air pollution control district
SANTA BARBARA COUNTY

INTRODUCTION TO PARTICULATE MATTER

Community Advisory Council - Santa Barbara County Air Pollution Control District

Our Mission: To protect the people and the environment of Santa Barbara County from the effects of air pollution.

Aeron Arlin Genet
Director / APCO

Timothy Mitro, Air Quality Engineer
July 22, 2020

PRESENTATION TOPICS

1) PM_{10} and $PM_{2.5}$
   - Health Effects and Emission Sources
   - Air Quality Standards
2) Particulate Matter Monitoring in Santa Barbara County
3) Planning Requirements
   - Federal Requirements - Regional Haze Program
   - State Requirements - SB 656 and AB 617
4) Rule Development Process for Draft Rule 363 – PM Control Devices

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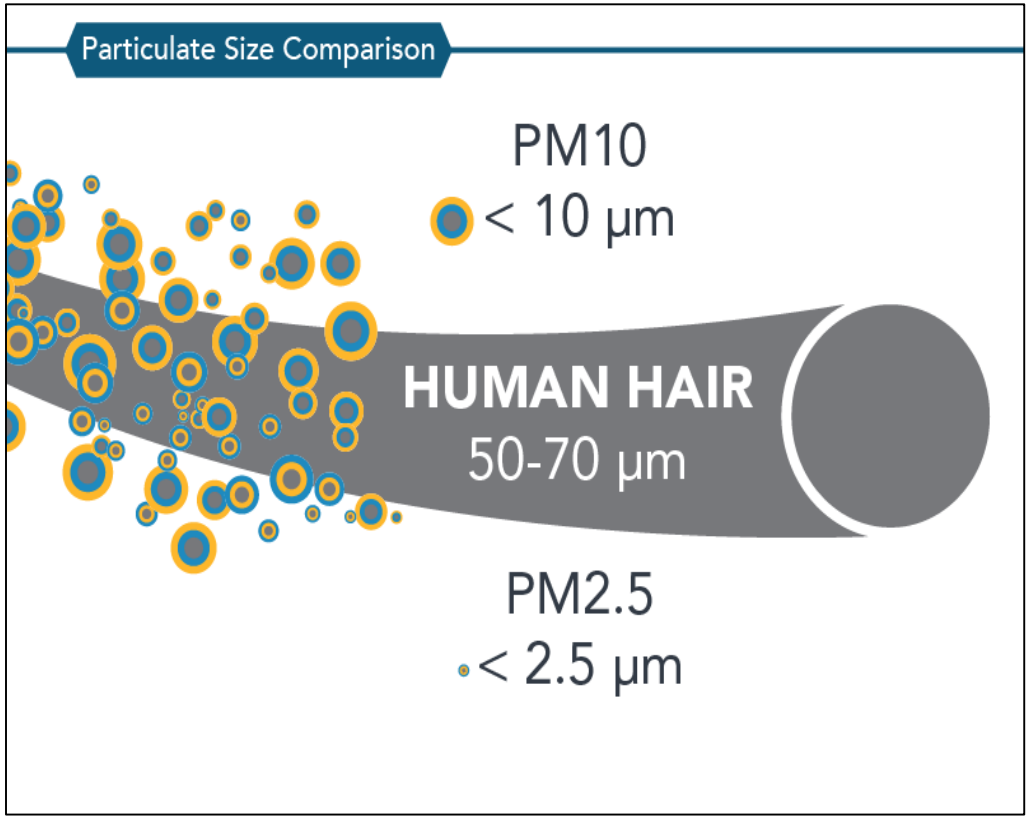
HEALTH EFFECTS AND EMISSION SOURCES

- Fine $PM_{2.5}$ particles penetrate deep into lungs and can be absorbed by the blood stream.
- Can cause nose and throat irritation, asthma aggravation, bronchitis, and heart attacks.
- PM_{10} and $PM_{2.5}$ emissions are caused by stationary, area, mobile, and natural sources of pollution.
  - Aggregate Plants
  - Windblown Dust
  - Farming Operations
  - Combustion Processes



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AMBIENT AIR QUALITY STANDARDS (AAQS)

California AAQS

Year Adopted	Pollutant	24-hr standard (ug/m^3)	Annual Avg. (ug/m^3)	Santa Barbara County Status
1969	TSP	100	60	Standard Revoked
1983, 2002	PM_{10}	50	20	**Nonattainment**
2002	$PM_{2.5}$	---	12	Attainment

National AAQS

Year Adopted	Pollutant	24-hr standard (ug/m^3)	Annual Avg. (ug/m^3)	Santa Barbara County Status
1971	TSP	260	75	Standard Revoked
1987	PM_{10}	150	---	Attainment
1997, 2006, 2012	$PM_{2.5}$	35	12	Attainment

