UPDATE ON CURRENT AND UPCOMING COMMUNITY AIR TOXICS MONITORING EFFORTS

STAFF PRESENTATION

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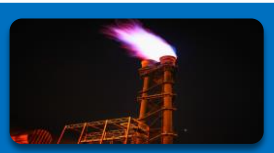
FRAMEWORK FOR MONITORING EFFORTS AT SCAQMD

Grants: AQ-SPEC sensor networks & technology demonstration (STAR, NASA ROSE, U.S. EPA)

District Initiatives: Community Air Toxics Initiative (CATI), MATES V

Torrance Refinery SEP – Fenceline & Community Monitoring



SCAQMD Rule Requirements: Rule 1180 (AB 1674)

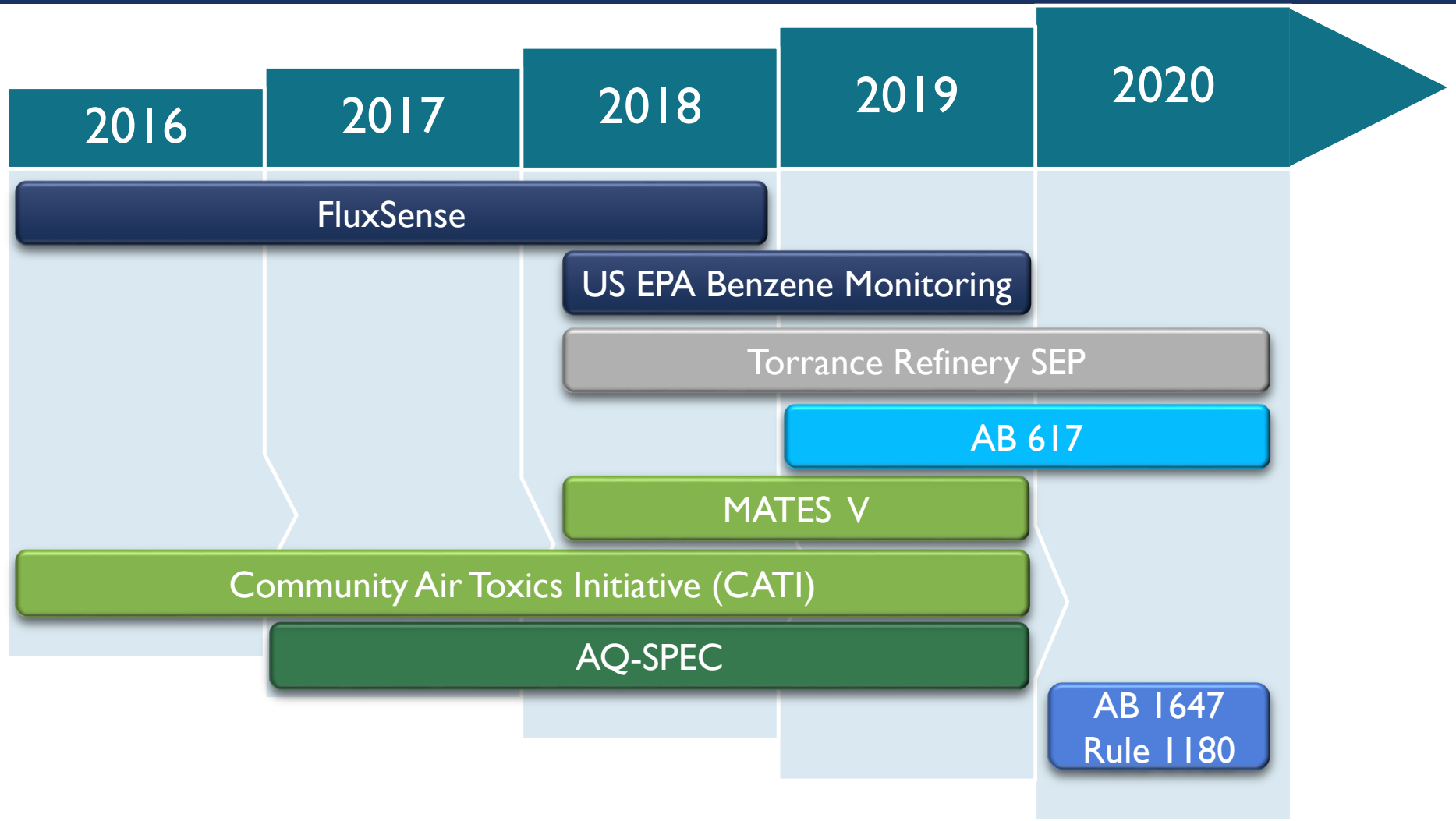
State mandates: AB 617

Ensure efforts are complementary & form a natural progression

DISTINGUISHING MONITORING EFFORTS

	AQ-SPEC	District Initiatives	Torrance Refinery SEP	Rule 1180 AB 1674	AB 617
Pollutants	• Toxic Air Pollutants • Criteria Pollutants	• Toxic Air Pollutants • Criteria Pollutants	• Toxic Air Pollutants • Criteria Pollutants	• Toxic Air Pollutants • Refinery-Related Pollutants	• Toxic Air Pollutants • Criteria Pollutants • GHG
Monitoring Approach	• Low-Cost Sensors • Saturation Monitoring • Continuous Monitors	• FRM/FEM • Low-Cost Sensors • Open Path • Saturation Monitoring • Continuous Monitors • Mobile Platform • Aircraft Surveys	• Fenceline Open-Path ORS • Continuous Monitors	• Open-Path • Continuous Monitors • Low-Cost sensors	• FRM/FEM • Low-Cost Sensors • Open Path • Continuous Monitors • Aircraft Surveys
Purpose & Timeframe	• Short-Term Intensive Studies • Identify Hot Spots • Community Monitoring	• Short-Term Intensive Studies • Basin Toxic Analysis	• 2-year Program • Community Monitoring	• Permanent • Fenceline Monitoring • Community Monitoring	• Long-term • Community Monitoring

