Annual Air Monitoring Network Plan

March 28, 2013

Agenda

- Annual Network Plan Requirements
- Air District's Approach
- Monitoring Network Basics
- Extensive Monitoring Network
- Completed Network Changes
- Planned Network Changes
- NO2 Monitoring Site Selection

Network Plan Requirements

- Network plan describes the state of the network and changes that are planned (40 CFR (Code of Federal Regulations) §58.10)
- 30-day public inspection period prior to submission to EPA
- Monitoring objectives
  - Attainment of Federal Standards/Strategy
  - Research Support
  - Provide Public Timely Information

Air Monitoring Approach

- The Valley covers an area of 23,490 sq. miles
- Valley is home to approx. 4 million residents
  - Several major metropolitan areas, vast expanses of agricultural land, industrial sources, highways and schools
- Nonattainment for PM2.5 and ozone; maintenance for PM10 and CO
- Limited financial and personnel resources for air quality monitoring

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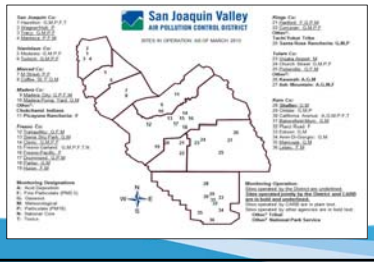
HEALTHY AIR LIVING

Air Monitoring Approach (cont'd)

- Despite challenges, District (in cooperation with CARB) operates an efficient, effective monitoring network (36 air monitoring stations) to support mission to improve & protect public health



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Monitoring Network Basics

- Common pollutants monitored
  - Particulate Matter (PM10 and PM2.5)
  - Ozone
  - Carbon Monoxide (CO)
  - Nitrogen Oxides (NO2)
  - Sulfur Dioxide (SO2)

- Utilizes complex equipment/analyzers
  - Tapered Element Oscillating Microbalance (TEOM), Beta Attenuation Monitors (BAMS)

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Monitoring Network Basics (cont'd)

- Types of regulatory monitors
  - Federal Reference Method (FRM)
  - Federal Equivalent Method (FEM)
- Types of monitoring stations
  - State and Local Air Monitoring Station (SLAMS)
  - Special Purpose Monitor (SPM)
  - Photochemical Assessment Monitoring Station (PAMS)
  - National Core (NCore)

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Extensive Monitoring Network

- Pursuant to federal guidelines, population, emission inventory, and "design value" determine the minimum number of monitors to be located within a MSA (i.e. county)
  - Following slides demonstrate the District's network meets or exceeds federal requirements

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Extensive Ozone Network

County Name	8-Hour Ozone Design Values	Required Number of Monitors	SLAMS
Fresno	99	2	5
Kern	96	2	6
Kings	95	1	1
Madera	81	1	2
Merced	84	1	1
San Joaquin	78	2	2
Stanislaus	87	2	2
Tulare	96	2	2

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Extensive PM2.5 Network

County Name	24-Hour PM2.5 Design Values (µg/m³)	Annual PM2.5 Design Values (µg/m³)	Required Number of Monitors	SLAMS	SPM
Fresno	58	17.0	2	4	4
Kern	62	18.2	2	2	1
Kings	57	16.3	1	1	2
Madera	55	20.5	1	1	0
Merced	44	16.0	1	1	1
San Joaquin	38	11.1	2	2	1
Stanislaus	51	15.3	2	3	0
Tulare	47	15.2	1	1	3

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Extensive PM10 Network

County Name	24-hour Highest PM10 (µg/m³)	Required Number of Monitors	SLAMS	SPM
Fresno	94	1 – 2	3	0
Kern	100	1 – 2	2	0
Kings	150	1 – 2	2	1
Madera	119	0	1	0
Merced	74	0 – 1	1	0
San Joaquin	111	2 – 4	2	2
Stanislaus	69	1 – 2	2	0
Tulare	78	0 - 1	1	0

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Extensive Monitoring Network (cont'd)

