

Draft 2024 CARB Annual Network Plan

Public Workshop
May 21, 2024

Logistics

- Presentation will be available on-line
[Annual Monitoring Network Report | California Air Resources Board](https://ww2.arb.ca.gov/our-work/programs/ambient-air-monitoring-regulatory/annual-monitoring-network-report)
<https://ww2.arb.ca.gov/our-work/programs/ambient-air-monitoring-regulatory/annual-monitoring-network-report>
- *Draft 2024 ANP will be posted soon for 30-day public comments. Please submit your comments to*
Jin Xu at Jin.Xu@arb.ca.gov
- Problems during presentation
Email Matthew Densberger at Matthew.Densberger@arb.ca.gov

Draft 2024 ANP Overview

- Types of monitoring networks in California
- Regulatory Monitoring Network
- Annual Network Plan and requirements

Types of Monitoring Networks in California

- **Regulatory (criteria pollutants)**

- Ground-level ozone (O₃)
- Carbon monoxide (CO)
- Nitrogen dioxide (NO₂)
- Particulate matter (PM_{2.5} and PM₁₀)
- Sulfur dioxide (SO₂)
- Lead (Pb)

- Toxic air contaminants

- Greenhouse gas emissions (e.g., CO₂, CH₄, and N₂O)

- Community-scale

Regulatory Monitoring Network

- Criteria pollutant monitoring
- Over 250 sites in California
- Operated by CARB, Districts, Tribes, and Federal Agencies
- Monitors audited by MLD on annual or semi-annual basis
- Network Plans submitted on an annual basis to EPA
- Monitoring Network Assessments on a 5-year basis to EPA

Environmental Justice (EJ) in Regulatory Monitoring Network

- ANP network system modification process.
- Five-Year Monitoring Network Assessment.
- More than one third of the regulatory monitoring sites are located within disadvantaged communities and tribal communities

Regulatory Monitoring Objectives

40 CFR 58, Appendix D

- Support compliance with state and federal standards
- Provide air quality data to the general public
- Support air quality research

Federal Site Types

- Extreme downwind
- Highest concentration
- Maximum precursor emissions impact
- Population exposure
- Source oriented
- Upwind background
- General/background
- Regional transport
- Welfare related impacts
- Quality assurance
- Other

Spatial Scale of Different Site Types

Spatial Scale of Representativeness	Definition
Microscale	Several meters up to about 100 meters
Middle scale	About 100 meters to 0.5 kilometer
Neighborhood scale	0.5 to 4.0 kilometers range
Urban scale	On the order of 4 to 50 kilometers
Regional scale	From tens to hundreds of kilometers
National and global scales	Characterizing the nation and the globe as a whole

Regulatory Monitoring Stations

- Types of monitoring stations
 - ✓ State and Local Air Monitoring Station (SLAMS)
 - ✓ National Core Network (NCore)
 - ✓ Photochemical Assessment Monitoring Station (PAMS)
 - ✓ PM Chemical Speciation Network(CSN)
 - ✓ Special Purpose Monitor (SPM)
 - ✓ Interagency Monitoring of Protected Visual Environments (IMPROVE)
 - ✓ Clean Air Status and Trends Network (CASTNET)
- Types of regulatory monitors
 - ✓ Federal Reference Method (FRM)
 - ✓ Federal Equivalent Method (FEM)

Appendix C to Part 58—Ambient Air Quality Monitoring Methodology
National Air Quality Monitoring Program Fact Sheets:

www3.epa.gov/ttnamti1/files/ambient/pm25/qa/vol2appa.doc

Annual Monitoring Network Plan

Annual Monitoring Network Plan (ANP)

- Annual network plan
- Content of CARB annual network plan
- Federal minimum monitoring requirements
- Detailed site information
- Ozone waiver requests