AIR TOXIC MONITORING IMPLEMENTATION TIMELINE



BUILDING UPON SCAQMD'S COMMUNITY MONITORING CAPABILITIES USING SENSOR NETWORKS

AQ-SPEC

- Community engagement and citizen science
- Deploy gaseous and PM sensors

MATES V

- Community engagement, citizen science, and needs assessment
- Deploy more gaseous and PM sensors, and also VOC sensors (2018 -2019)

AB 617
AB 1647

- Potential applications to community sensor networks (2019+)

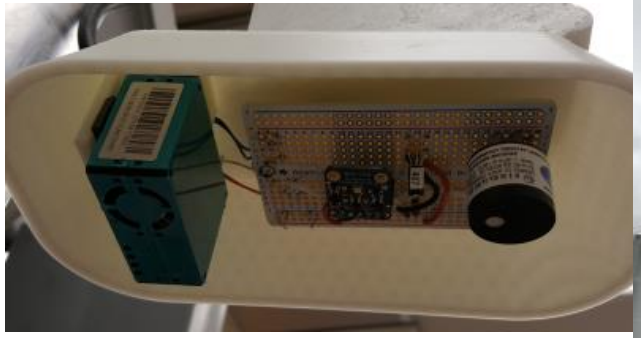
EXAMPLE: VOC MONITORING SENSOR DEVELOPMENT

Oct – Dec 2016

Assembled and tested prototype based on EPA's design

Jan – Apr 2017

Designed and assembled 4 "improved" SPODs with added capabilities



May – Aug 2017

Deployed 4 SPOD units at SCAQMD's Fenceline Monitoring Lab in Carson, CA

Jun – Aug 2017

Integrated sensor data with EnviroSuite for visualization and analysis

BUILDING UPON SCAQMD'S AIR TOXICS COMMUNITY MONITORING AND RESPONSE CAPABILITIES

MATES V

- Regional air toxics measurements & modeling
- Flight measurements and mobile monitoring to find potential hot-spots

CATI

- Local Cr6 investigations (Paramount & Compton)
- Monitoring, inspections, source testing
- Interagency coordination and collaboration

AB 617

- Identify communities for air toxics monitoring
- Conduct air toxics monitoring and follow-up

PARAMOUNT INVESTIGATION - APPROACH

Transparency & Accessibility

- Share information promptly
- Website, public meetings and calls
- Plain language fact sheets & reports

