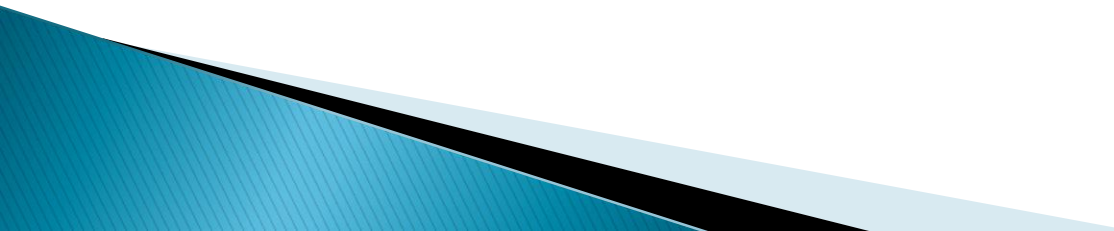


Workshop on Draft 2013 SCAQMD Annual Network Plan

June 25, 2013



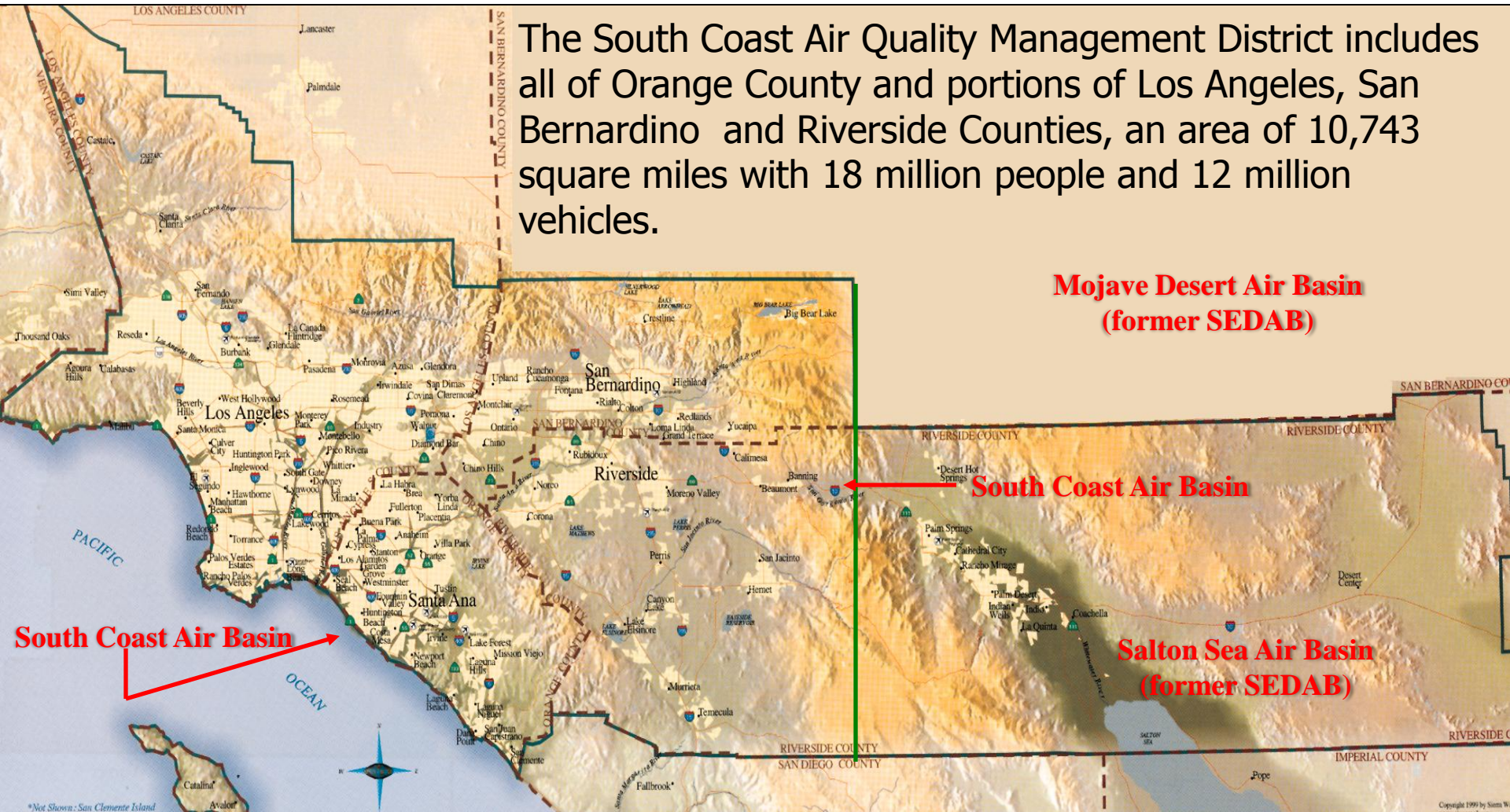
Overview

- ▶ Background
 - ▶ Monitoring Network
 - ▶ Special Programs
 - ▶ Recent and Proposed Modifications
 - ▶ PM2.5 Continuous Monitor Comparability Assessment
 - ▶ Further Discussion
- 



South Coast Air Quality Management District

The South Coast Air Quality Management District includes all of Orange County and portions of Los Angeles, San Bernardino and Riverside Counties, an area of 10,743 square miles with 18 million people and 12 million vehicles.