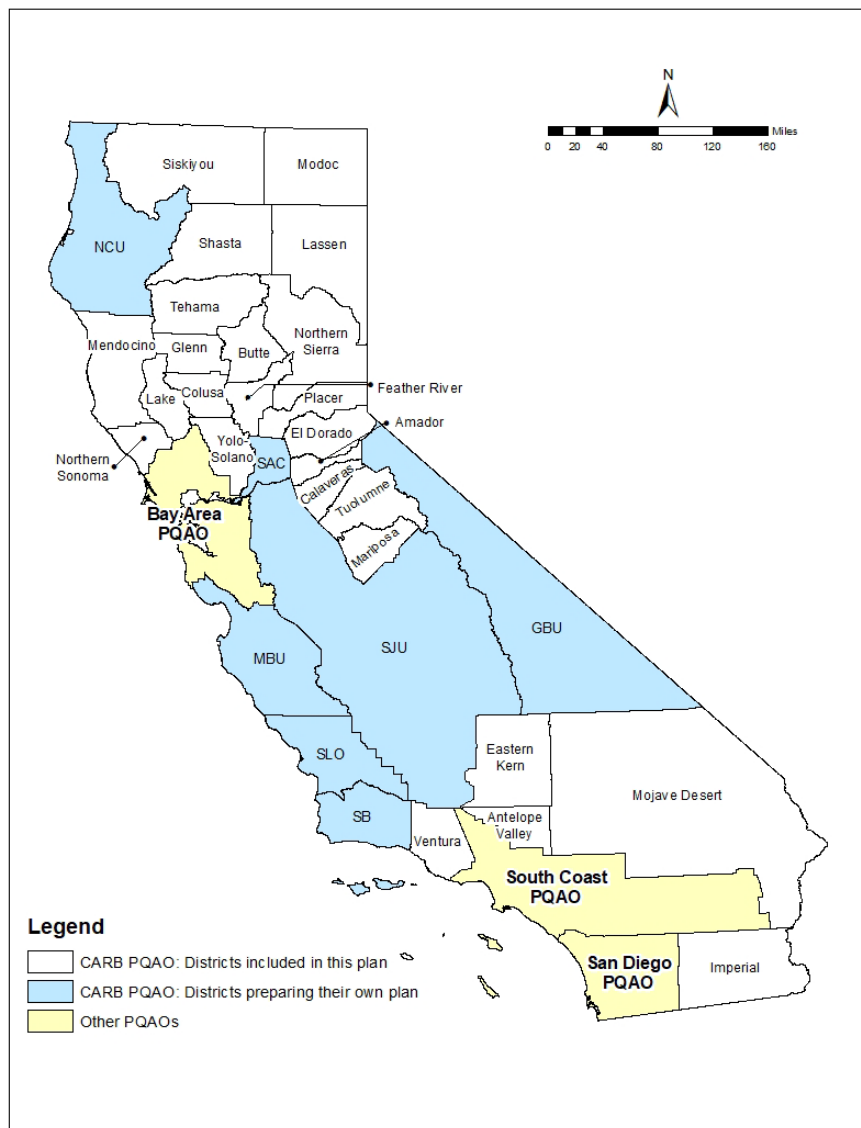
Annual Network Plan Requirements

- Required under federal regulations – submitted to the U.S. EPA by July 1st of each year
- 40 CFR 58.10: Annual Monitoring Network Plan and periodic network assessment

“The plan shall include a statement of whether the operation of each monitor meets the requirements of appendices A, D, and E of this part, where applicable.”

- 40 CFR 58, Appendix A: audits; collocation
- 40 CFR 58, Appendix D: Network Design Criteria
- 40 CFR 58, Appendix E: Probe and Monitor Path Siting Criteria
- **It is more of a documentation tool than a planning tool.**