Collaboration

- Joint inspections
- Information sharing
- Coordination with agencies

Solution-oriented

- Data-driven decision making
- Significant decreases in Cr6
- Lessons learned

AB 617 Implementation

BUILDING UPON SCAQMD'S EXPERTISE IN REFINERY-RELATED MONITORING

FluxSense
- Complete demonstration project/pilot studies (Dec 2017)
- Continue work on community monitoring (2017-2018)

MATES V
- Demonstrate real-time, continuous facility monitoring and community monitoring using mobile lab and VOC sensor network (2018-2019)

Torrance SEP
- Deploy fenceline and community monitoring systems (2018-2020)
- Implement community alert system

Rule 1180
- Deploy permanent fenceline and community monitoring systems (2020)

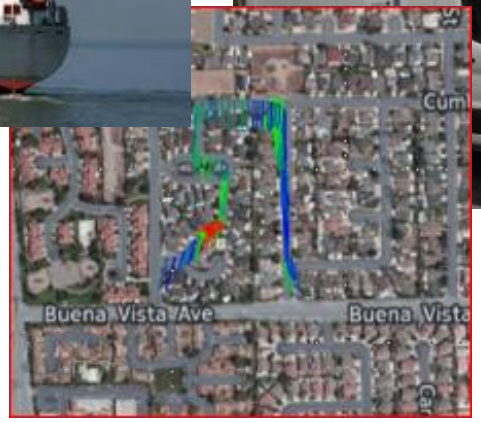
OPTICAL REMOTE SENSING (ORS) SURVEYS - FLUXSENSE

2013
Demonstration project at one refinery

2015
Study of fugitive emissions from refineries, small sources, and ships

2016 - 2018
Quarterly mobile emission and community surveys

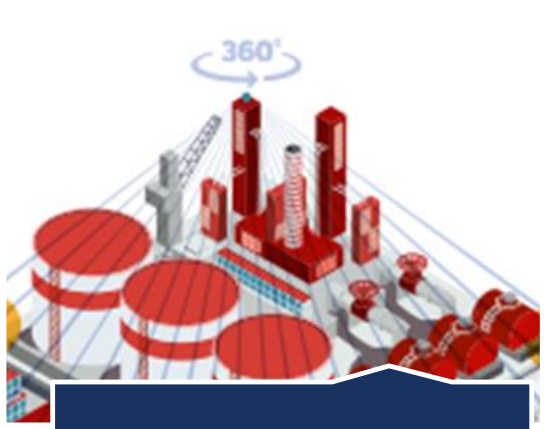
December 2017
Study of emissions from oil tankers in and near the ports



MATES V – ADVANCED MONITORING COMPONENT

Flight Measurements

Mobile Lab



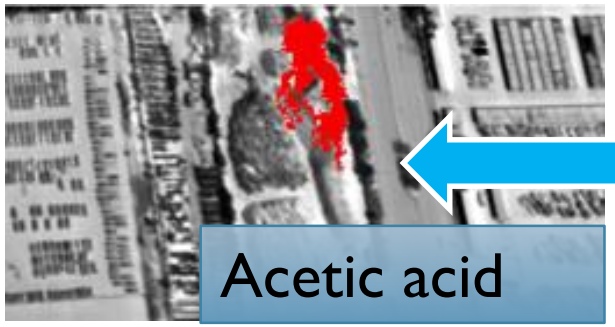
Optical Tent

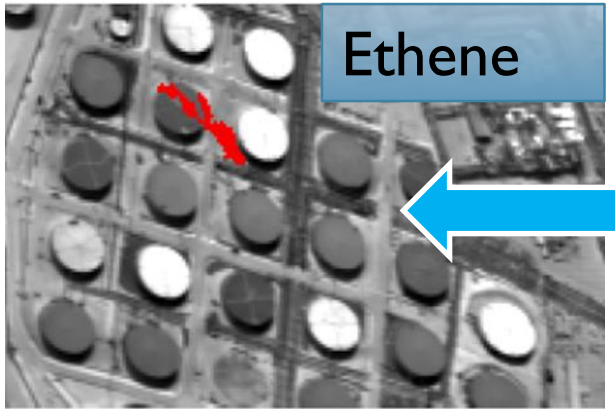
Sensor Networks

- Create detailed air toxics maps
- Evaluate monitoring technologies for leak detection capabilities
- Characterize cumulative impacts to communities
- Focus on refineries, as well as other industrial sources