**Mojave Desert Air Basin
(former SEDAB)**

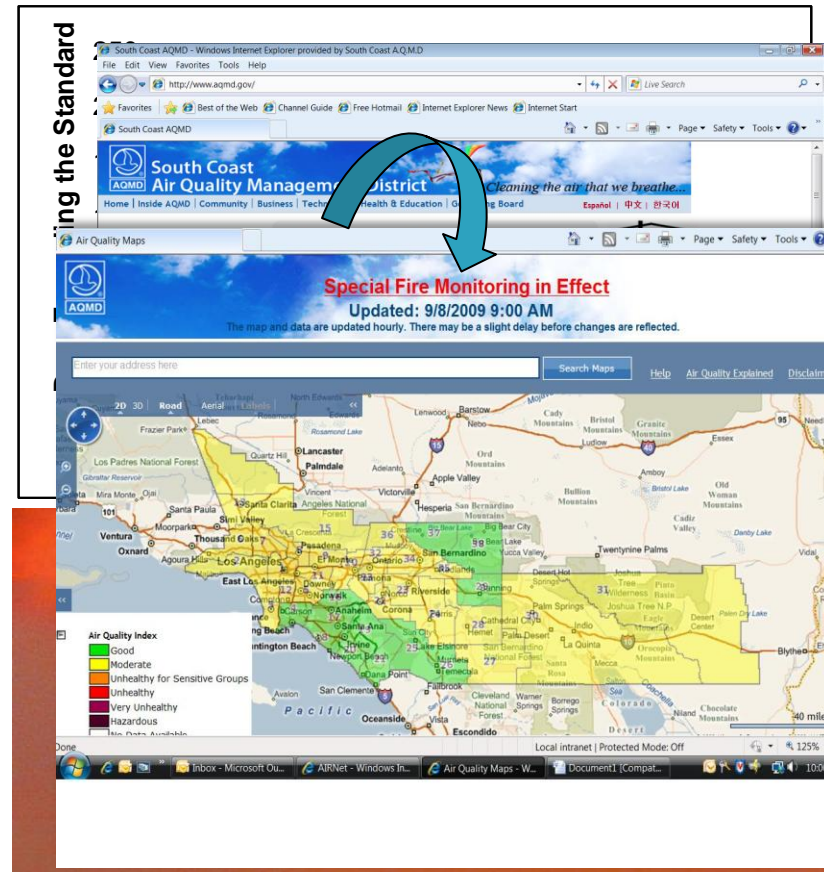
South Coast Air Basin

**Salton Sea Air Basin
(former SEDAB)**

*Not Shown: San Clemente Island

Objectives of Air Monitoring

- ▶ Support Compliance with Air Quality Standards and Emission Strategy Development
- ▶ Support Air Pollution Research
- ▶ Provide Air Pollution Data to the General Public



SCAQMD Monitoring Network

- ▶ 35 permanent, multi-pollutant monitoring stations
- ▶ 5 additional single pollutant monitors for source Lead (pb)
- ▶ Meets U.S. EPA Program Requirements where applicable
 - Criteria Pollutants, NCore
 - PAMS
 - NATTS
 - PM2.5 Speciation



Annual Network Plan

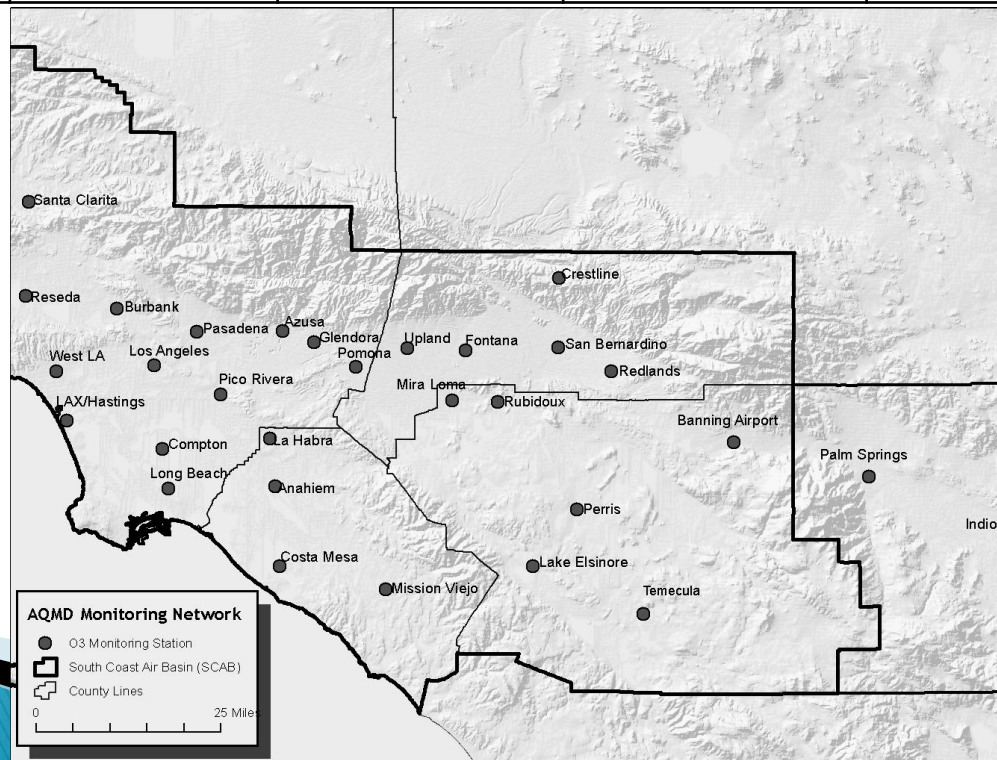
- ▶ Document that shows evaluation of existing network and discussion of upcoming changes for review by public and U.S. EPA
 - State Implementation Plans
 - Attainment Designations
- ▶ Available on SCAQMD website
 - <http://www.aqmd.gov/tao/AQ-Reports/AQMonitoringNetworkPlan/AQnetworkplan.htm>
- ▶ Requirements
 - Submitted by July 1st of each year to U.S. EPA Regional Administrator
 - Public Inspection/ Comment
 - Description of Monitors
 - Network Modifications

South Coast Air Basin NAAQS Attainment Status

Criteria Pollutant	Averaging Time	Designation ^{a)}	Attainment Date ^{b)}
1979 1-Hour Ozone^{c)}	1-Hour (0.12 ppm)	Nonattainment (Extreme)	11/15/2010 (not attained)
1997 8-Hour Ozone^{d)}	8-Hour (0.08 ppm)	Nonattainment (Extreme)	6/15/2024
2008 8-Hour Ozone	8-Hour (0.075 ppm)	Nonattainment (Extreme)	12/31/2032
CO	1-Hour (35 ppm) 8-Hour (9 ppm)	Attainment (Maintenance)	6/11/2007 (attained)
NO₂^{e)}	1-Hour (100 ppb)	Unclassifiable/Attainment	N/A
	Annual (0.053 ppm)	Attainment (Maintenance)	9/22/1998
SO₂^{f)}	1-Hour (75 ppb)	Designations Pending	N/A
	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment	3/19/1979 (attained)
PM10	24-hour (150 µg/m ³)	Attainment (South Coast Basin)/ Nonattainment (Serious) for Coachella Valley	6/12/2013
PM2.5	24-Hour (35 µg/m ³)	Nonattainment	12/14/2014 ^{h)}
	Annual (15.0 µg/m ³)	Nonattainment	4/5/2015
Lead (Pb)	3-Months Rolling (0.15 µg/m ³)	Nonattainment (Partial) ⁱ⁾	12/31/2015

Ozone

MSA	Counties	Population and Census Year	8-hr Design Value (ppb) DV, Years ¹	Design Value Site (name AQS ID)	Monitors Required	Monitors Active	Monitors Needed
31100	Los Angeles Orange	13,052,921, 2012	96, 2009-2012	Santa Clarita 060376012	4	17	0
40140	San Bernardino Riverside	4,350,096, 2012	106, 2009-2012	Crestline 060710005	3	12	0