Areas Covered in the CARB ANP



▶ Primary Quality Assurance Organization (PQAO) Drafting Their Own ANP

CARB, Bay Area, South Coast, San Diego

▶ CARB ANP

25 Districts Included in the CARB ANP

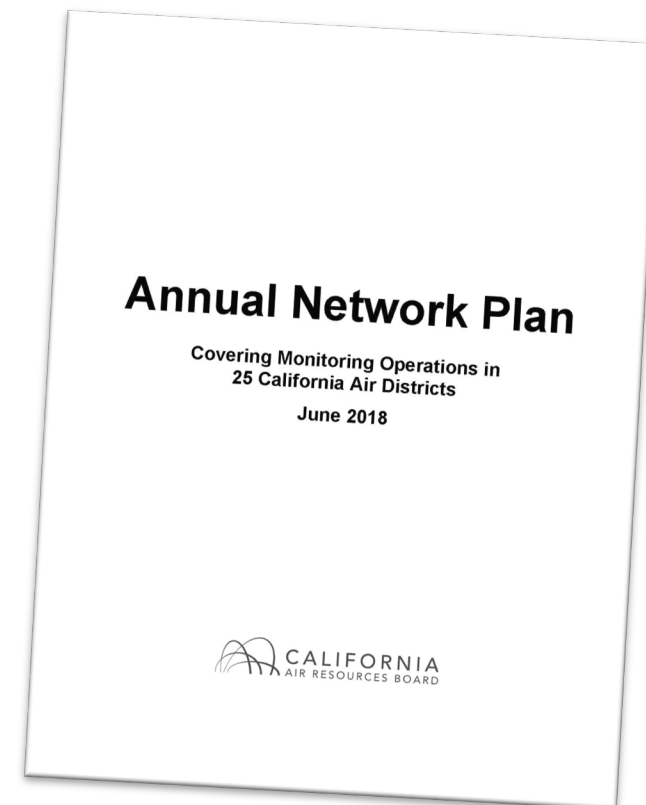
Amador County, Antelope Valley, Butte County, Calaveras County, Colusa County, Eastern Kern, El Dorado County, Feather River, Glenn County, Imperial County, Lake County, Lassen County, Mariposa County, Mendocino County, Modoc County, Mojave Desert, Northern Sierra, Northern Sonoma County, Placer County, Shasta County, Siskiyou County, Tehama County, Tuolumne County, Ventura County, Yolo-Solano

7 Districts Drafting Their Own ANP

Great Basin, Monterey Bay, North Coast, Sacramento, San Joaquin Valley, San Luis Obispo County, Santa Barbara

What is in the CARB ANP?

- Federal requirements
 - Minimum monitoring requirements
 - Quality assurance requirements
 - Particulate Matter collocation requirements
- Site information
 - Detailed information on each monitor
 - Recently implemented and proposed changes
 - Supporting documents
- Ozone and PM_{2.5} waiver requests
- Public Comments and CARB Responses



Federal Minimum Monitoring Requirements

- Each pollutant requires a minimum number of monitors based upon certain criteria

Pollutant	Minimum Monitor Criteria
Ozone, PM ₁₀ and PM _{2.5}	Metropolitan Statistical Area (MSA) Population, Design Value Concentration
NO ₂	MSA Population
Near Road NO ₂	MSA Population, Annual Average Daily Traffic
SO ₂	MSA Population, SO ₂ Emissions (tons/year)
Pb	Pb Emissions (NEI) <ul style="list-style-type: none">– airports >1.0 tons/year– non-airport sources >0.50 tons/year

Federal Minimum Monitoring Requirements: Example: Ozone Minimum Monitoring Requirements

Metropolitan Statistical Area population	3-year design value concentrations $\geq 85\%$ of any Ozone NAAQS	3-year design value concentrations $< 85\%$ of any Ozone NAAQS
>10 million	4	2
4 – 10 million	3	1
350,000 – <4 million	2	1
50,000 – <350,000	1	0

- MSA: Sacramento–Roseville–Arden Arcade
- Population: 2,397,382
- Design Value: 0.081 ppm
- Design Value = 116 percent of 0.070 ppm NAAQS

HOW MANY MONITORS ARE REQUIRED?

2

Federal Minimum Monitoring Requirements: Example: PM_{2.5} Minimum Monitoring Requirements

Population	DV exceeds \geq 85% of any NAAQS	DV exceeds $<$ 85% of any NAAQS
> 1 million	3 sites	2 sites
500,000 – 1 million	2 sites	1 sites
50,000 – <500,000	1 sites	0 sites

- MSA: Bakersfield
- Population: 909,235
- Design Value: 62 $\mu\text{g}/\text{m}^3$ (24-hour) and 18.8 $\mu\text{g}/\text{m}^3$ (Annual)
- Design Value = 177% (24-hour) and 157% (Annual)

HOW MANY MONITORS ARE REQUIRED?

