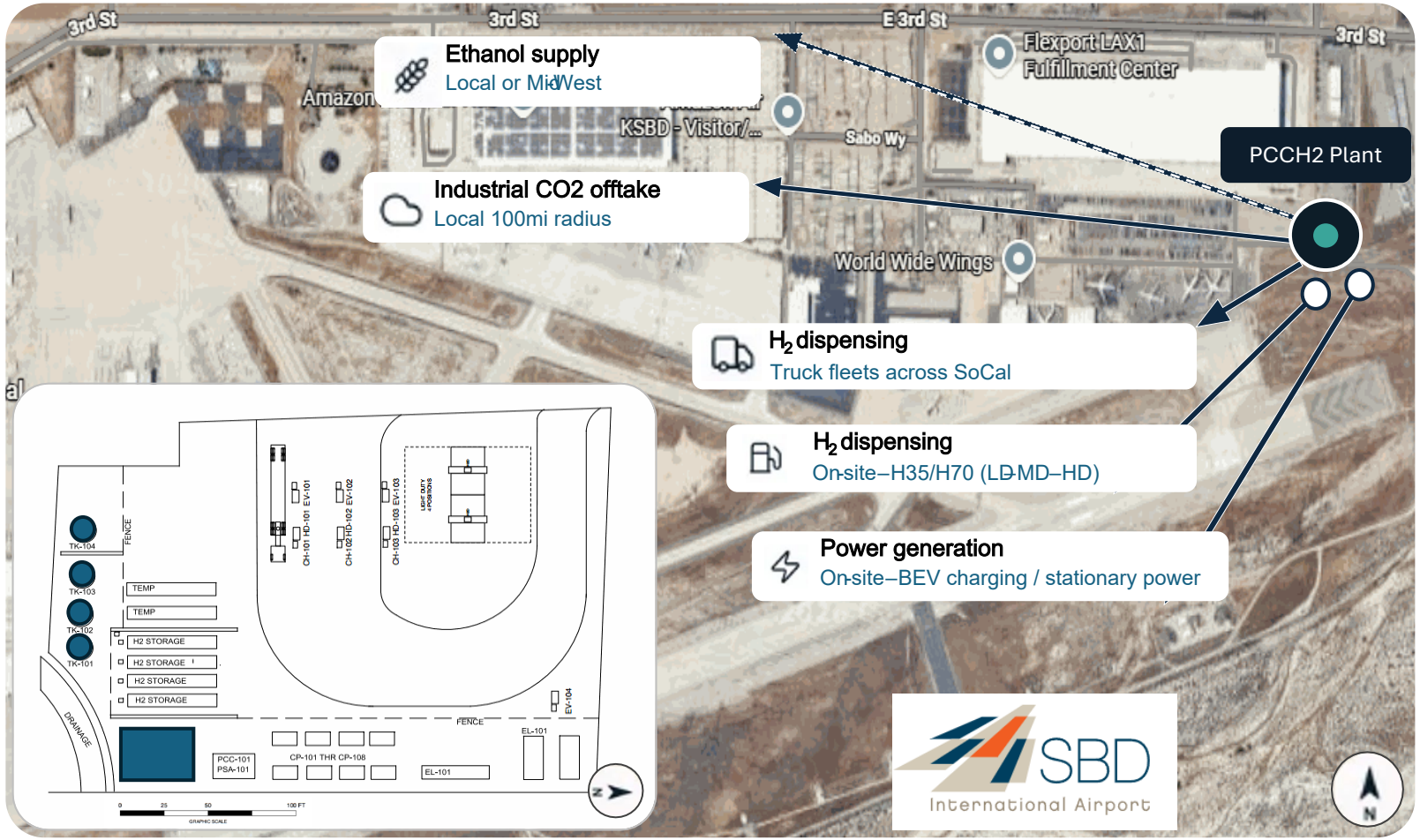
- 1ton H_2 / day commercial plant at San Bernardino Airport operational by Q3/2027
- Fast following scale up to 3ton H_2 / day
- Enable local H_2 ecosystem
- Resilient plant operation to secure BEV charging and H_2 fueling during grid blackout

H_2 Offtake

- On-site dispensing H35/H70 (LD -MD-HD)
- On-site BEV fast-charging
- H_2 distribution to the local offtake – support of the East-West drayage truck corridor

Biogenic CO_2 Offtake

- Direct sale via local partnerships



PATHWAY TO COMMERCIAL DEPLOYMENT



STAGE 0

Commercial Validation

- Stardust Road — Cloverdale, IN | $2M ✓
- San Bernardino Airport — CA | $13M

NON-DOE PROGRAM • FUNDING PENDING

Demonstrate | Operation / FEED

STAGE 1

Commercial Scale-Up

3 tons H_2/day

- Cloverdale / I-70 — IN | $50M

Target Operation: 1Q 2028

Scale | Design



STAGE 2

Expanded Commercial Deployment

>20 tons H_2/day

2 × 20-ton blocks — $150M total

- PARTNER 1– Marysville, OH
- PARTNER 2 — North Carolina
- Cloverdale — POET Adjacent Facility
- Paducah Gaseous Diffusion Plant — KY