PM2.5

Federal Reference Method (FRM)

MSA	Counties	Population and Census Year	Annual Design Value [ug/m3], DV & Years ¹	Annual Design Value Site (Name, AQS ID)	Daily Design Value [ug/m3], DV & years	Daily Design Value site (name AQS ID)	# Required SLAMS Monitors	# Active SLAMS Monitors	# Additional SLAMS needed
31100	Los Angeles Orange	13,052,921, 2012	12.6, 2009-2012	Los Angeles 060371103	32.2, 2009-2012	Burbank 060371002	3	11	0
40140	San Bernardino Riverside	4,350,096, 2012	15.2, 2009-2012	Mira Loma 060658005	36.2, 2009-2012	Mira Loma 060658005	3	9	0



PM2.5 (Continued)

Continuous: Federal Equivalent Method (FEM) and non FEM

MSA	Counties	Population and Census Year	Annual Design Value [ug/m3], DV & Years ¹	Annual Design Value Site (Name, AQS ID)	Daily Design Value [ug/m3], DV & years	Daily Design Value site (name AQS ID)	# Required Continuous Monitors	# Active Continuous Monitors	# Additional Continuous needed
31100	Los Angeles Orange	13,052,921, 2012	18.9, 2009-2012	Los Angeles 060371103	45.3, 2009-2012	Los Angeles 060371103	2	5-FEM 3-Non FEM	0
40140	San Bernardino Riverside	4,350,096, 2012	21.3, 2009-2012	Mira Loma 060658005	42.21, 2009-2012	Mira Loma 060658005	2	2-FEM 6-Non FEM	0

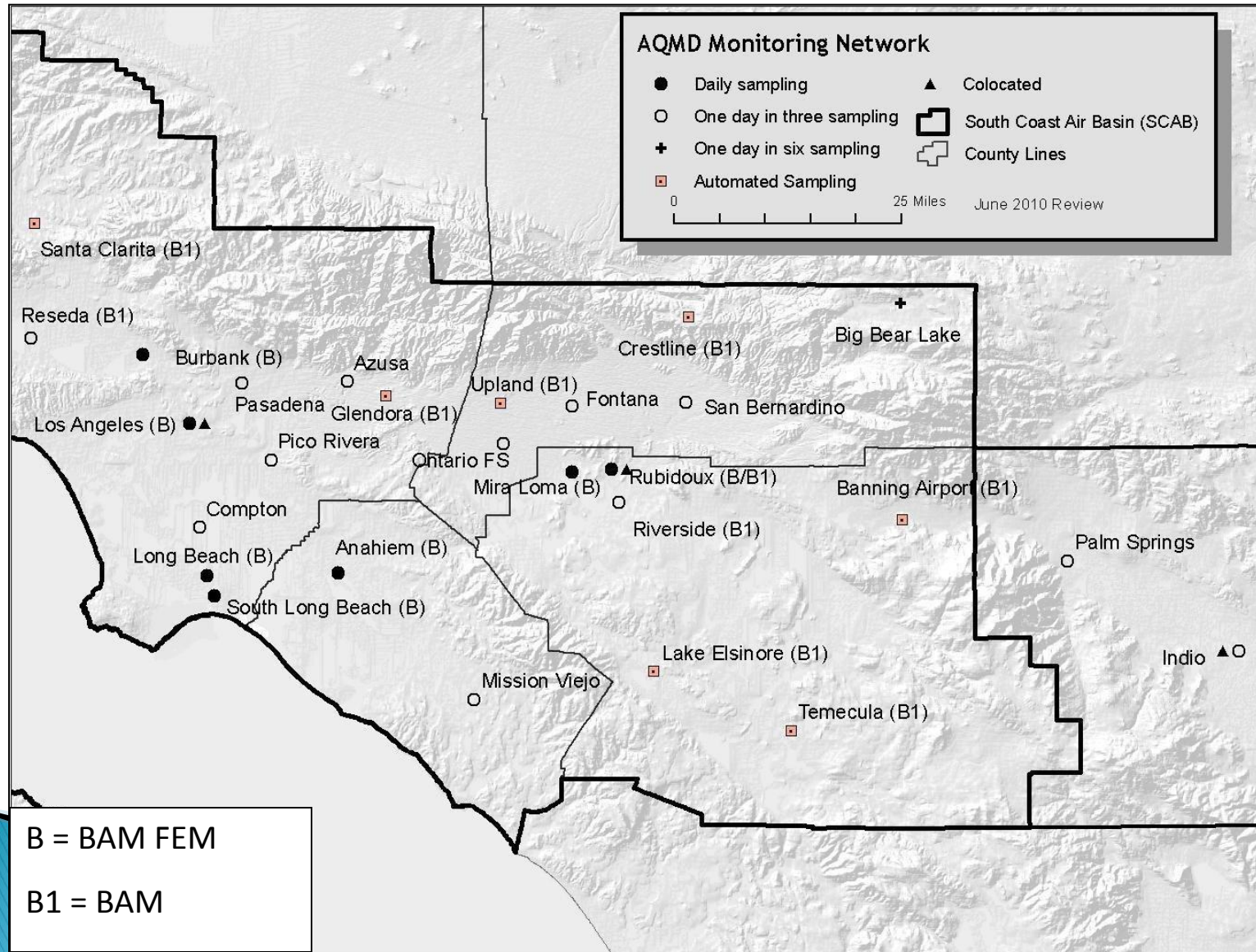
* Currently all active continuous monitors do not meet acceptance criteria under 78 FR 3086 (Appendix C) and is requested to not be compared to the NAAQS

Speciation

MSA	Counties	Population and Census Year	Monitors Required ¹	Monitors Active	Monitors Needed
31100	Los Angeles Orange	13,052,921, 2012	1	2	0
40140	San Bernardino Riverside	4,350,096, 2012	1	2	0

