Study of Neighborhood Air near Petroleum Sources (SNAPS)

California Air Resources Board (CARB)
January 2018

CALIFORNIA
AIR RESOURCES BOARD

Meeting Agenda

- Welcome & Introductions
- Background
- Public Process, Health Risk Analysis and Follow up
  - Community selection process
- Scope and Monitoring Technology
- AB 617 Community Air Protection Program (CAPP)

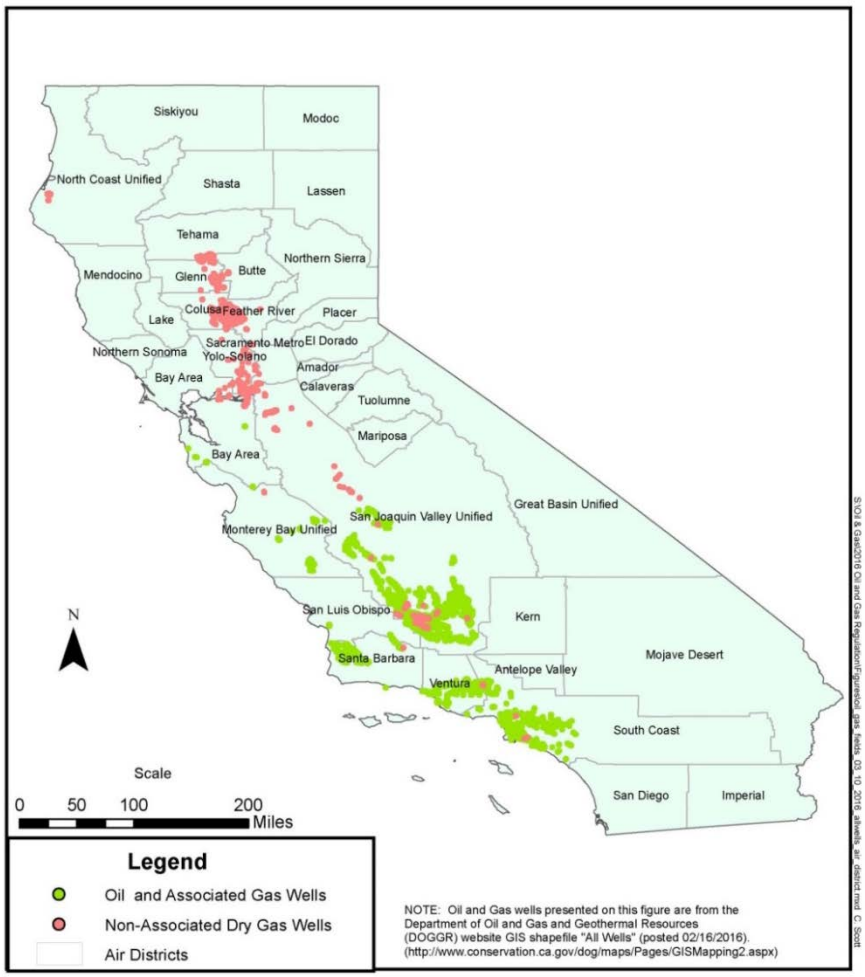
Background

Motivation to Study near Oil and Gas Operations

- Part of a broader CARB effort to understand impacts of oil and gas operations
- Exposure concerns raised by communities
- Aliso Canyon underground storage natural gas leak
- California Council on Science and Technology (CCST) recommendations

California Oil and Gas Operations

- Third largest oil producer, 15th largest natural gas producer in US
- Generally gas wells are found in northern California, oil wells further south
- Gas produced with crude oil is called associated gas



California Oil and Gas Operations (cont.)

Oil and Gas Production

- ~ 82,000 active wells
- ~ 122,000 plugged wells
- Related equipment such as tanks also potential sources

Produced Water Ponds

- Over 1,000: almost all in Central Valley

Current Related CARB Efforts

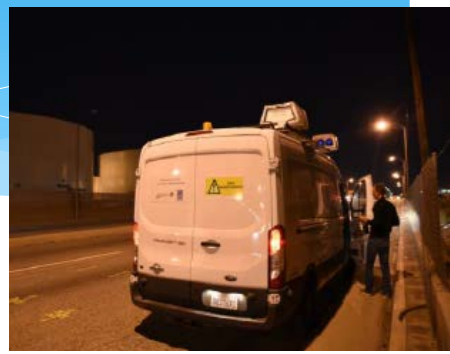
- Recently adopted methane regulation
  - Many districts have existing VOC regulations for oil production
- Recommendations for targeted air sampling at well stimulation events (e.g. fracking)
- Oil and gas produced water (wastewater) pond research
- Statewide greenhouse gas network
- California Airborne Methane Survey

Oil and Gas Related Results of California Airborne Methane Survey

- 180,000 individual sources surveyed
- Identification of 329 methane point sources across the state
  - Strong methane plumes observed at a relatively small fraction (< 0.2%) of California's oil and gas infrastructure
  - Majority of oil and gas plumes from storage tanks and wellheads
  - Most high-emitting oil and gas methane sources found in Kern County oil fields