Deploy | Concept

Thank you

Tim Fogarty
CEO
tfogarty@pcchydrogen.com





Attachment 3

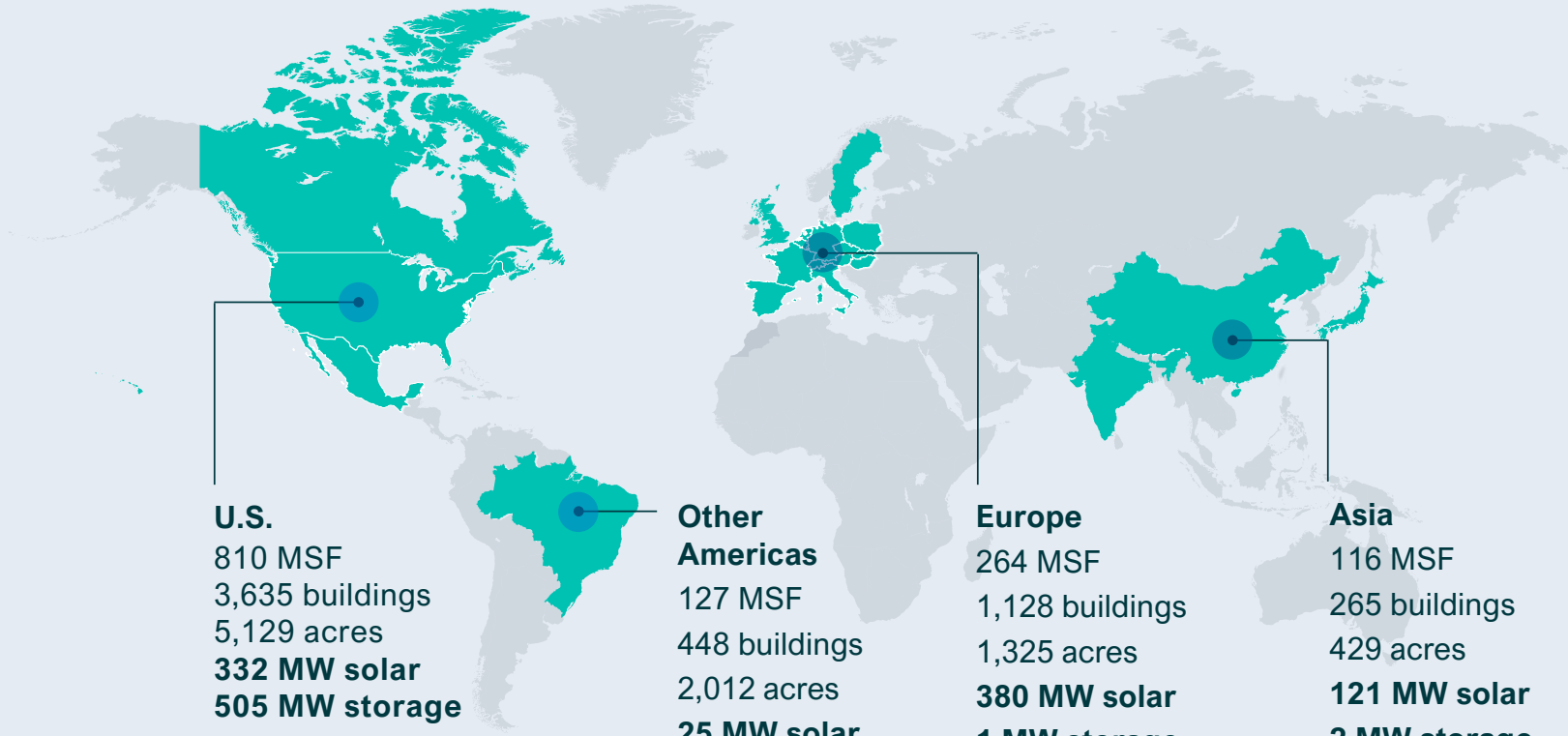
PROLOGIS®

Innovative Energy Solutions

SCAQMD Governing Board Retreat

The world's most valuable logistics platform

Built on unmatched scale in logistics real estate. Digital infrastructure and distributed energy expand the moat — reinforcing our position within essential infrastructure.



U.S.
810 MSF
3,635 buildings
5,129 acres
332 MW solar
505 MW storage

Other Americas
127 MSF
448 buildings
2,012 acres
25 MW solar

Europe
264 MSF
1,128 buildings
1,325 acres
380 MW solar
1 MW storage

Asia
116 MSF
265 buildings
429 acres
121 MW solar
2 MW storage

$3.2T
of goods–the equivalent of 2.9% global GDP–flowed through Prologis warehouses in 2024[1]

$240B
assets under management

1.3B
square feet, 20 countries

6,500
customers

5.8 GW
Power pipeline for data centers

$68B
third-party AUM

$41B
build out of land bank (TEI)[2]

A2/A
rated by Moody's/S&P

1.4 GW
Solar and battery storage installed

Note: Prologis data as of June 30, 2026.
1. Source: Oxford Economics as of December 31, 2024.
2. Total Expected Investment (TEI) represents total estimated cost of development or expansion, including land, development and leasing costs. TEI is based on current projections and is subject to change.

Prologis OnPrem Power: Energy, Delivered Faster

What is OnPrem Power?

It can include:

– Natural gas generation (recip, fuel cell, lgen)

– Energy storage systems (batteries, hydrogen)

– Combined heat & power systems (absorption chiller, ORC, steam)

Metric	Only Grid Interconnection	OnPrem Power + Grid Connection
Time to Power	5–10 years	6–18 months
Scalability	System dependent	Flexible
Resilience	Single system	Multiple energy pathways

Proven at Scale

Site Fully Energized in Just 12 Months

10MW
prime power microgrid

5.2M
Square feet warehouse power equivalent

Fuel-flexible
for energy security with NG, propane, hydrogen, etc.



Case Study

Customer: Performance Team

Location: Torrance, California

Key features:

- Linear generators, BESS, DCFCs
- Working with grid upgrade timelines
- Additional reliability when grid joins
- Renewable natural gas & H2 flexible
- Developed in LA, a highly regulated district

Ontario Green Hydrogen Pilot






Key Features

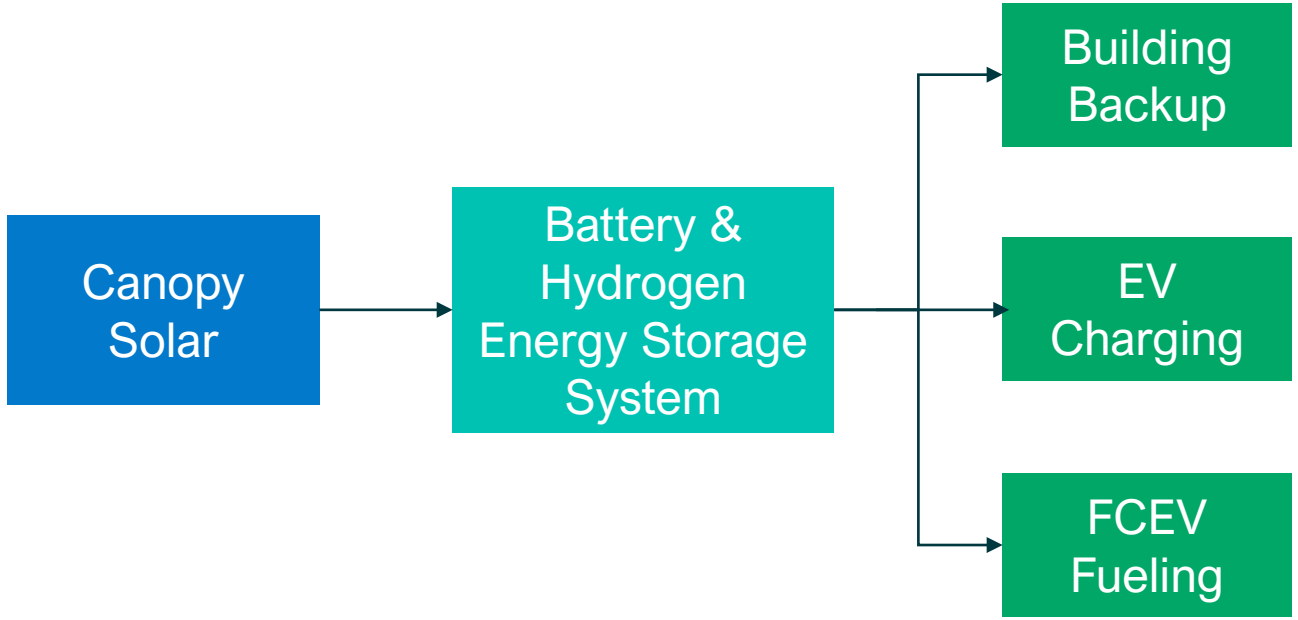
1. Off-grid 2MW canopy solar producing green hydrogen, stored for EV fast charging, hydrogen dispensing, and building backup power.
2. Demo vehicles in scope: Two Honda H2 CRV, Honda Fastport, & H2 forklift.