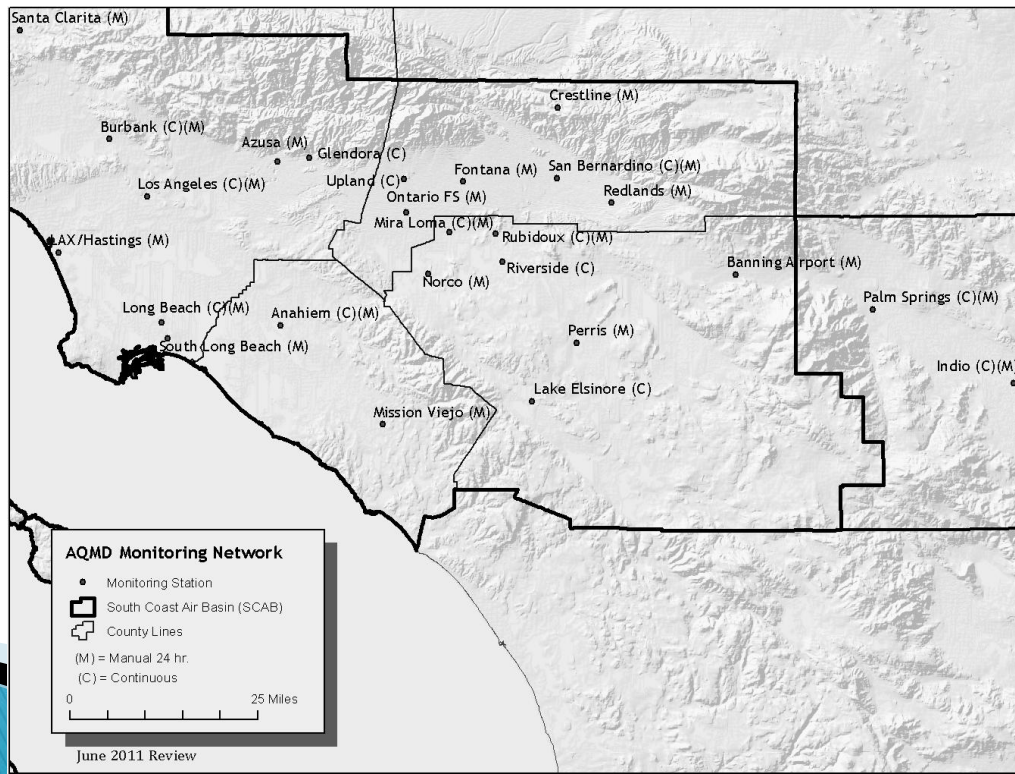
¹sites designated as part of the PM_{2.5} Speciation Trends Network (STN).

PM2.5 Network Map



PM10

MSA	Counties	Population and Census Year	Max Concentration [ug/m3]	Max Concentration site (name AQS ID)	# Required Monitors	# Active Monitors	# Additional Monitors Needed
31100	Los Angeles Orange	13,052,921, 2012	80	Los Angeles 060371103	4-8 Med Conc	9	0
40140	San Bernardino Riverside	4,350,096, 2012	124	Indio, 060652002	6-10 High Conc	12	0



Nitrogen Dioxide (NO2)

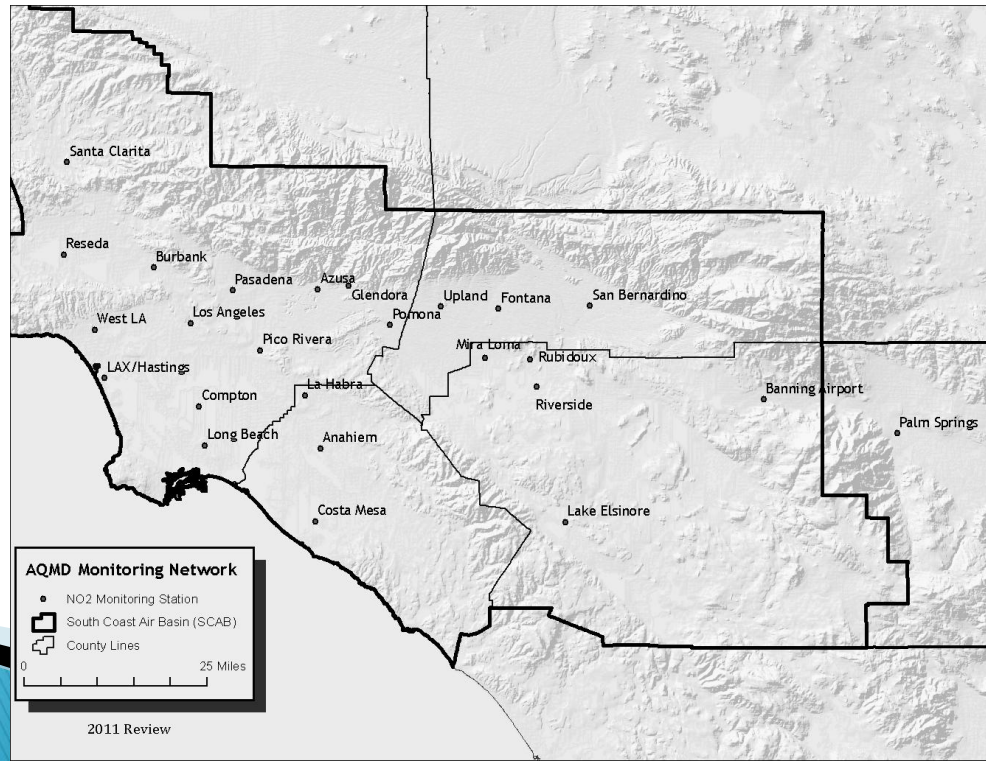
CBSA	Population and Census Year	Max AADT Counts (2010) ¹	# Required Near Road Monitors ²	#Active Near Road Monitors ³	#Additional Near Road Monitors Needed ⁴	#Required Area Wide Monitors	#Active Area Wide Monitors	#Additional Area wide Monitors Needed
31100	13,052,921, 2012	357,000, 2010	0	0	0	1	17	0
40140	4,350,096, 2012	245,300, 2010	0	0	0	1	8	0

¹Max AADT Counts – 2011 is the latest data available from CA DOT; traffic volumes in California have decreased avg. 1.1% from 2010.

²Two required beginning January 1, 2014.

³Two required sites to be active by January 1, 2014. See schedule in Recent or Proposed Changes to Network, Near Road Monitoring.

⁴One additional site per CBSA to be active by January 1, 2015. See schedule in Recent or Proposed Changes to Network, Near Road Monitoring.