2

Minimum Monitoring Requirements

- Need more than minimum monitoring requirements?
 - ✓ State and Federal planning
 - ✓ Community needs
 - ✓ Emergency monitoring
 - ✓ Other Federal requirements
 - Highest concentration site
 - Background site
 - Transport site

Detailed Site Information

Local Site Name:	Grass Valley-Litton Building		
AQS ID:	06-057-0005		
GPS Coordinates:	39.23352, -121.05567		
Street Address:	200 Litton Dr., Suite 320, Grass Valley, 95945		
County:	Nevada		
Distance to roadways (meters):	1,256 to CA-20		
Traffic Count (AADT,year)	37,000 (2015)		
Ground Cover:	Asphalt		
Representative statistical area name (i.e. MSA, CBSA, other):	Truckee-Grass Valley Micropolitan Statistical Area		
Pollutant, POC	Ozone, 1	PM2.5, 3	
Primary, QA-Audit, Supplementary, or N/A	N/A	Primary	
Parameter Code	44201	88101	
Basic monitoring objective(s)	NAAQS	NAAQS	
Site type(s)	Population Exposure	Population Exposure	
Monitor type(s)	SLAMS	SLAMS	
Network affiliation(s)	N/A	N/A	
Instrument manufacturer and model	Teledyne API T400	Met One BAM 1022	
Method code	87	209	
FRM/FEM/ARM/Other	FEM	FEM	
Collecting Agency	Northern Sierra	Northern Sierra	
Analytical Lab (i.e. weigh lab, toxics lab, other)	N/A	N/A	
Reporting Agency	Northern Sierra	Northern Sierra	
Spatial scale	Neighborhood	Neighborhood	
Monitoring start date	06/01/1993	12/6/2017	
Current sampling frequency	Continuous	Continuous	
Required sampling frequency including exceptional events	N/A	N/A	
Sampling season	1-Jan - 31-Dec	1-Jan - 31-Dec	
Probe height (meters)	11.9	12.1	
Distance from supporting structure (meters)	3.8	4	
Distance from obstructions on roof (meters)	No obstructions	No obstructions	
Height above probe for obstructions on roof (meters)	N/A	N/A	
Distance from obstructions not on roof (meters)	No obstructions	No obstructions	
Height above probe for obstructions not on roof (meters)	N/A	N/A	
Distance to nearest tree drip line (meters)	>10	>10	
Distance to furnace or incinerator flue (meters)	N/A	N/A	

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Distance to nearest tree drip line (meters)	>10	>10	
Distance to furnace or incinerator flue (meters)	N/A	N/A	
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	
Unrestricted airflow (degrees around probe/inlet or % of monitoring path)	270	270	
Probe material for reactive gases NO/NO ₂ /NO _y , SO ₂ , O ₃ ; PAMS: VOCs, Carbonyls (e.g. Pyrex, stainless steel, Teflon)	Teflon	N/A	
Residence time for reactive gases NO/NO ₂ /NO _y , SO ₂ , O ₃ ; PAMS: VOCs, Carbonyls (seconds)	12.5	N/A	
Will there be changes within the next 18 months?	No	No	
Is it suitable for comparison against the annual PM _{2.5} NAAQS?	N/A	Yes	
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	
Frequency of flow rate verification for automated PM analyzers	N/A	Monthly	
Frequency of one-point QC check for gaseous instruments	Weekly	N/A	
Date of Annual performance evaluation conducted in the past calendar year for gaseous parameters	7/27/2023	N/A	
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	02/16/23 07/27/23	