MATES V – FLIGHT-BASED AIR TOXICS MEASUREMENTS

- Survey large areas, including refinery areas
- Detect plumes & emissions
- Focus ground-based efforts





MOBILE AIR TOXICS LABORATORY (FLUXSENSE)

- Survey major refineries and other petroleum facilities

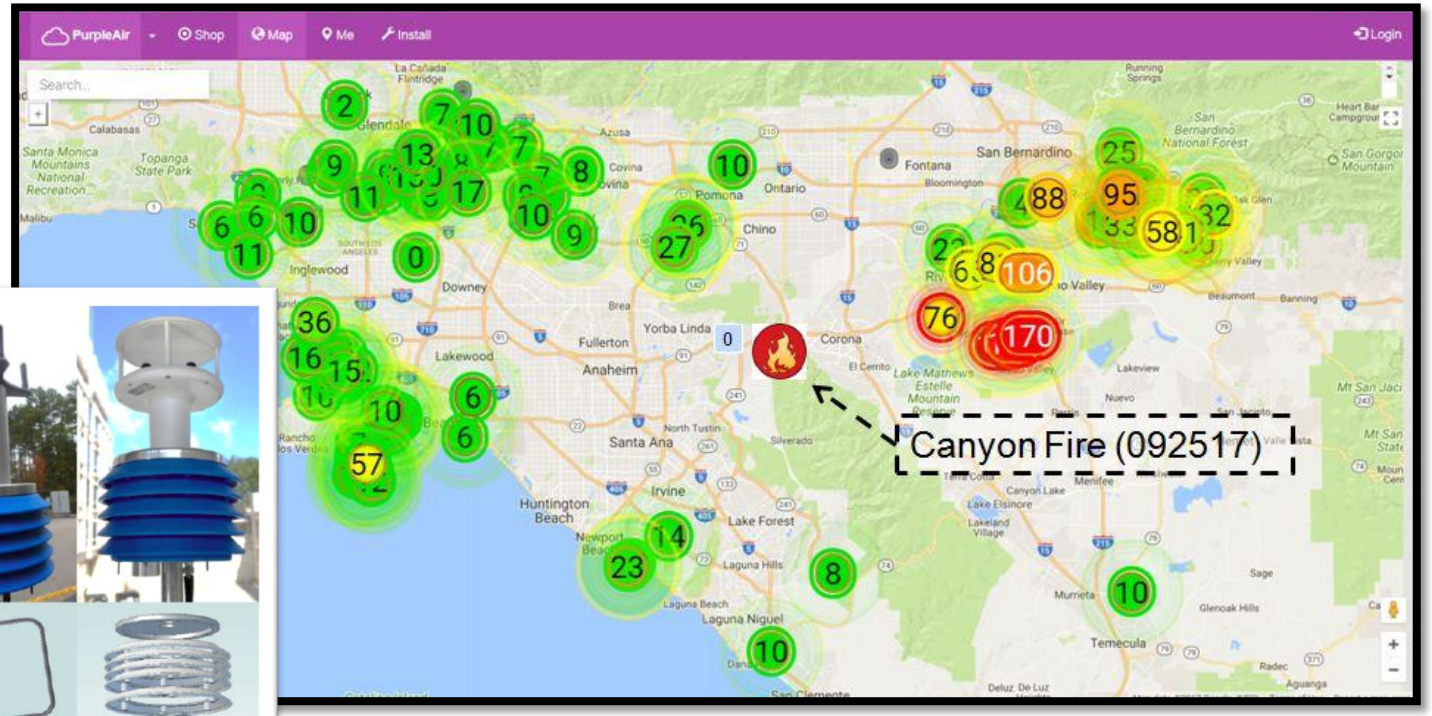
- Fenceline and community mobile monitoring
- Identify sources/leaks and community levels

OPTICAL TENT (FACILITY-BASED AIR TOXICS MONITORING)