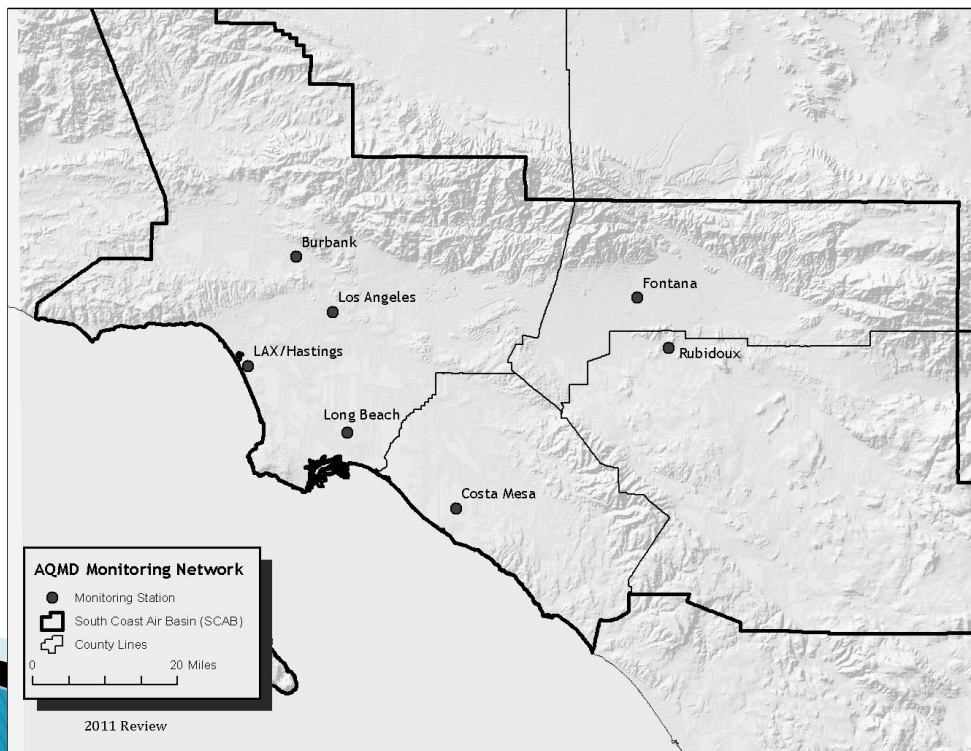


Sulfur Dioxide (SO₂)

CBSA	Counties	Total SO ₂ ¹ [tons/year]	Population Weighted Emissions Index ² [million persons-tons per year]	#Active Near Road Monitors	#Required Area Wide Monitors	#Active Area Wide Monitors	#Additional Area wide Monitors Needed
31100	Los Angeles Orange	13,052,921, 2012	157,455	0	2	5	0
40140	San Bernardino Riverside	4,350,096, 2012	11,097	0	1	2	0

¹Using latest NEI data 2008 Version 2, available on EPA website: <http://www.epa.gov/ttn/chief/net/2008inventory.html>

²Calculated by multiplying CBSA population and total SO₂ and dividing product by one million.

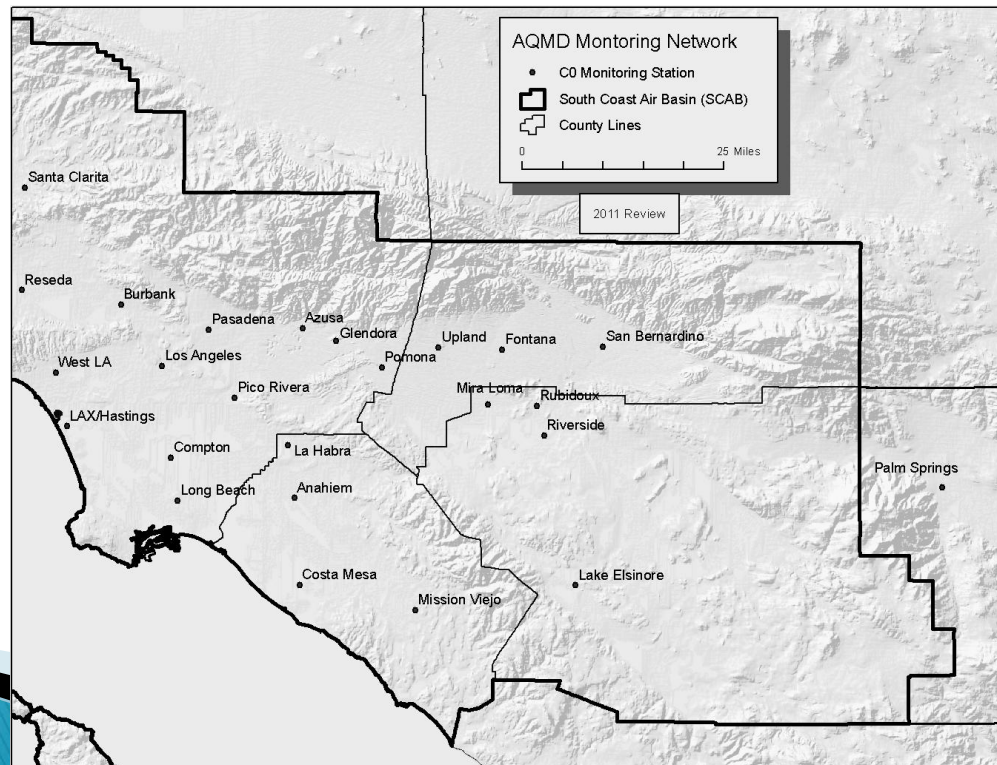


Carbon Monoxide (CO)

CBSA	Population and Census Year	#Required Near Road Monitors ¹	#Active Near Road Monitors ²	#Required Area Wide Monitors	#Active Area Wide Monitors
31100	13,052,921, 2012	0	0	0	17
40140	4,350,096, 2012	0	0	0	8

¹Required beginning January 1, 2015

²Required sites to be active by January 1, 2015; to be implemented concurrently with near road NO₂ sites.



Lead (Pb)

Pb at NCore

NCore Site (name, AQS ID)	CBSA	Population and Census Year	# Required Monitors	# Active Monitors	# Additional Monitors Needed
Los Angeles (Main Street) 060371103	31100	13,052,921, 2012	1	1	0
Rubidoux 060658001	40140	4,350,096, 2012	1	1	0

Source Oriented Pb Monitoring (Including Airports)

Source Name	Address	Pb Emissions ¹ (tons per year)	Emission Inventory Source ² and Data Year	Max 3-Month Design Value ¹ [ug/m3]	Design Value Date(third month, year)	# Required Monitors	# Active Monitors	# Additional Monitors Needed
Long Beach Airport Daugherty Field	4100 E Donald Douglas Dr, Long Beach, CA 90808	1.02528004	NEI 2008 Version 2	Unavailable	Unavailable	Pending 5 year assessment	0	1
Van Nuys Airport	16461 Sherman Way, Van Nuys, CA 91406	0.7659205	NEI 2008 Version 2	0.06	7; 2012	1	1	0
Exide Technologies	2700 S Indiana St, Vernon, CA 90058	0.511995	NEI 2008 Version 2	0.46	7; 2011	1	2	0
Trojan Battery	9440 Ann St., Santa Fe Springs, CA 90670	0.0177	NEI 2008 Version 2	0.11	4; 2011	0	1	0
Quemetco Inc.	720 S 7th Ave, City Of Industry, CA 91746	2.08123E-06	NEI 2008 Version 2	0.11	7; 2010	0	1	0
TAMCO	12459-B Arrow Route, Rancho Cucamonga, CA 91739	0.124448391	NEI 2008 Version 2	Unavailable	Unavailable	0	1	0