AMBIENT AIR QUALITY STANDARDS (AAQS)

2020 Review of National AAQS

Description	Pollutant	24-hr standard (ug/m^3)	Annual Avg. (ug/m^3)
Current Standard	$PM_{2.5}$	35	12
EPA Policy Assessment	$PM_{2.5}$	Maintain Current Standards	
CARB Recommendation	$PM_{2.5}$	20-30	8-10

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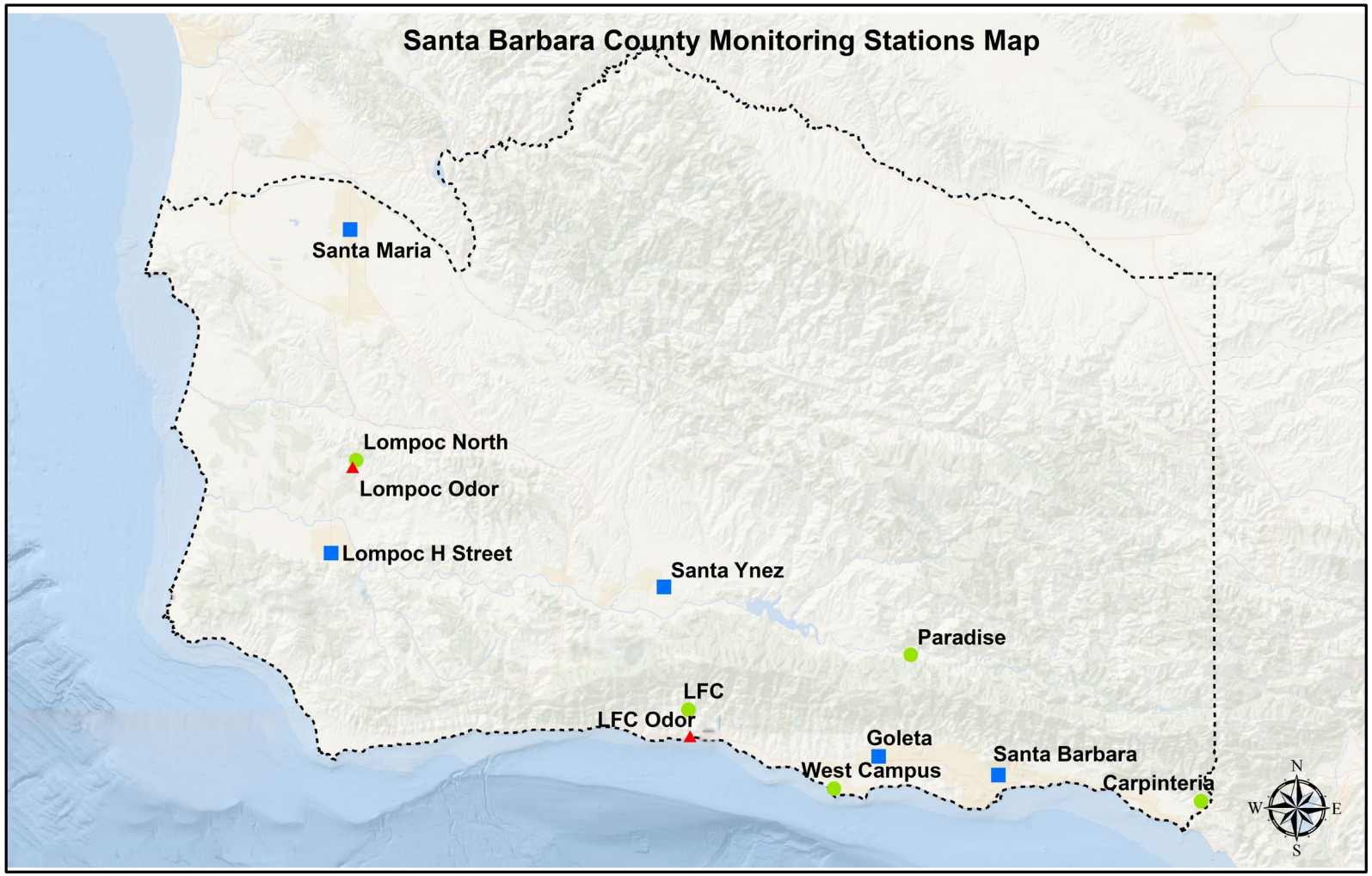
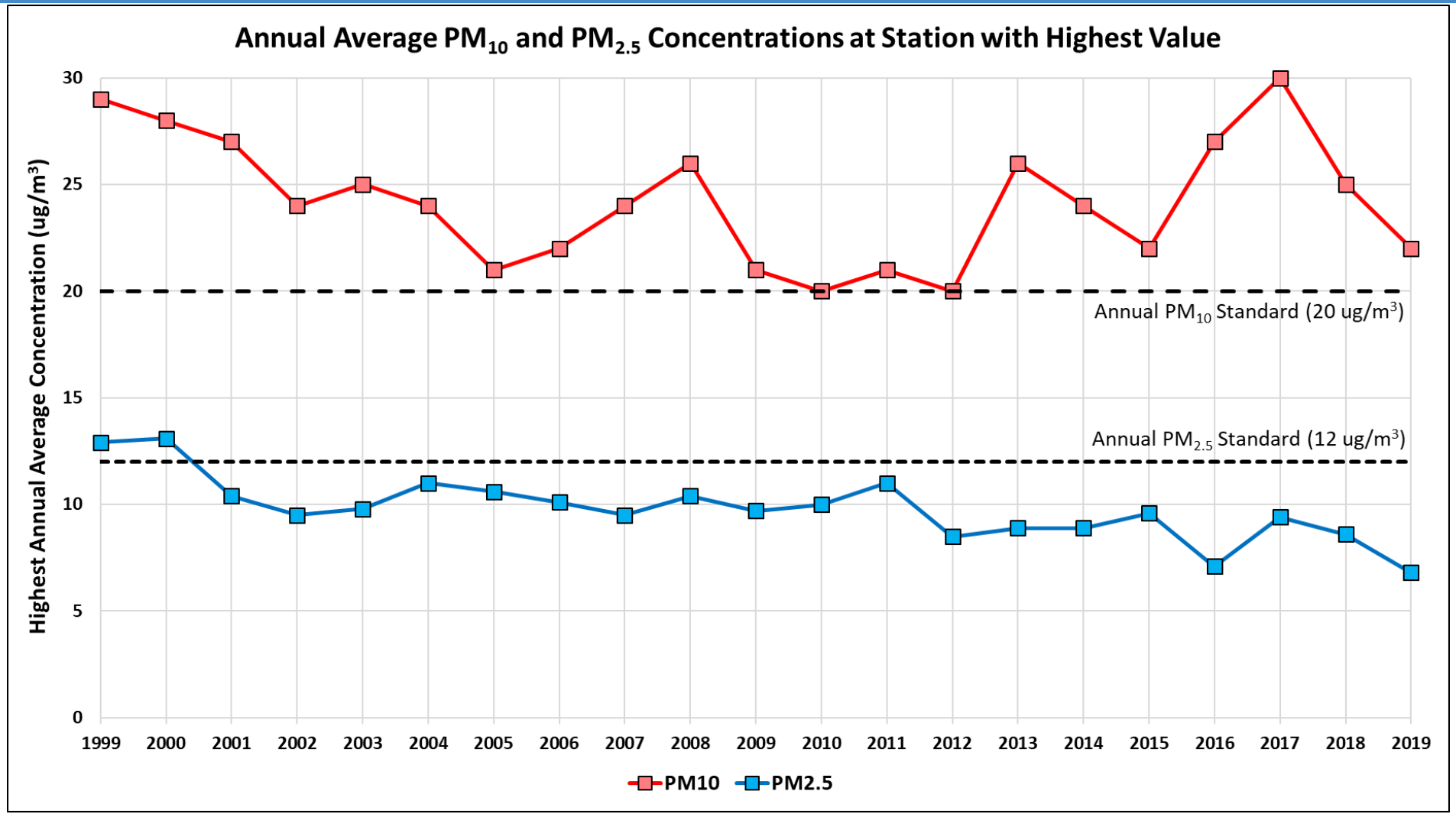
PM MONITORING IN SANTA BARBARA COUNTY