Top Development Highlights

1. Innovative low-cost solar canopy
2. Bonus: Hydrogen eVTOL compatibility

Status

1. Technology selection complete
2. Preliminary engineering being finalized
3. Funding options being assessed



HYBRID ADVANCED TECHNOLOGY
COMMUNITY HUB

Fontana HATCH Project

Key Features

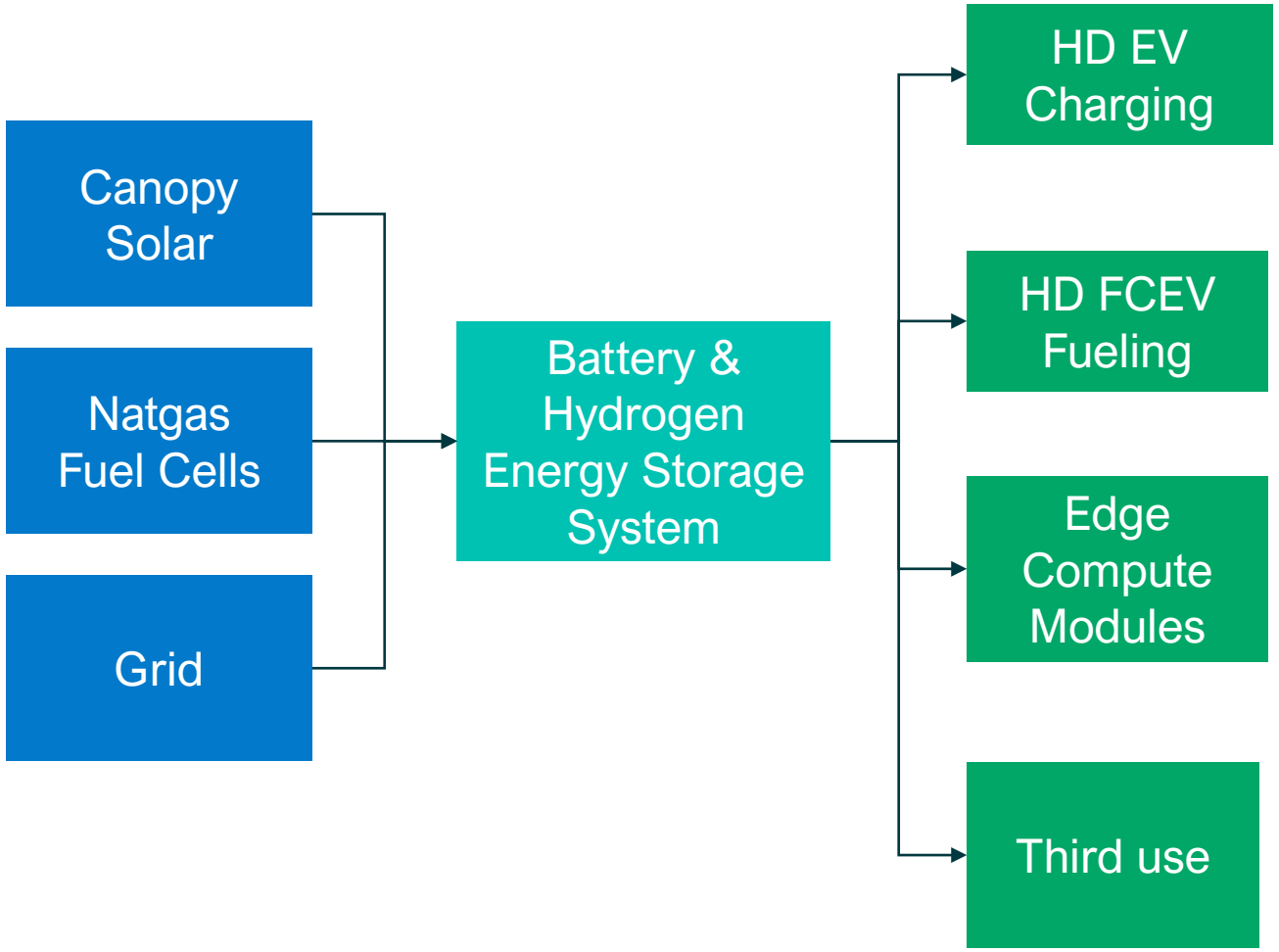
1. MW-scale Heavy Duty focused hub site with infrastructure cost share support from edge compute
2. Waste heat recapture from fuel cells
3. Produces surplus water (potable)

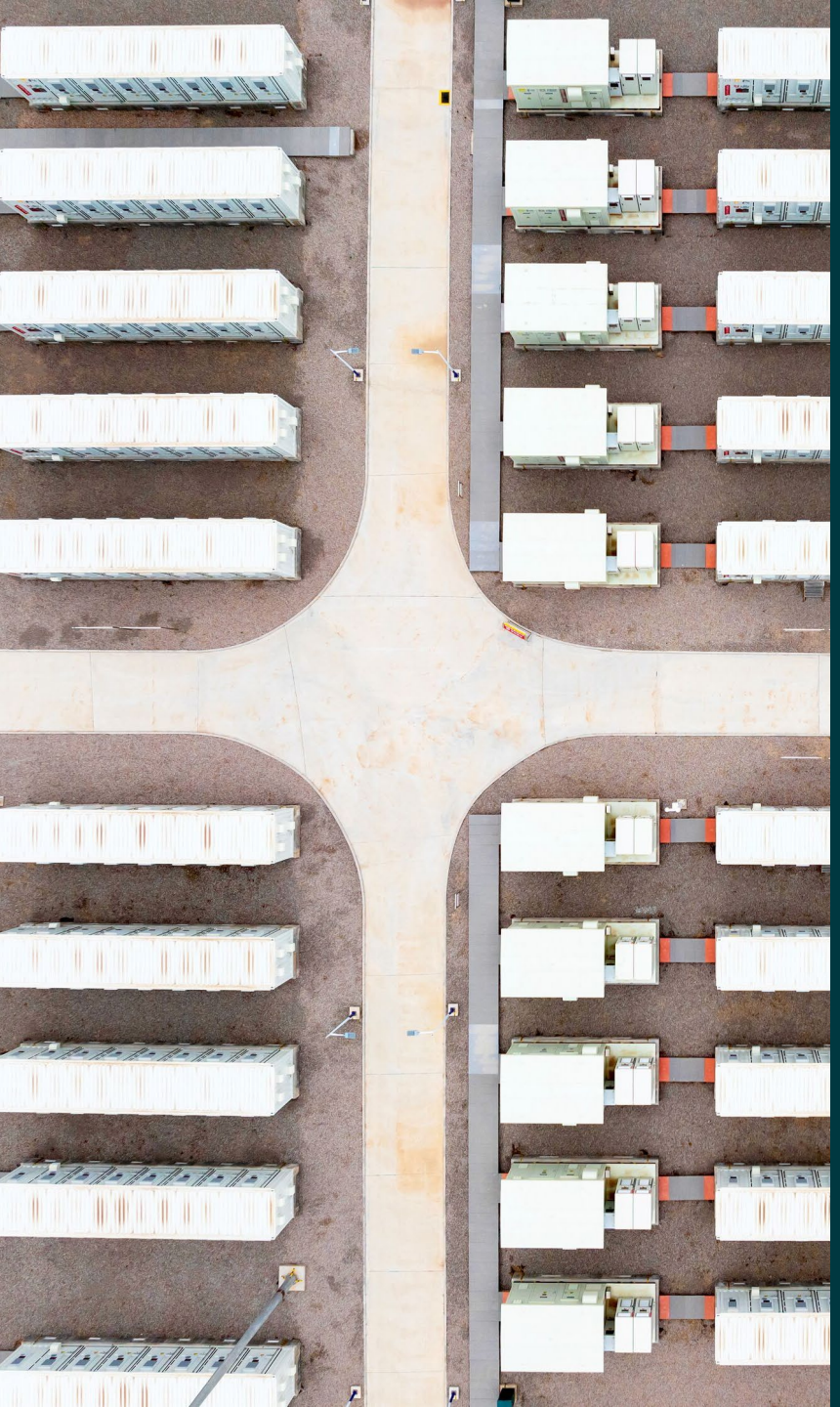
Top Development Highlights

1. Bonus: Space for tertiary use looks feasible including surplus water & compute waste heat utilization benefits. E.g. Urban farm?