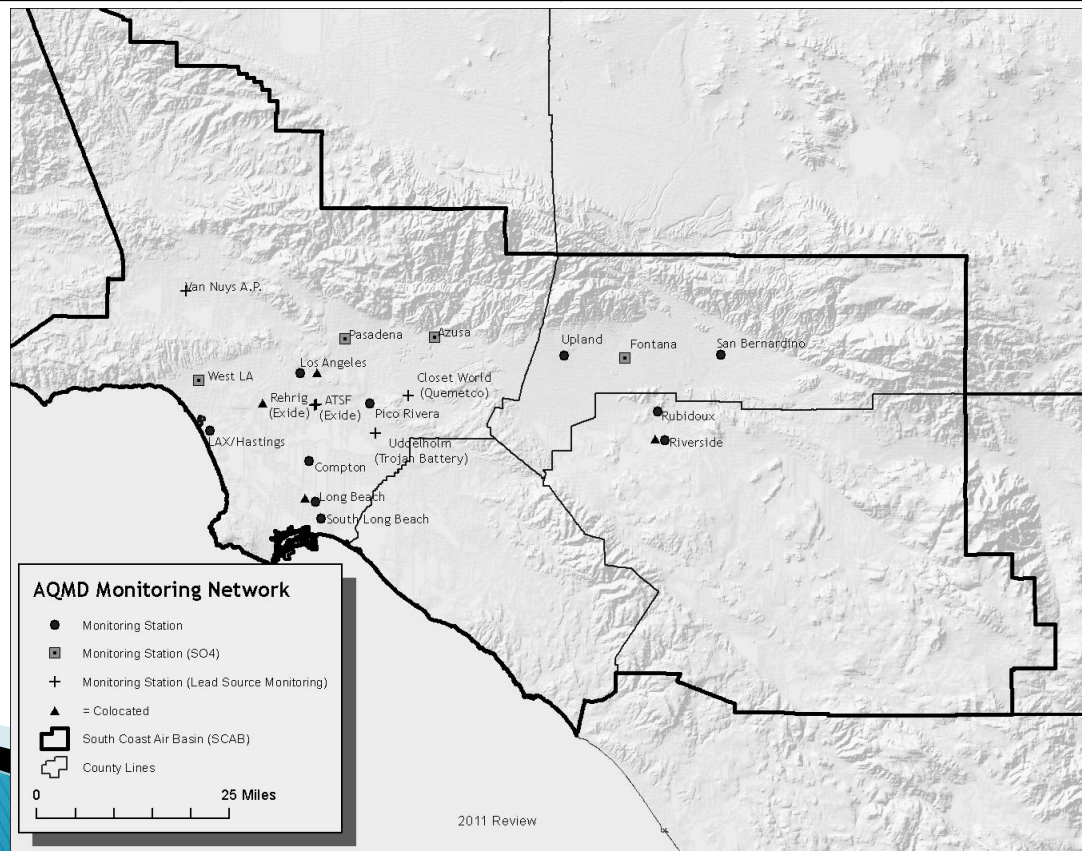
¹Consider data from past three years.

²Data found at <http://www.epa.gov/ttn/chief/net/2008inventory.html> (5/1/2013)

Lead (Pb)

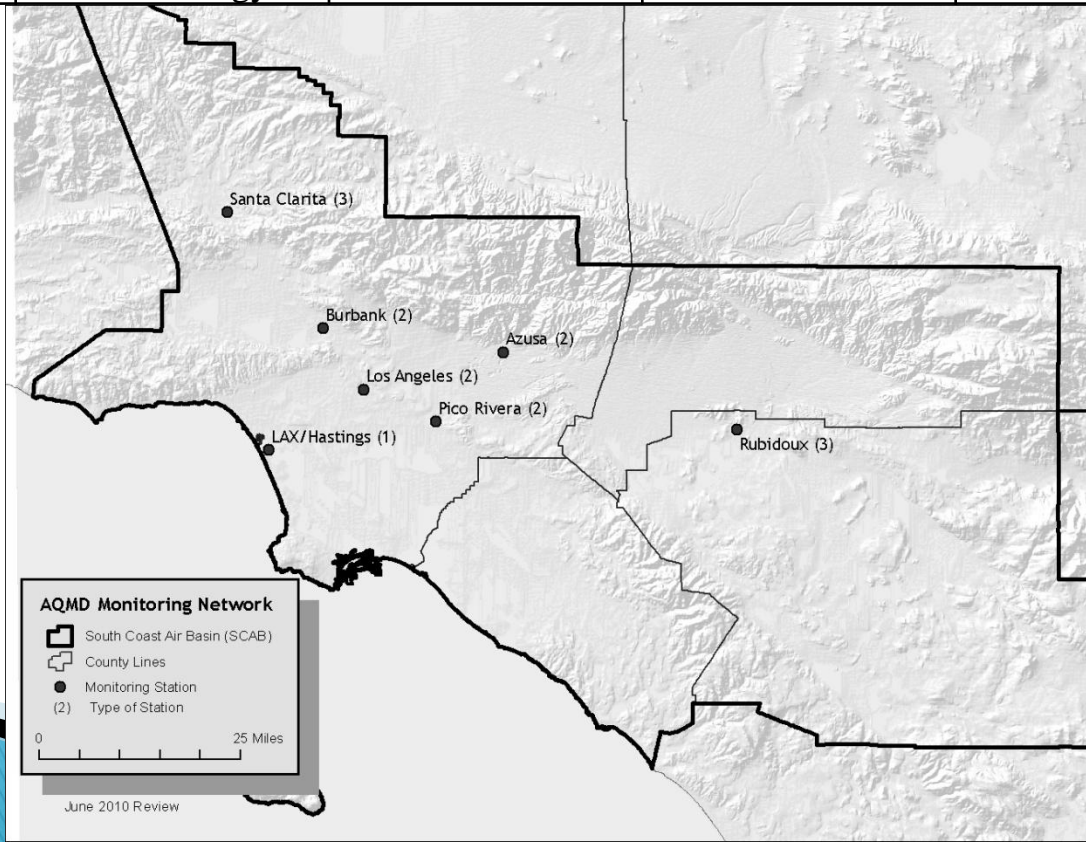
Pb Non Source Monitoring

CBSA	Population and Census Year	# Required Area Wide Monitors	# Active Area Wide Monitors	# Additional Monitors Needed
31100	13,052,921, 2012	0	5	0
40140	4,350,096, 2012	0	3	0



Photochemical Assessment Monitoring Stations (PAMS)

Area	Type	# Required PAMS Sites	# Active PAMS Sites	# PAMS Sites Needed
SCAQMD Monitoring Area	1 or 3	1	3	0
	2	1	4	0
	4	0	0	0
	Upper Air Meteorology	1	5	0