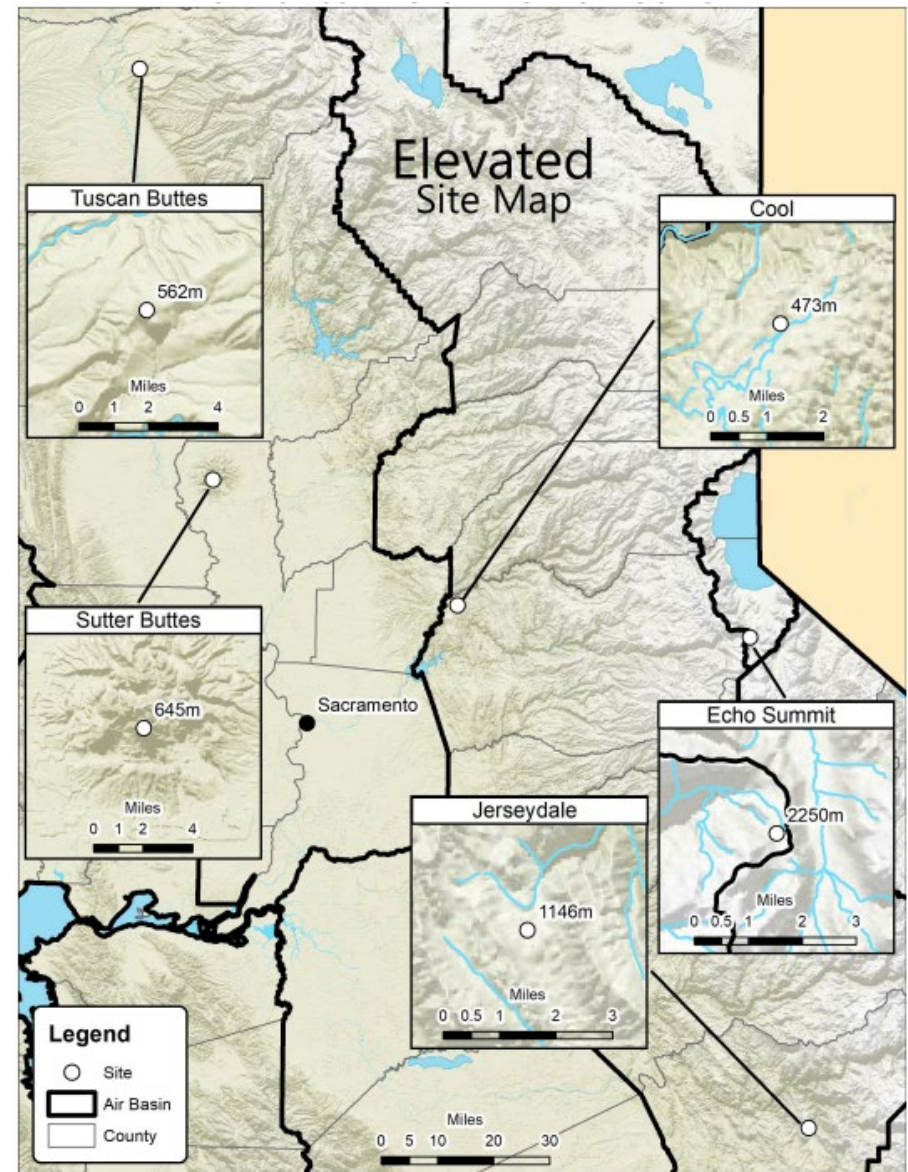
Monitoring Site Changes (examples)

- Site relocation
 - Shelter and power issues, area development, end of lease term, etc.
- Discontinuation
 - attainment during the previous 5 years
 - consistently measured lower concentration than other monitors in the same county during the previous 5 years
 - not required by an attainment or maintenance plan
- 40 CFR 58.14 – System modification

District	Site (AQS ID)	Comment
Butte County APCD	Paradise-Clark (060072003)	CARB has completed the consolidation of two Paradise monitoring stations to a single new location at 5913 Clark Road. Sampling at the new Paradise-Clark station began in May 2023, installation of the site Met tower is scheduled for Summer 2024.
Eastern Kern APCD	Mojave-CA-58 (060290019)	The Mojave site was relocated to a new site at 3200 Pat Avenue in late February 2023 with AQS number: 06-029-0020.

Ozone Seasonal Monitoring Waiver Request

- Five seasonal monitoring sites:
 - Echo Summit
 - Cool
 - Jerseydale
 - Sutter Buttes
 - Tuscan Butte
- April – October
- Justification:
 - O₃ concentrations are significantly lower in the early spring and late fall months
 - Located in remote, mountainous area
 - Winter weather conditions



Contact Information

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THANK YOU!