Status

1. Technology selection and site layout complete
2. Preliminary engineering being finalized
3. Funding options being assessed incl. tertiary use exploration







JT Steenkamp
VP - Technology, Front-End Engineering & Development

jtsteenkamp@prologis.com

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ENERGY SOLUTIONS

Back to Agenda

AGENDA NO. 1g

Enhancing our Portfolio of NOx Emission Reduction Strategies

Governing Board Retreat

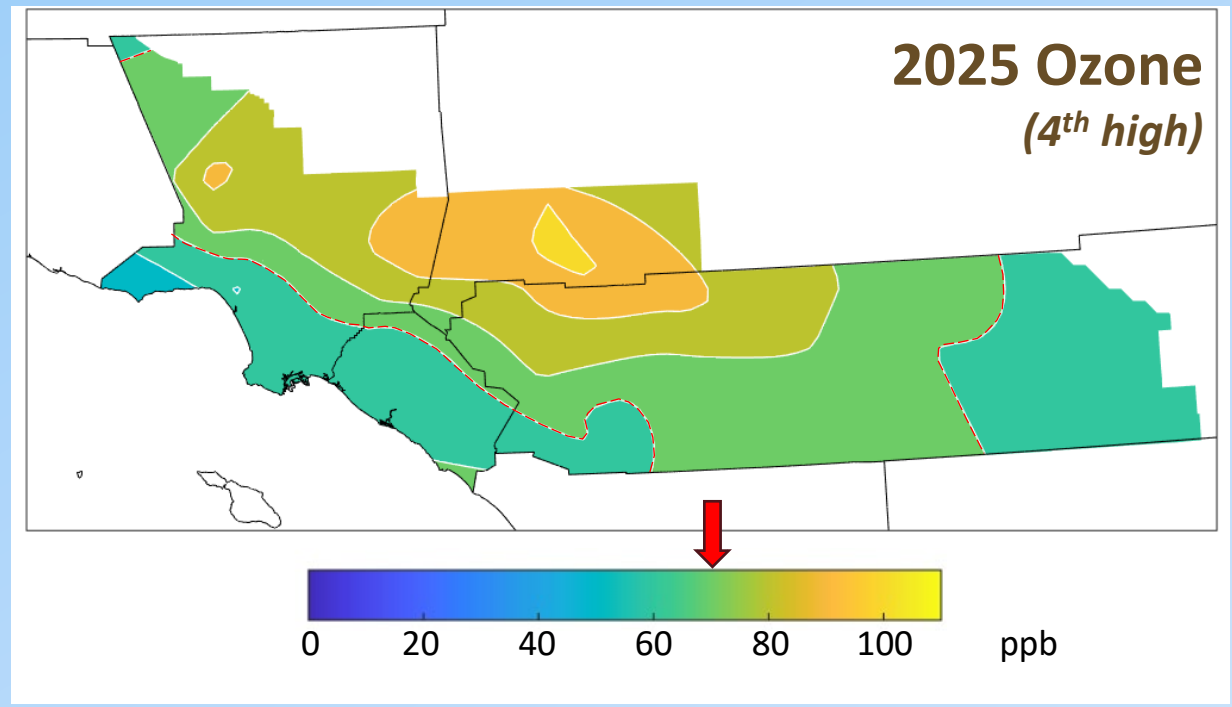
September 10, 2026

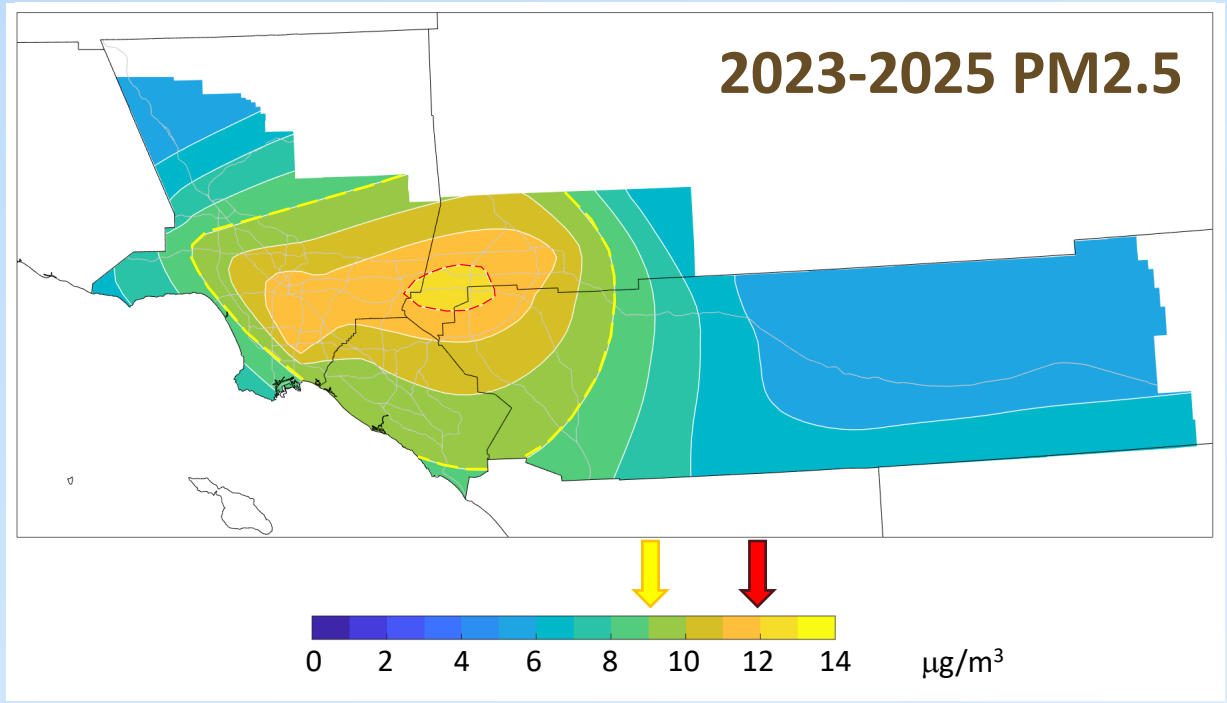
Overview

- Our attainment challenges are getting harder with recent federal policy changes
- South Coast AQMD still has mandates under the Clean Air Act
- There are several tools available to continue to make progress
- Presentation explores which tools show greatest promise in this moment

Our Greatest Air Quality Challenge

Attaining Federal Air Quality Standards





Clean Air Act Requirements

Prepare and implement air quality plans
Attain air quality standards by set deadlines

Upcoming Deadlines

Ozone

2027	Last Remaining Plan Element* due for 75 ppb standard
2031	Attainment Year 75 ppb standard
2037	Attainment Year 70 ppb standard