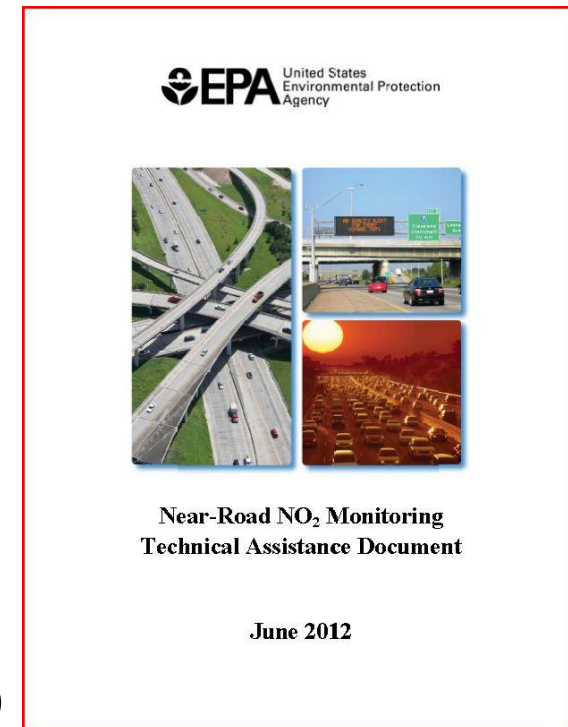
Recent or Proposed Modifications to Network

- ▶ Van Nuys Pb Monitoring Site
- ▶ TSP Sulfate Monitoring
- ▶ Station Improvements
 - Pasadena
 - Crestline
 - West LA
 - Riverside Magnolia
 - South Long Beach



Near Road NO₂: Candidate Road Segment Ranking Process

- ▶ Incorporates U.S. EPA TAD Considerations
 - FE AADT
 - Roadway Design
 - Spacing
 - Meteorology
 - Roadside Structures
 - Terrain
- ▶ Site Survey of Top 12 Ranked FE AADT Roadways in South Coast Basin
 - 9 Los Angeles–Long Beach–Santa Ana CBSA
 - 3 Riverside–San Bernardino–Ontario CBSA
 - Existing 710 Freeway Site
- ▶ SCAQMD Public Workshop (January 2013)
 - Overview of Site Selection Process
 - Discussion with Public



Candidate Segment Scoring Matrix

	5	3	1	0
Federal Equivalent Annual Average Daily Traffic (FE AADT)	Traffic Count of the Highest Ranked FE AADT	Normalized to the Highest Ranked FE AADT	Normalized to the Highest Ranked FE AADT	n/a
Roadway Design	At same elevation	Slightly higher elevation	Below Grade/ Under Overpass/ On Bridge	Design Prevents Access or Accurate Representation of Roadway
Distance from Roadway	Less than or equal 20 m	Normalized distance from 20 m to 50 m	50 m from Roadway	>50 m
Meteorology (Predominant Wind Direction)	Downwind	Parallel	Upwind	n/a
Roadside Structures	No Barriers (< 2 m)	Some Obstruction (Small Sound Barriers, Sparse Low Vegetation)	Major Obstruction (Large Soundwalls, Buildings)	Completely Blocked
Terrain	Flat/ Mildly Sloping	Uneven	Mountain Ridges, Canyons	Terrain Prevents Access or Accurate Representation of Roadway

Weighting values	
FE AADT Score	5
Roadway Design	1
Distance from Roadway	1
Meteorology	1
Roadside Structures	1
Terrain	1

Map of Highest Ranking Candidate Roadway Segments from Scoring Matrix



Near Roadway Monitor Site Considerations for 2015

- ▶ 40 CFR Part 58 Appendix D: Second site required if:
 - CBSA has a population of 2.5 million or more
 - CBSA has a population of 500,000 or more and one or more segments of 250,000 AADT or greater
- ▶ Near Road NO₂ Monitoring TAD 2nd Site Guidance:
 - Sites should be differentiated from first site
 - Fleet mix, congestion patterns, geographic area, population exposure
 - Consider initial data from first site

Special Programs

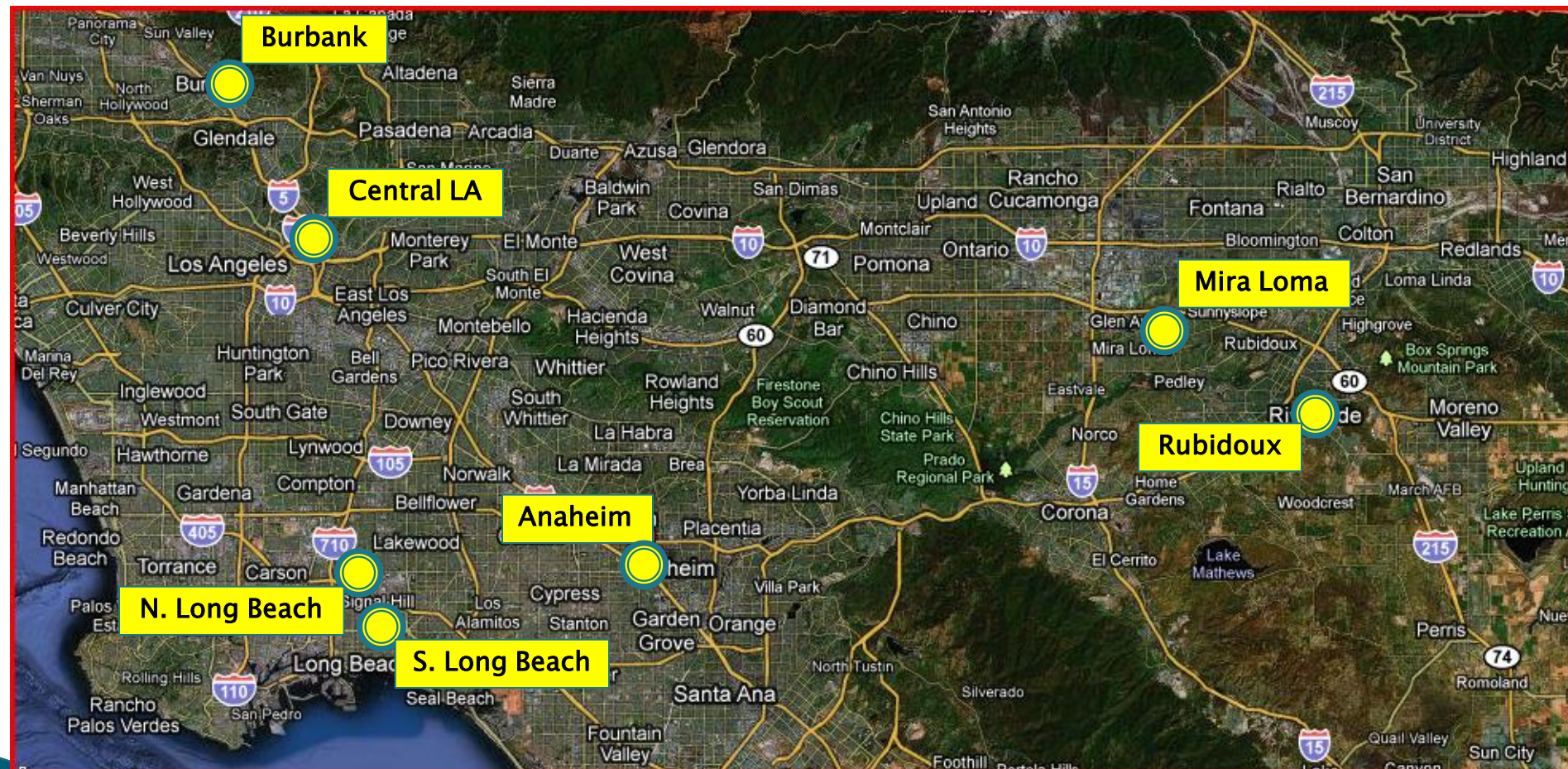
- ▶ MATES IV
- ▶ Fugitive Dust Study
- ▶ Hexavalent Chrome
- ▶ College of the Desert
- ▶ Gerdau-TAMCO
- ▶ Salton Sea



