



Opportunities to Utilize Low-Cost Sensors to Address Regulatory Air Monitoring Network Resource Constraints

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Summary

- Traditional regulatory air monitoring overview
- Low-cost sensors may be beneficial option for certain objectives
- Case studies

Regulatory Air Monitoring

Primary Objectives:

- Timely reporting of pollution data to public
- Support research
- Support compliance with air quality standards

BENEFITS	DRAWBACKS
High quality data in a variety of conditions	Very expensive
Used for regulatory decisions	Labor intensive
Backed by detailed sampling plan	Limited options



Low Cost Sensors



- New, non-regulatory sensors are available
- Evaluations in progress



BENEFITS	DRAWBACKS
Inexpensive	Unconfirmed quality
Little or no training required	Unknown lifespan
No siting restrictions	Limited use of data

Cost Comparison

Cost Type	Item	Regulatory Monitor	Low Cost Sensor
Set up costs	Air monitor	\$10,000-25,000	<\$2000
	Meteorological equipment	\$18,000	\$0
	Data management	\$3,500	\$1000-\$3500+
	Shelter and site preparation	\$30,000	\$0
Annual costs	Site operator and transportation	\$35,000	\$0-\$35,000
	Site lease and utilities	\$20,000	\$0

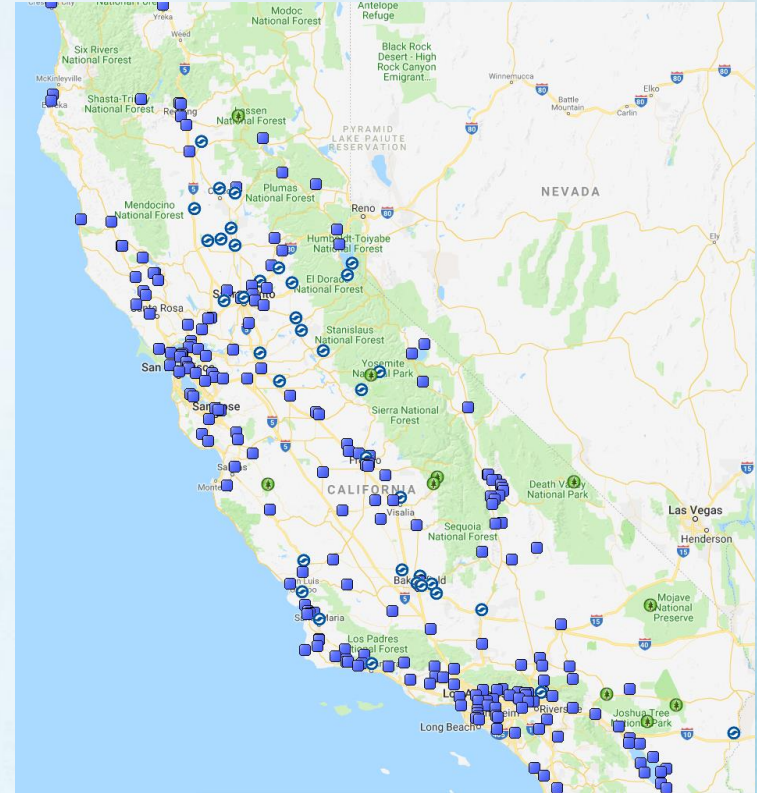
Opportunities

Exceedance of Federal Minimum Network Requirements

- Gaseous monitors in northern and central coast area
- CA/AZ border sampling site

New Sampling Projects

- Define objectives and discuss options
- Cost/benefit analysis



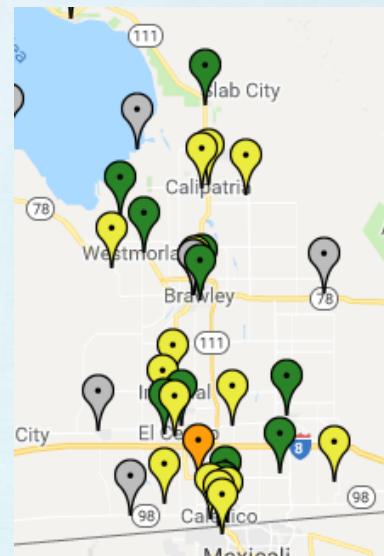
Case Studies

- Minimum number of required monitors in place
- Air quality standards are not met
- Community needs more information



Imperial Valley 2018

<https://ivan-imperial.org/air>



Case Studies

Sacramento Wood Smoke – Winter 2016/2017

<http://www.airquality.org/>





San Ysidro – 2016 to Present

<http://www.syairstudy.org/>



Opportunities for Low-Cost Sensors?

	
Real time public air pollution notification	Regulatory air quality standard decisions
Enhancement of spatial detail	Use in State Implementation Plans
Supplementing existing monitoring data	Without understanding limitations

Summary

- Regulatory air monitoring sites are expensive and designed for specific objectives
- New options should be considered when appropriate to meet objectives
- Low-cost sensor technologies can be a cost-effective solution for certain objectives

Thank you

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