** 'Black Box' Plan that describes how previously undefined emission reduction measures will be achieved*

PM2.5

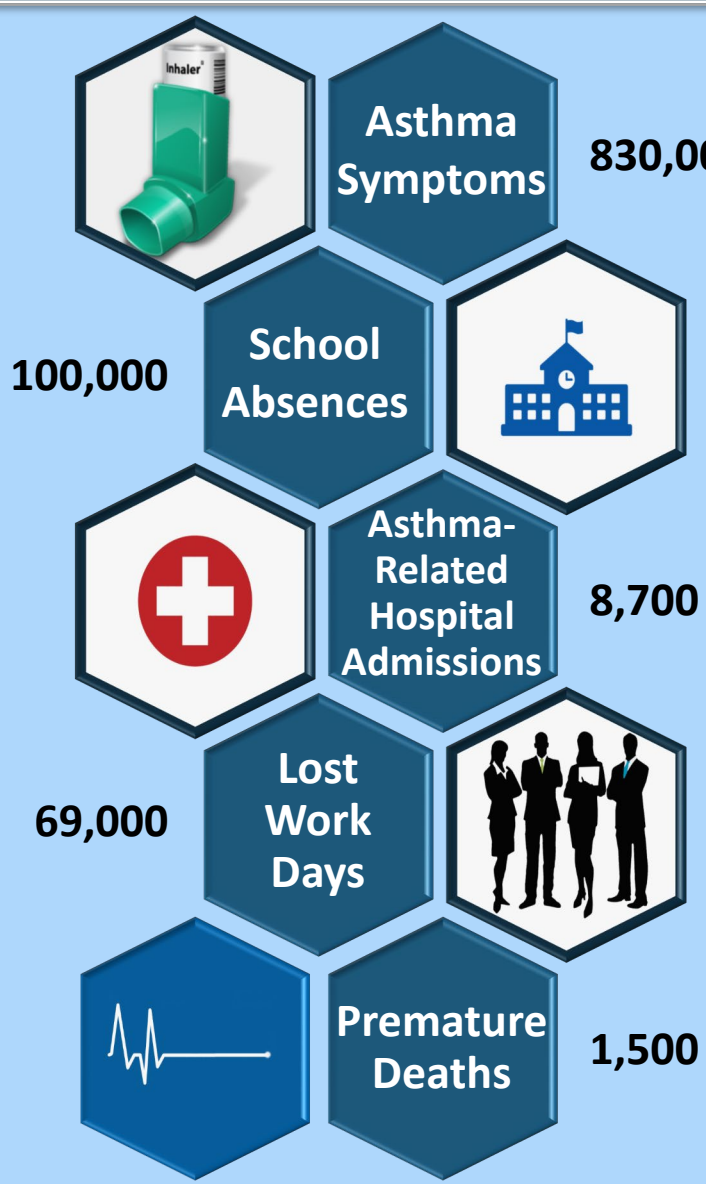
2030*	Attainment Year 12 $\mu g/m^3$ standard
2037**	Attainment Year 9 $\mu g/m^3$ standard

** If extension finalized by U.S. EPA*
*** If U.S. EPA follows most recent court decision*

Why Attaining Air Quality Standards Matters

Public Health

Annual Public Health Benefits (examples of avoided outcomes)	Annual Monetized Public Health Benefit (2025-2037)