PM2.5 Continuous Monitor Comparability Assessment

- ▶ Continuous PM2.5 measurement network (FEM)
 - Supplements traditional filter-based methods (FRM)
 - Provides real-time public AQI information
- ▶ Any request to U.S EPA regarding the use of continuous data for NAAQS comparison is due in our Annual Network Plan submittal by June 30, 2013.
- ▶ 40 CFR §58.11(e) identifies the technical performance criteria for requesting exclusion of FEM data from comparison to the NAAQS
 - The statistical information required in §58.11(e) were generated using EPA's "PM2.5 continuous monitor comparability tool" available on-line

Sites with both FRM and FEM



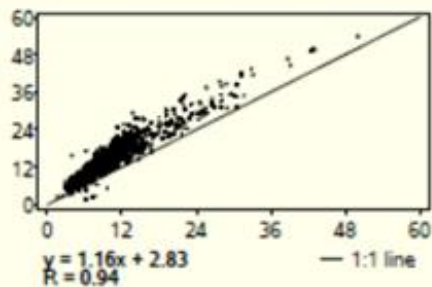
- Continuous monitors used as part of SCAQMD's PM2.5 monitoring program
- FRM and FEM monitors operated concurrently at seven network locations

PM2.5 FEM/ FRM Method Comparison

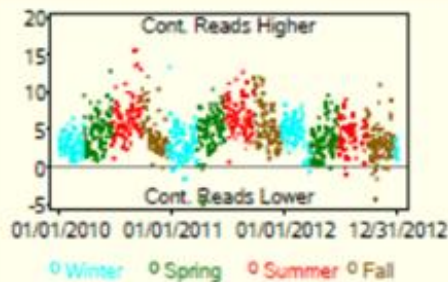
PM_{2.5} Continuous Monitor Comparability Assessment Site 06-059-0007: Anaheim, CA

FRM: Andersen RAAS2.5-300 PM_{2.5} SEQ w/WINS-GRAVIMETRIC (120), PM_{2.5} - Local Conditions (88101), POC=1
Cont: Met One BAM-1020 Mass Monitor w/VSCC-Beta Attenuation (170), PM_{2.5} - Local Conditions (88101), POC=3

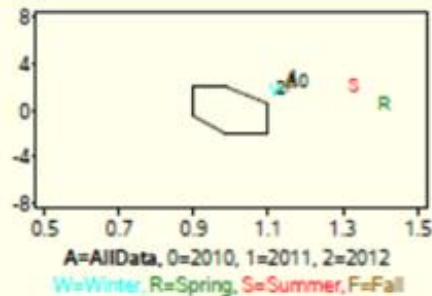
Cont. (y) vs. FRM (x) PM_{2.5} (μg/m³)



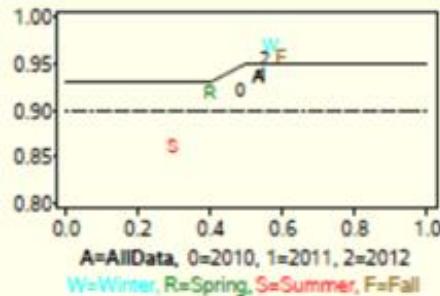
Cont. minus FRM PM_{2.5} (μg/m³)



Additive (y) vs. Multiply (x) Bias

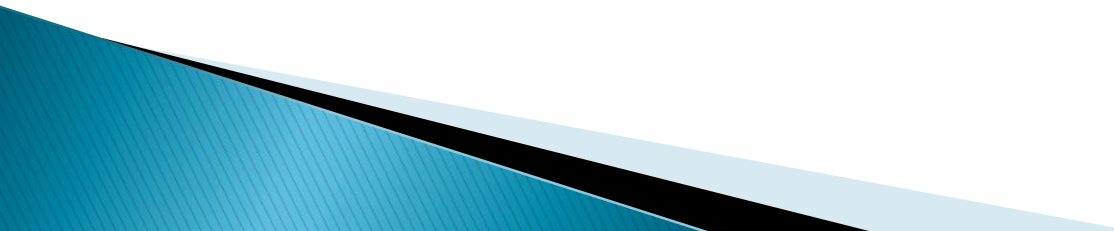


R (y) vs. FRM CCV (x)



- Comparisons of measurements between 2010 to 2012 show that the FEM method can read significantly higher PM_{2.5} mass concentrations than the FRM method
- FEM can be 0 to 60% higher depending on site and year
- These differences have been observed nationwide to varying degrees
- Differences are due to “semi-volatile” PM material
 - The measurement of these PM components (ammonium nitrate, organic compounds, water) are highly dependent on temperature, humidity, sample handling, and thus method.

Request For Exclusion of PM2.5 FEM Data From Comparison to the NAAQS

- SCAQMD PM2.5 FEM monitors do not meet the performance criteria specified by U.S. EPA
 - As part of the 2013 Annual Monitoring Network Plan, SCAQMD staff is making the request to U.S. EPA that all data from all PM2.5 FEM monitors be excluded for comparison to the NAAQS
 - SCAQMD staff is working to optimize the monitoring instrumentation to meet all of our monitoring objectives
 - FEM data are of sufficient quality to be used for real-time public AQI reporting
- 

Discussion