- Carbon Monoxide (CO)
  - There are eight CO monitors in the District's monitoring network
- Sulfur Dioxide and Lead
  - The Valley is not required monitor either pollutant; however, there are SO_2 and Lead monitors operating at the Fresno-Garland monitoring station

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Completed Changes

- Merced, Fresno, and Hanford-Corcoran CBSAs
  - Replaced old air monitoring equipment
- Fresno CBSA
  - CARB moved the Fresno-First monitoring station to Fresno-Garland location because of lease issues
  - A collocated PM10 monitor and a temporary PM2.5 analyzer added to the Fresno-Drummond monitoring site

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Completed Changes (cont'd)

- Hanford-Corcoran CBSA
  - Corcoran station temporarily shut down due to safety issues. Repaired and resumed operating in August 2012
- Bakersfield CBSA
  - A temporary PM10 monitor at the Bakersfield-California site was moved to the Bakersfield-Muni site (the monitor will be moved again when a replacement site is located)

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Planned Changes
Current through Mid-2014

- Modesto, Merced, Madera, and Tulare CBSAs
  - No changes scheduled for these CBSAs during this time period.
- Stockton CBSA
  - Planning to shut down Stockton Wagner/Holt PM10 station. The Stockton monitor provides PM10 SLAMS monitoring for this CBSA.

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Planned Changes (cont'd)
Current through Mid-2014

- Fresno CBSA
  - Investigating consolidating Fresno-Pacific into Fresno-Drummond site
  - NOy monitor will be added to Parlier site
  - District will be siting a near-road station in this CBSA
- Hanford-Corcoran CBSA
  - Testing a new type of PM2.5 analyzer

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Planned Changes (cont'd)
Current through Mid-2014

- Bakersfield CBSA
  - District plans to install PAMS Type 3 equipment at an appropriate location in the Arvin area
  - The Bakersfield-Muni site unacceptable for PM monitoring due to emissions from site specific emissions and nearby sources. District is looking for a replacement site for the PM monitors
  - District will be siting a near-road station in this CBSA

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NO2 Monitoring Site Selection

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New Federal NO2 Standard

- EPA revised NO2 standard in 2010
  - Retained annual standard
  - Promulgated new 1-hr NO2 standard of 100 ppb
  - NAAQS included air monitoring network requirements, including establishing the first-ever near roadway air monitoring network

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NO2 Monitoring Network Requirements

- Three different NO2 monitoring networks
  - Area-wide Monitor
    - District will use an existing site when population threshold is reached
  - Regional Administrator's Network (RA-40)
    - District will work with EPA if locations are chosen in our jurisdiction
  - NO2 Near-Road Air Monitoring Site (NO2NR)
    - CBSA with > 500,000 population – 1 site
    - CBSA with > 2.5 million – 1 additional site

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SJV Near Road Network

- NO2 monitors triggered in four CBSAs—Fresno, Bakersfield, Stockton-Lodi, Modesto
- NO2 siting requirements:
  - Located in area that is likely to have maximum concentrations
  - As close to the freeway as possible (< 50 m)
  - Sites operational by January 1, 2017

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Physical Considerations

- As close to the freeway (traffic lane) as possible (50 meters or less)
- Needs to be placed at grade
- Avoid off-ramps, on-ramps, up/down hill transitions, toll plazas, tunnels, sound walls, over/under passes, interchanges etc.
- Avoid obstacles—trees, bushes, road side structures, and etc.
- Easements, set backs, zoning and etc.

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Physical Considerations (cont'd)

- Take into account future construction
- Must have reasonably easy access
- Electrical power needs to be reasonably close by (150-200 amps)
- Land line phone service needs to be reasonably accessable
- Parking for two to three vehicles (large van)
- Safety features need to be installed (guard rails, etc.)