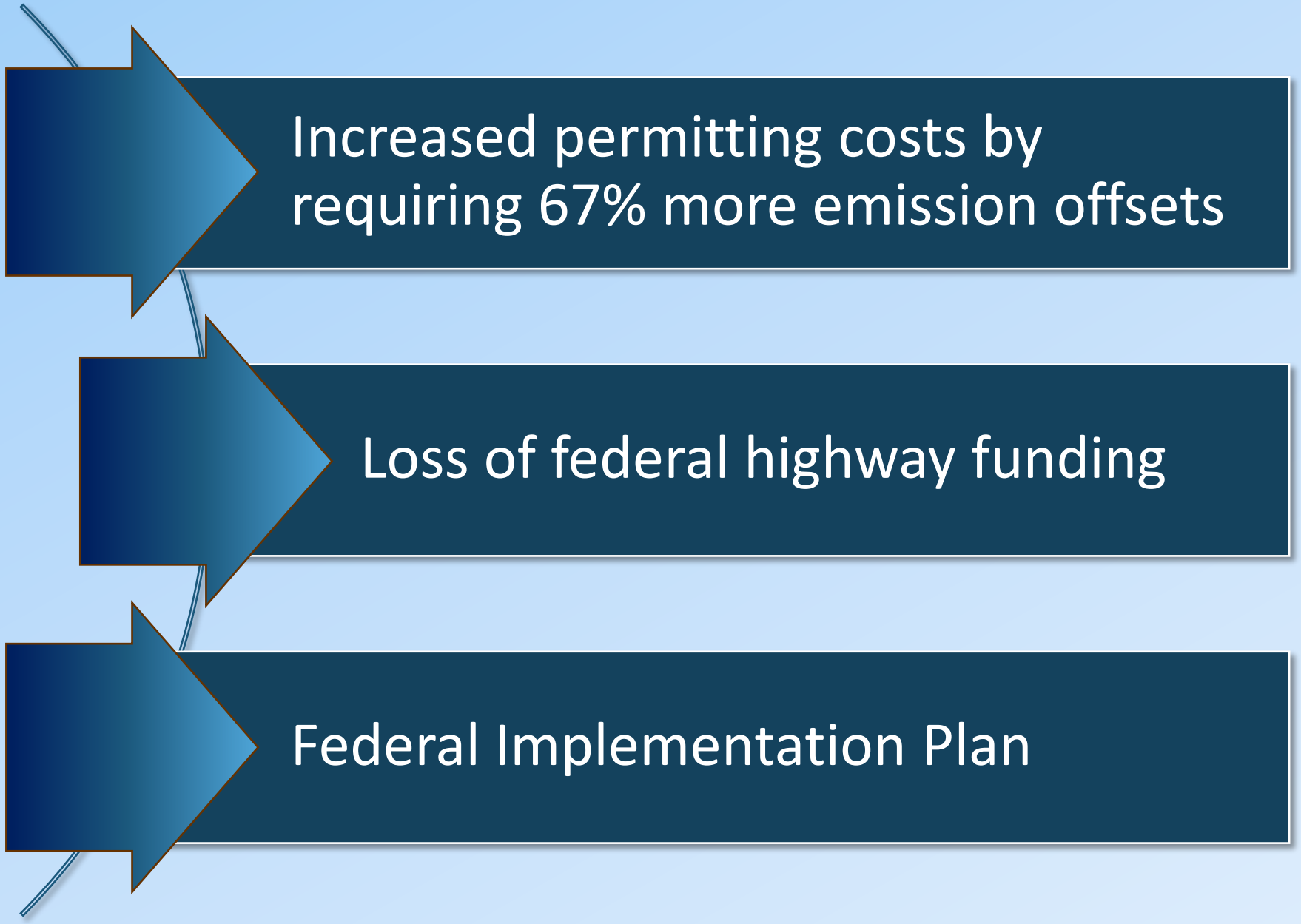


$19.4 Billion

74% of benefit from avoided premature deaths due to reduced PM2.5

Why Attaining Air Quality Standards Matters

Clean Air Act Sanctions



The Importance of NOx

NOx is widely emitted

NOx + Other Pollutants + Weather → Ozone, PM2.5















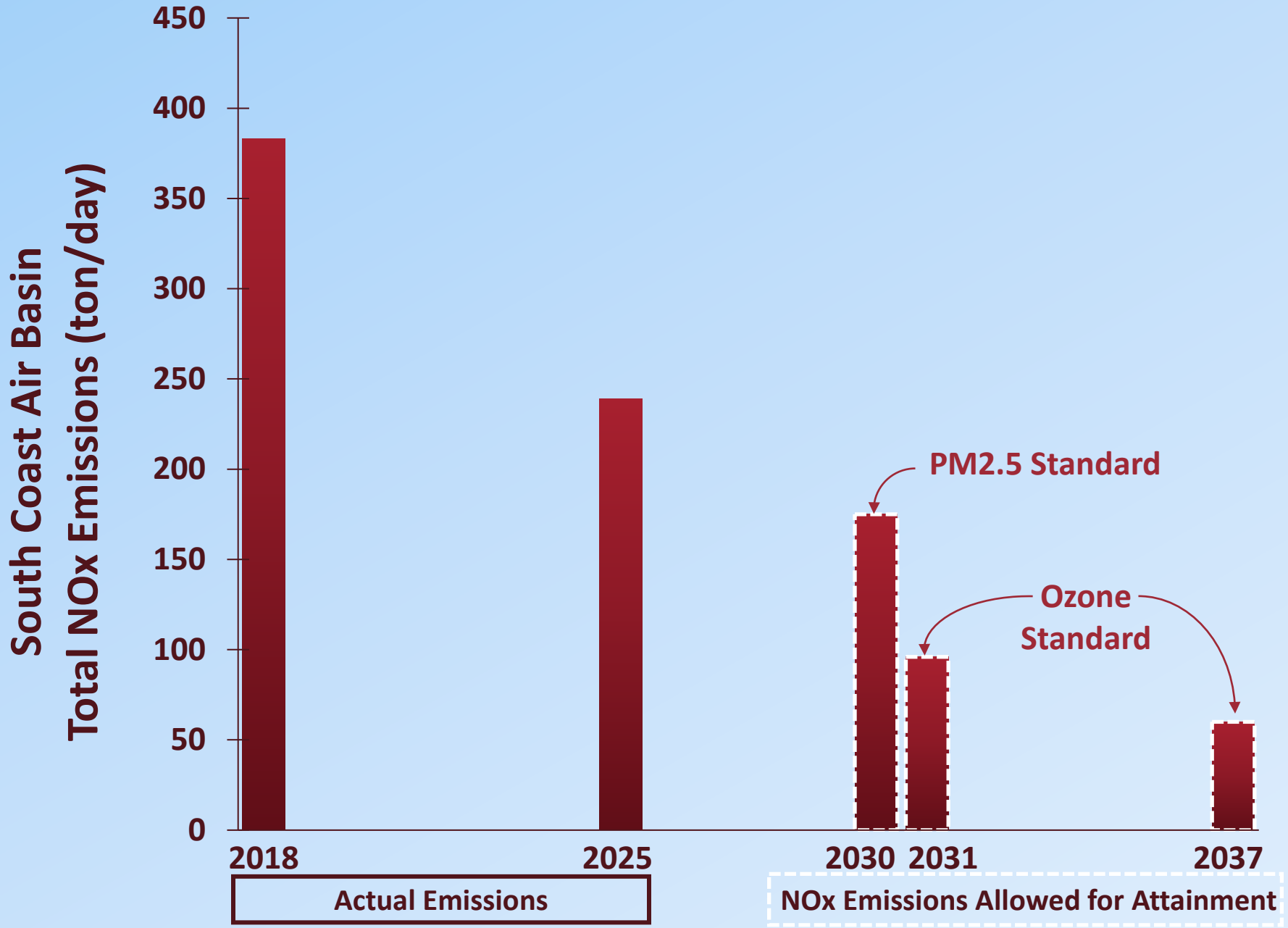


NOx Levels for Attainment

Ambient Air Quality Standards:

2008 & 2015 Ozone

2012 PM2.5



AQMP = Air Quality Management Plan

How Has Recent Federal Policy Affected Attainment of Air Quality Standards?

Federal government is attempting to roll back nearly ten years of CARB's rulemaking

Regulations Affected by New Federal Policies

Most Actions Here are Either Proposed or Still in Litigation

CARB Withdrawal of Waiver Requests

- Advanced Clean Fleets
- In-Use Locomotive
- Partial: Commercial Harbor Craft
- Partial: Transport Refrigeration Unit

U.S. EPA SIP Decision

- Heavy-Duty Inspection and Maintenance (Clean Truck Check)

Loosening of Federal Rules

- Heavy-Duty Engines for 2027 and later
- Tier 4 Light-Duty Phase-In

Enacted CRA Resolutions

- Advanced Clean Cars II
- Advanced Clean Trucks
- Heavy-Duty Omnibus
- Zero Emissions Airport Shuttle Bus
- Zero Emission Powertrain Certification
- Heavy-Duty Warranty

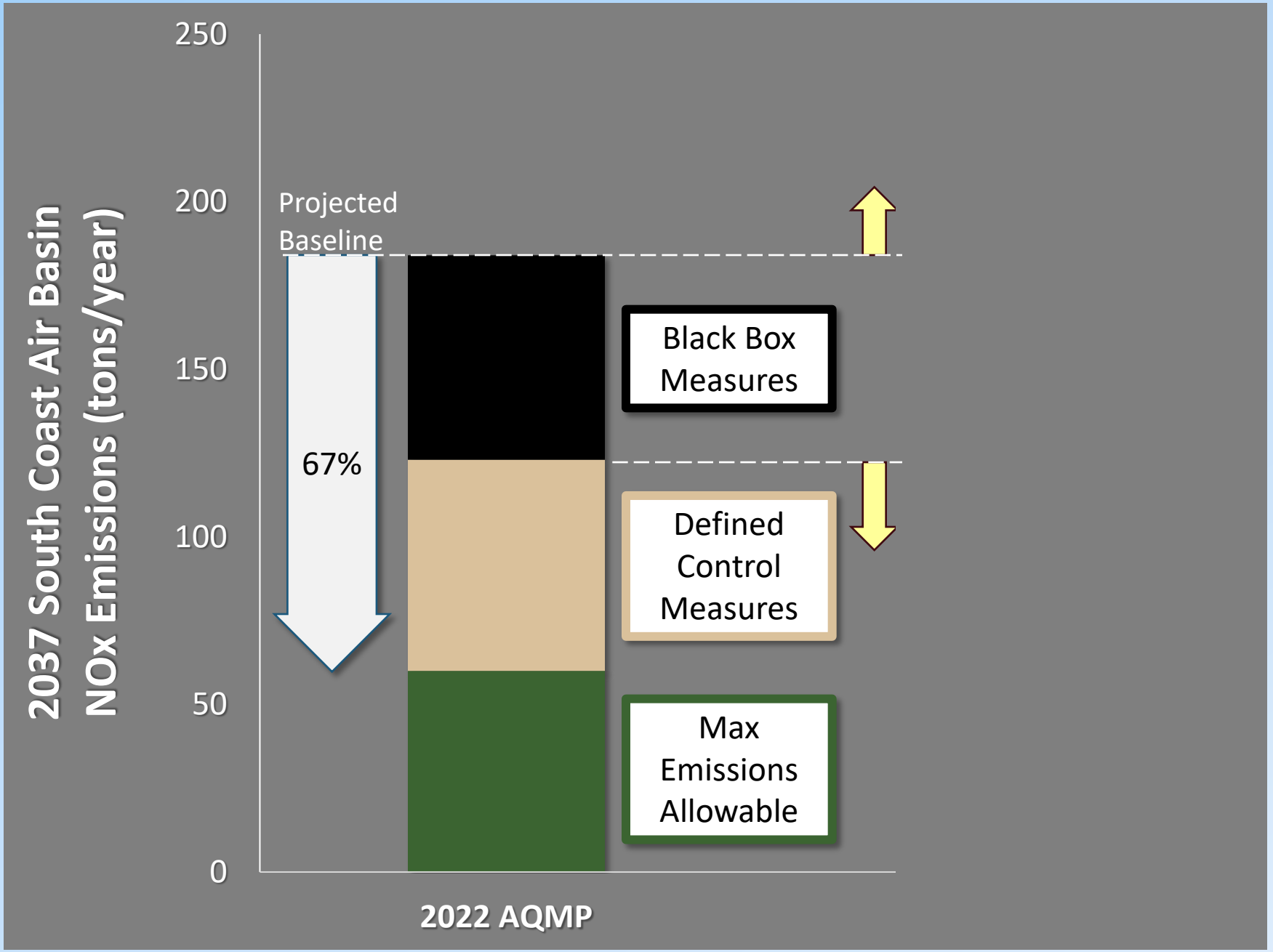
Pending CRA Resolutions

- Ocean-Going Vessels At-Berth (2022 amendments)
- Small Off-Road Engines (2022 amendments)
- Commercial Harbor Craft (2022 amendments)
- 2012 Advanced Clean Cars I emission standards
- LEV II GHG* standards for 2009 and later

CRA = Congressional Review Act, SIP = State Implementation Plan

How Big Is the Impact of Recent Federal Policy Change?