District Efforts

- Allenco Downtown LA monitoring (2014-2015)
- Optical Remote Sensing (ORS) study (Fall 2015)
  - Characterized and quantified emissions from small sources, including urban oil wells, oil fields, oil processing facilities, off-shore oil islands and oil platforms
  - Results posted online: http://www.aqmd.gov/fenceline-monitoring
- Community Scale ORS study (2016 – 2018)
  - Mobile ORS surveys to map concentrations of air toxics and identify pollution "hot-spots"
- Coastal Odor Events Investigation
  - Ongoing response to citizen complaints; deployed ORS to investigate potential off-shore sources (December 2017)
- MATES V study (2018 - 2019)
  - Enhanced monitoring using advanced technologies (ORS, "low-cost" sensor networks)



Background

Discussion Questions

- Do you have any questions about how this study might utilize or inform CARB's related efforts?
- Are there any specific types of oil and gas operations you feel this study should include?

Public Process, Health Risk Analysis, and Follow up

Approach

- Define site selection considerations
- Pre-screening of communities
- Site selection (a few communities each year)
- Local community meeting for each selected site
- Deploy monitoring trailer(s) up to 4 months
- Report monitoring data
- Final report
- Follow-up

Community Selection Considerations

Potential Follow Up Actions

- Contact operator
- Source testing, if necessary
- Enforcement
- Health analysis
- Revise measures and policies
- Inform statewide reduction strategy

Next Steps

- Receive stakeholder comments and feedback
- Screening for potential monitoring locations
- Follow up meeting to discuss community selection (Sacramento + webcast)

Public Process, Health Risk Analysis, and Follow up

Discussion Questions

- Do you have any questions about the public process or next steps for this study?
- Are there any suggestions or comments on the Community Selection Process outlined on Slide 12?
- Are there any concerns you'd like to express about the air quality near oil and gas sources?
- Do you know of any specific communities or locations we should include in this study?

Scope and Monitoring Technology

SNAPS Scope

- Characterize air quality in communities near oil and gas operations
  - Toxic Air Contaminants (TACs)
  - Criteria pollutants (particulate matter, carbon monoxide, sulfur dioxide, and ozone)
  - Methane, Volatile Organic Compounds (VOCs) & metals speciation
- Identify emission sources as feasible
- Analyze data for possible health risks

Approach and Reporting

- Air quality monitoring platforms
  - One mobile vehicle (screening)
  - Three instrument trailers for up to 4 months per site
- Posting of real-time data
- Final report and community follow-up

Public Data Sharing and Response Plan for Air Study Results

Response Tier	Pollutant/criteria	Time to Public Posting of Data	Agencies included in analysis	Agencies notified
Tier I Data collected in real time	CH_4, H_2S, SO_2, O_3, CO, CO_2, $PM_{2.5}$, black carbon (BC)	Hourly(1)	CARB OEHHA	N/A
Tier II All other data	Toxic air contaminants (TACs), non-TAC VOCs and metals	With published study(2)	CARB OEHHA	Air districts CalEPA

Note: If preliminary data show potential levels of concern, CARB and OEHHA will evaluate and inform districts and communities as appropriate.

(1) Results streamed hourly on project website.
(2) Study will be published as quickly as feasible.

Mobile Vehicle Monitoring

- Onsite instrumentation
  - Methane, carbon monoxide, carbon dioxide
  - Portable gas chromatograph (GC) for benzene, toluene, ethylbenzene, xylenes
- Collect samples for lab analysis
- Low emission hybrid electric vehicle

Trailer Based Stationary Monitoring Stations

- Onsite instrumentation
  - Methane, carbon monoxide, carbon dioxide, ozone, black carbon, particulate matter, sulfur dioxide, hydrogen sulfide
  - Gas chromatograph for select VOCs (e.g., ethane, propane, benzene)
  - Metals with an x-ray fluorescence
- Discrete samples for lab analysis
  - Aldehydes, polycyclic aromatic hydrocarbons, metals, toxic VOCs

Technology

Discussion Questions

- Do you have questions or comments about what types of chemical compounds we'll be looking for?
- Do you have questions or comments about mobile vehicle screening?
- Do you have questions or comments about trailer-mounted stationary monitoring?

AB 617 Community Air Protection Program (CAPP)

Community Air Protection Program (CAPP) Overview

- CARB's program implementing AB 617
- Establishes community focused framework
  - Enhanced information on community level air pollution
  - Community specific emission reduction programs
  - Focus on early actions
  - Emphasis on community participation
  - Builds on existing community level efforts

Community-scale Air Quality Monitoring

- State Monitoring Plan due October 2018:
  - Review capabilities of monitoring technologies
  - Provide recommendations for additional monitoring
  - Establish guidance on best practices
- Deploy community air monitoring systems in prioritized communities by July 2019
- Identify additional communities annually

SNAPS Supports CAPP (AB 617)

- Provide toxic emissions monitoring data to assist AB 617 monitoring or inventory efforts
- Field test community monitoring networks and technologies
- Potentially identify sources for statewide reduction strategy

Resources and Contact Information

- Project webpage https://www.arb.ca.gov/cc/oil-gas/snaps/snaps.htm
- Visit project webpage to Subscribe and receive email updates
- Contact information

Events & General Project Questions

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