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Additional Considerations

- Meteorology (i.e. wind direction)
- Congestion
- Population Exposure
- Microscale site
  - Measure peak areas of emissions
  - Exposure is only representative within the 100 meter radius
  - Probe height close to ground as possible
- Land owner willingness to have a site on their property

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Rigorous Site Selection Process

- Followed the EPA's Technical Assistance Document as closely as possible
- District and CARB worked together in order to find acceptable locations
  - Used Google Earth
  - Staff sent to visually observe locations
- EPA involved throughout the siting process and provided input

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Rigorous Site Selection Process (Cont'd)

- Evaluate traffic count data
  - CARB gathered traffic count data from CalTrans and estimated missing data points
- Defined start and end of segment
- Ranked segments by FE-AADT
  - Fleet Equivalent Annual Average Daily Traffic
  - Extra weight given to truck traffic
- Ranked all segments in a county/CBSA to determine top 10

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Rigorous Site Selection Process (Cont'd)

- Find acceptable locations where a site can be built (focusing on the highest ranked locations)
  - Contact property owners to determine interest in leasing property
  - Work with interested property owners to establish lease

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Next Steps in Site Selection

- Negotiate a lease with a willing property owner in the highest ranked segment
- Seek public comment
- Possibly take lease to Governing Board
- Submit site selections in annual network plan for EPA concurrence
- Hire contractor to build site

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Comparison with South Coast

	South Coast	Fresno	Bakersfield
Highest FE-AADT	733,000	257,000	386,000
10th Highest FE-AADT	665,000	212,000	198,000

- Both SC and SJV are required to have 4 sites
  - South Coast: 2 CBSAs, 2 sites each (14 million in population)
  - San Joaquin: 4 CBSAs, 1 site each (3 million in population)
- SC Near Road Study on I-710 measured 83 ppb (98th percentile)

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Fresno Monitoring Site Selection

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Segments in Fresno

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Fresno Segments Without Any Acceptable Locations

- Segments 1, 2, 3, 6, and 8—due to freeway design
  - Below and above grade
  - Vegetation/Obstruction
  - Interchange
- Segments 5 and 9—future construction of High Speed Rail

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Segments with Acceptable Locations in Fresno

- Segments 4, 7, and 10
- Worked with two landowners within Segment 4 interested in leasing the District space for a site
- Did not pursue locations in Segments 7 and 10 since a location in a higher ranked segment was found

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Proposed Fresno Location

- Found site within Segment 4
- East of Highway 99, north of Jensen
  - 2482 Foundry Park Avenue
  - Exact location on the property is to be determined
- Expect probe inlet to be 20-25 meters from the right edge of the freeway

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Bakersfield Monitoring Site Selection

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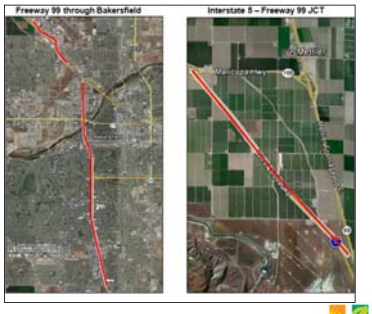
Segments in Bakersfield



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Bakersfield Segments Without Any Acceptable Locations

- Segments 1 through 6—due to freeway design
  - Below and above grade
  - Vegetation
  - Interchange
- Segment 7—meteorology
- Segment 8—lack of near by population
- Segment 10—accessibility issues, location of structures

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Proposed Bakersfield Location

- Segment 9 is the only segment that had acceptable locations after accounting for siting considerations
- Worked with landowners within Segment 9 interested in leasing the District space for a site
- East of Highway 99, south of JCT 65
  - 2809 Unicorn Road
  - Exact location on the property is to be determined
- Expect probe inlet to be 20-25 meters from the right edge of the freeway

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Open Discussion

Please come to podium
State name and affiliation

webcast@valleyair.org

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Next Steps

Comment Deadline: 04/18/13 at 5:00 PM

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Mail: San Joaquin Valley APCD
1990 E. Gettysburg Avenue
Fresno, CA 93726
P: (559) 230-6100 F: 559-230-6064
E-mail List: new e-mail list has been set up for the Air Monitoring Network (http://www.valleyair.org/lists/list.htm)

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