2037 Example



Estimates shown are subject to change with rapidly evolving policy landscape

**South Coast AQMD, CARB, and U.S. EPA are still working on these estimates*

Solutions Need to Scale

Equipment Type	Total Equipment Count In South Coast AQMD
Passenger Vehicles	8 million+
Medium/Heavy-Duty On-Road Vehicles	2 million+
Light Commercial Off-Road	5 million+
Heavy-Duty Off-Road	0.4 million+
Locomotives	8,000+
Aircraft	1.1 million+ landings & take-offs/year
Ships	9,000+ vessel calls/year
Lawn and Garden	10 million+
Residential Furnaces & Water Heaters	10 million+
Heaters & Boilers	1 million+

How can technology be deployed at scale affordably?

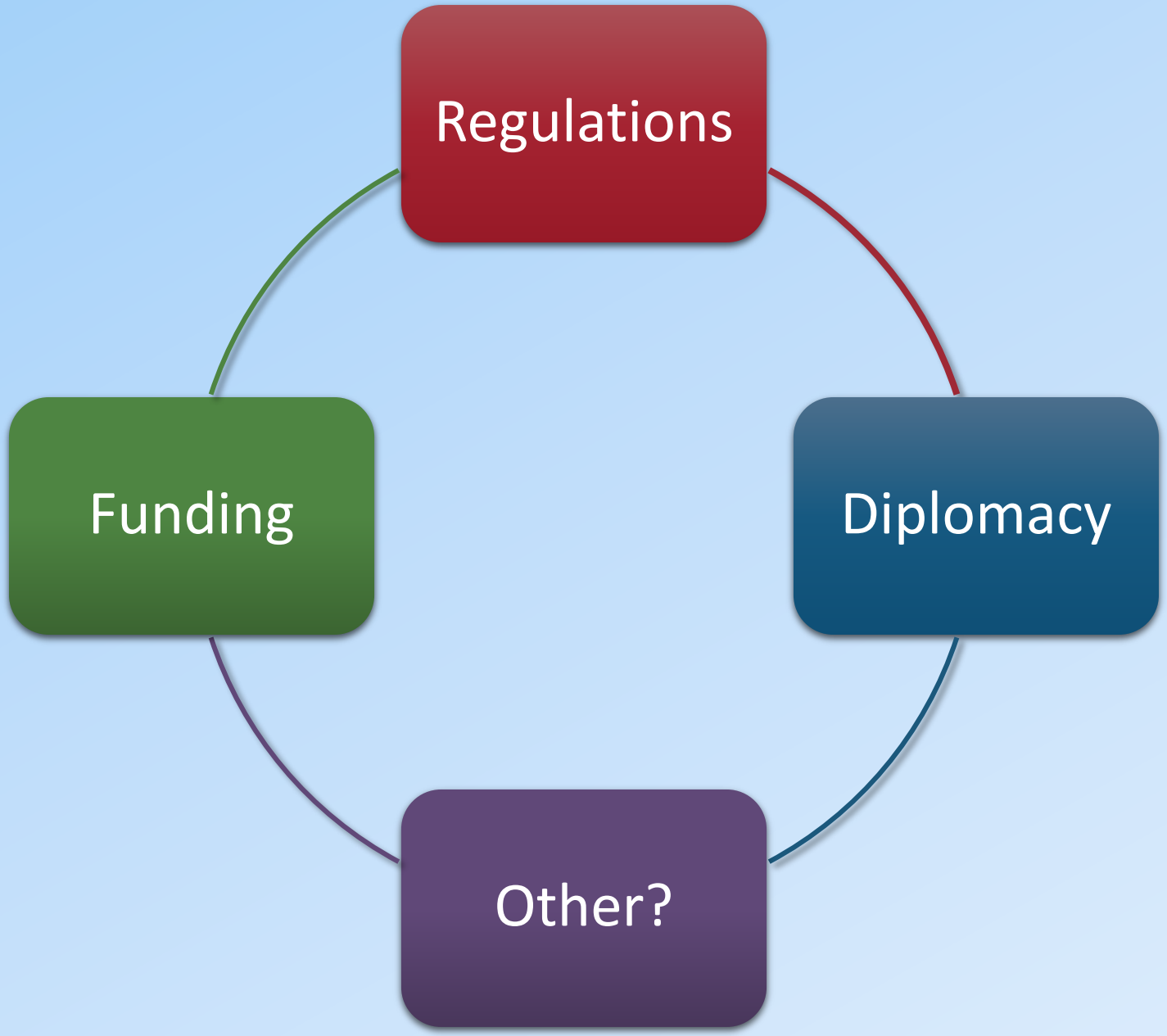
Key Considerations for Next Steps

- Mobile sources are >80% NOx, but **authority is limited**
- Technological changes must be **cost-effective** and **affordable**
- **Time is needed** to deploy millions of pieces of new equipment
- Fuel switching requires significant **infrastructure upgrades**
- **Technology development** still needed for many sources

…but Clean Air Act requirements and public health impacts require action

What are promising approaches to address these challenges – given current federal and state policy, and the current state of technology?

What Tools Are Available to South Coast AQMD?