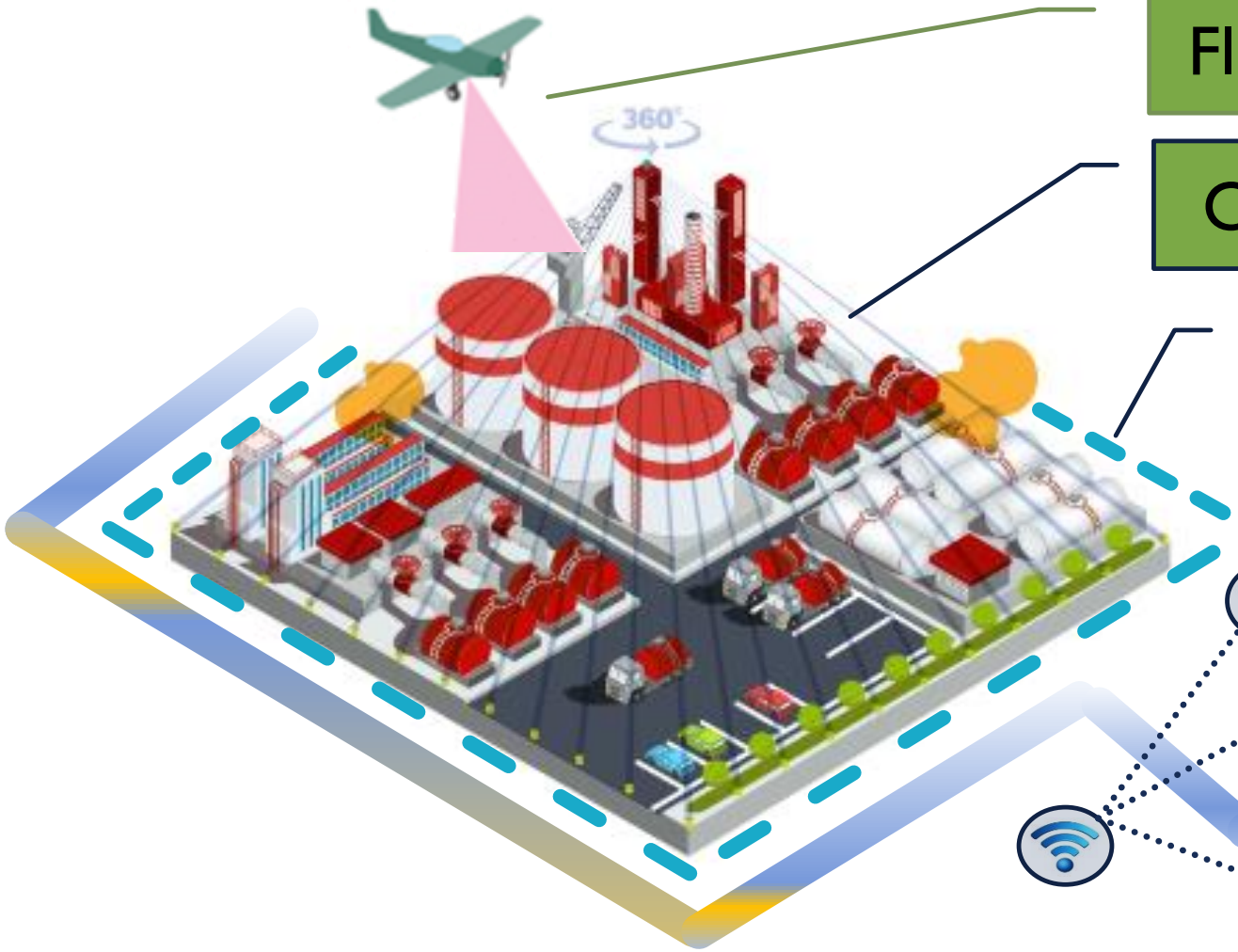
- Continuous facility monitoring
- Real-time leak detection
- Quantify long-term emissions

SENSOR NETWORKS & COMMUNITY ENGAGEMENT

- Detailed local data
  - PM: 2 communities
  - VOC: Near-refinery community
- Community engagement
  - Air quality & sensor training
  - Needs assessment
  - Inform air quality improvement projects



COMPLEMENTARY APPROACHES TO REFINERY MONITORING



Flight measurements

Optical Tent *

Fenceline Monitoring *

Community Monitoring/ Sensor Networks *

Mobile Monitoring

*Provides Continuous, Real-Time Data

TORRANCE REFINERY SEP PROJECTS - UPDATE

Community Alert System

- Contract executed to fund City of Torrance
- ~1 year implementation

Fenceline and Community Monitoring

- Contract under development to fund Sonoma Technology, Inc
- Up to 3 year project

POTENTIAL IMPACT OF THESE PROJECTS IN OVERALL SCAQMD ACTIVITIES

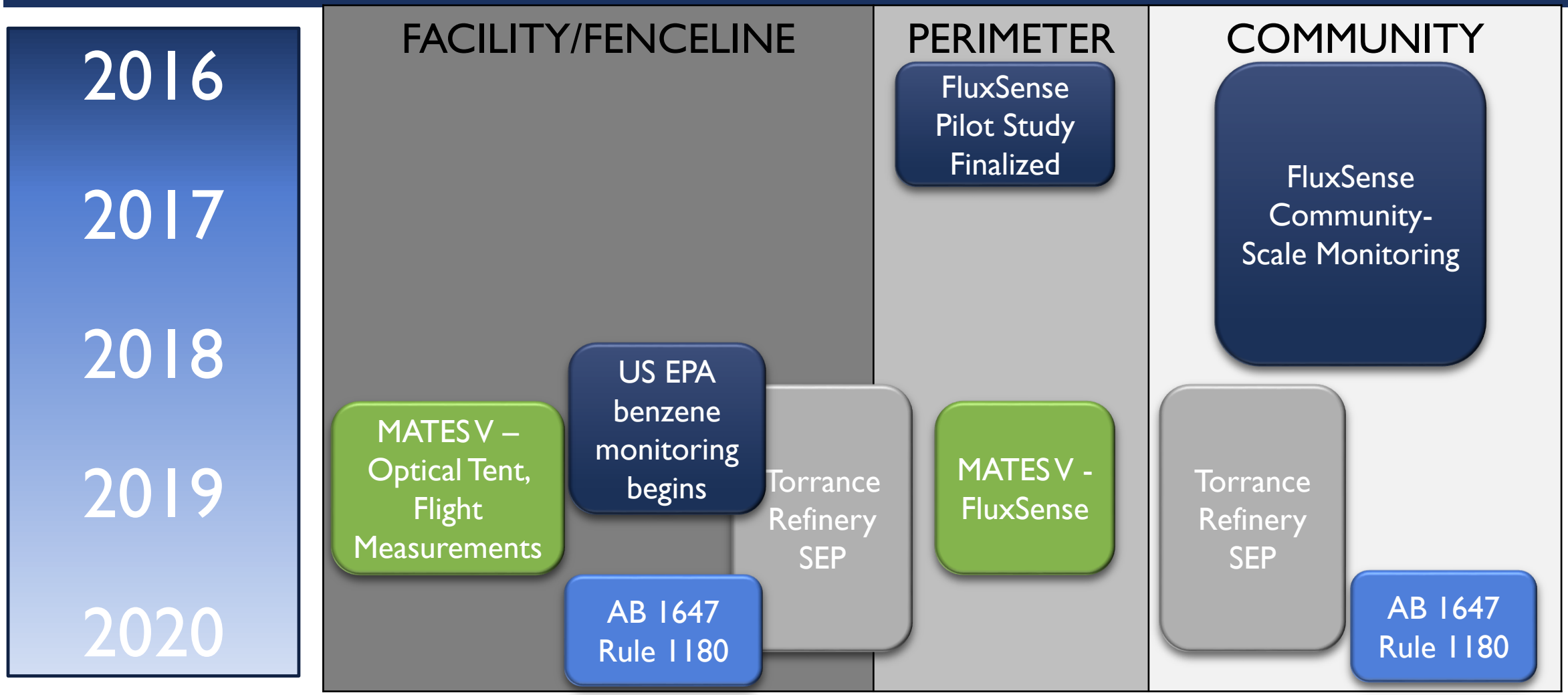
Improve estimates of community level exposures

Improve facility leak detection capabilities

Validate emissions inventories

Inform future rule development

REFINERY MONITORING IMPLEMENTATION TIMELINE



AIR MONITORING IMPLEMENTATION TIMELINE

2017

- **AQ-SPEC:** low cost sensor deployment though 2019
- **CATI**: Paramount and Compton Cr6 monitoring
- **FluxSense**: community monitoring project

2018

- **US EPA:** refinery fenceline benzene monitoring
- **MATES V:** air toxics monitoring through 2019
- **Torrance SEP:** fenceline and community monitoring through 2020

2019

- **AB 617:** community air monitoring

2020

- **AB 1647/Rule 1180:** refinery fenceline and community air monitoring systems