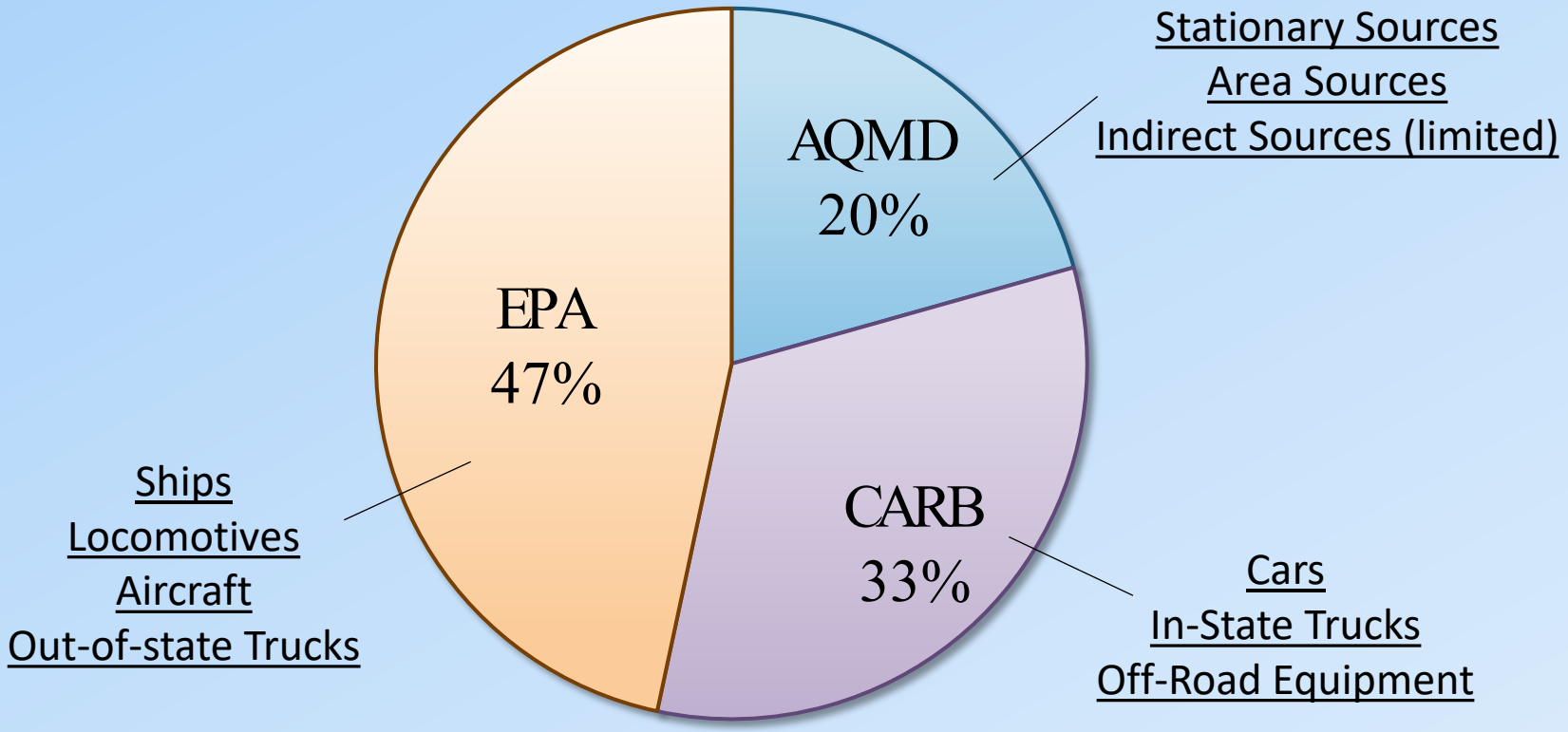


No single action can get us to attainment

Regulation

Challenges and Opportunities

Percent of Total NOx Emissions in 2037 by Agency with Primary Regulatory Authority



Zeroing out all AQMD and CARB sources would not get to attainment

Regulation - Challenges and Opportunities (continued)

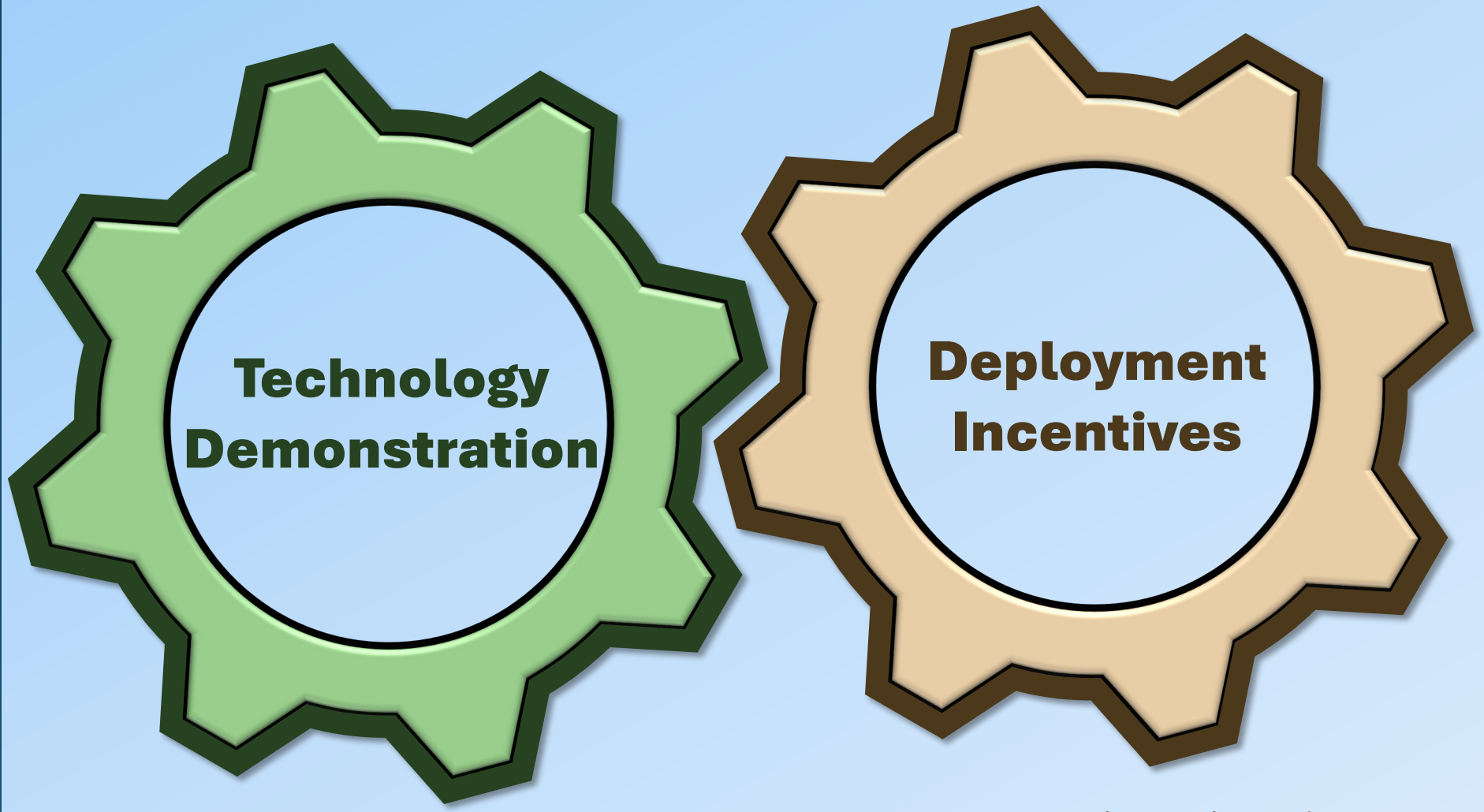
- Near-term opportunities:
  - Stationary/area source rulemaking
    - We must implement ‘all feasible measures’
    - Cost-effectiveness and affordability remain key issues
    - Several toxics rules also in development
      - Will not address attainment issues
  - CARB is beginning next set of mobile source strategies
    - Feedback needed during development






CARB
Drive
Forward

Funding



- **Supports pre-commercial** technology development into commercially-ready products
- **Advances clean technologies** that otherwise may not be developed

- **Encourages** early market adoption
- Allows manufacturers to **scale** and develop more affordable options
- Provides opportunity to **support local manufacturers and workforce**

Funding

Challenges and Opportunities

- Recent historically high funding from federal and state government unlikely to continue
- South Coast AQMD administers about $150 million per year in incentives
  - About 8 tons/day NOx reduction expected by 2030
- South Coast AQMD is uniquely able to develop innovative new funding programs

Deployment Incentive Programs

Challenges and Opportunities

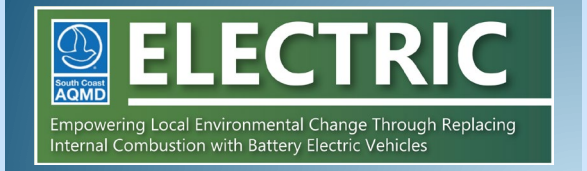
Recently Developed Programs

INVEST CLEAN

GO ZERO

WAIRE Mitigation Program





- Staff continuing to pursue new incentive opportunities
  - Technology demonstrations
    - Ocean-going vessels
    - Industrial heat pumps
    - Onsite power solutions
  - Technology deployment
    - Purchase and use of zero emission vehicles
    - Stationary sources

Diplomacy

Challenges and Opportunities



Contractual Agreements

- Ports
- Airports



International Engagement

- European and Asian port jurisdictions



Alternative Fuels Advocacy

- Utilities
- Agencies
- Fuel providers



Legislative Outreach

- State
- Federal

These efforts are critical facilitating measures, but may not directly result in emission reductions

Summary

- Our attainment challenges are getting harder
  - …But we need to make progress for public health and under Clean Air Act requirements
- Many non-regulatory, near-term opportunities to address attainment issues:
  - Funding:
    - Creation of new, innovative funding programs
      - Technology Development
      - Incentives for Deployment
  - Diplomacy:
    - Engagement and partnership building is needed to set the stage for future emission reductions