Station	PM_{10}	$PM_{2.5}$
Santa Maria	X	X
Lompoc	X	X
Goleta	X	X
Santa Barbara	X	X
Las Flores Canyon	X	
Santa Ynez *	X	

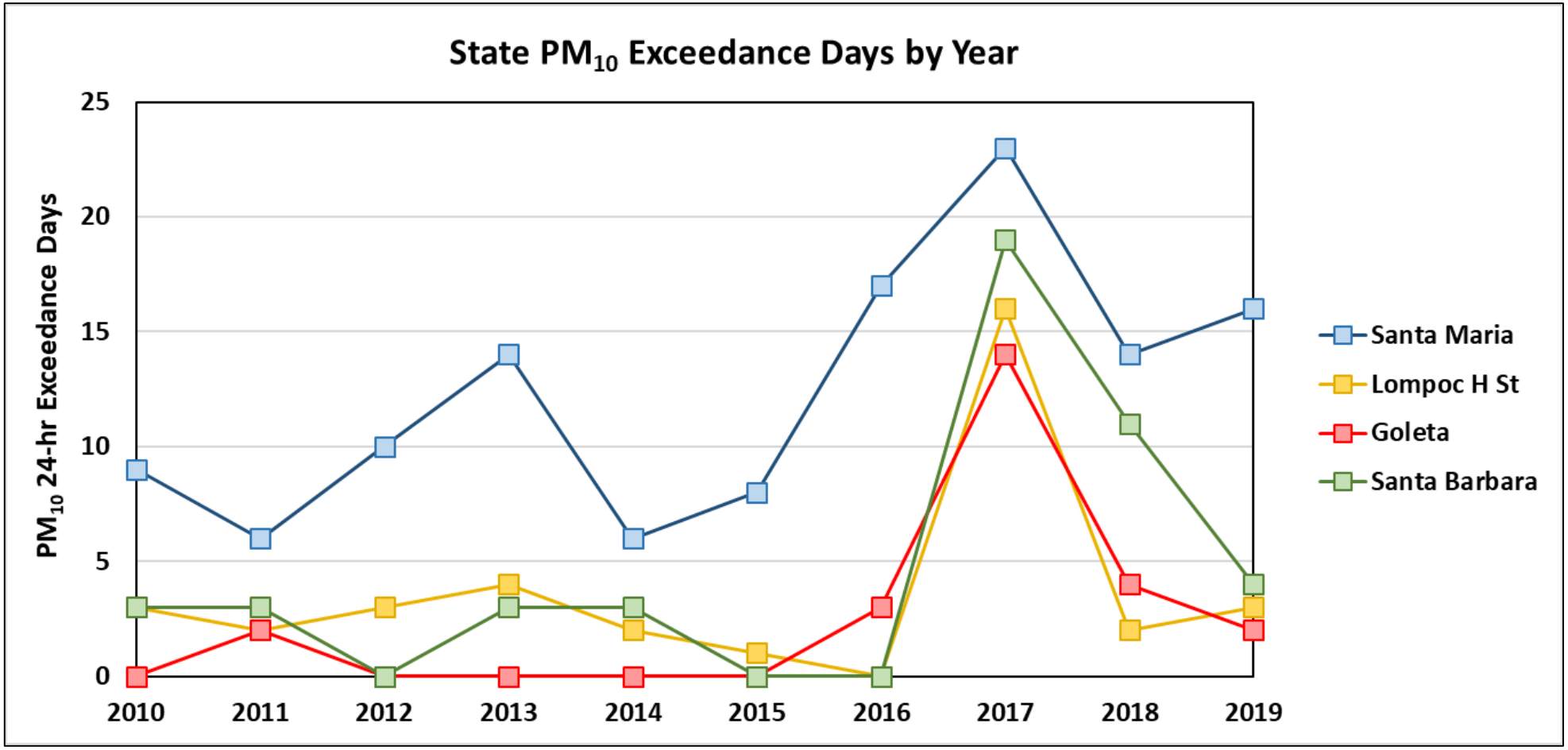
* Santa Ynez has a temporary PM_{10} station that will transition to $PM_{2.5}$ by the end of the year.



PM MONITORING TRENDS



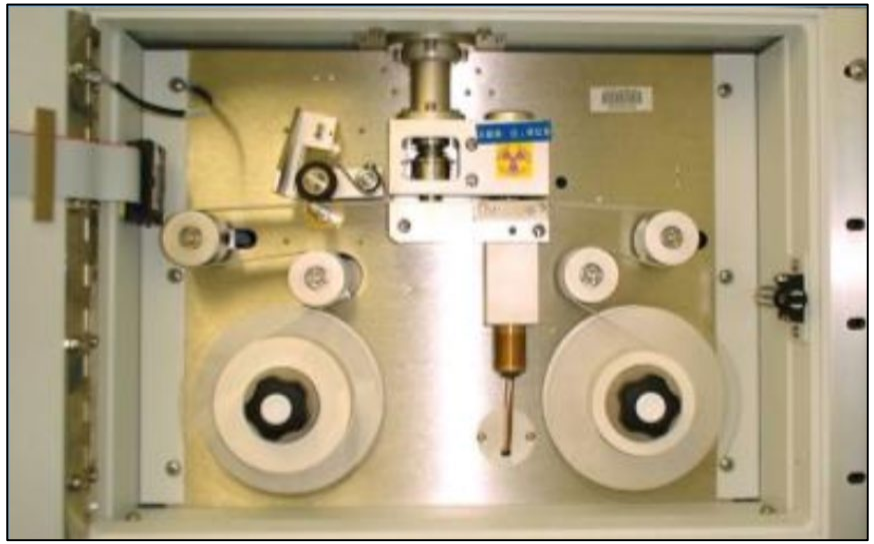
PM MONITORING TRENDS

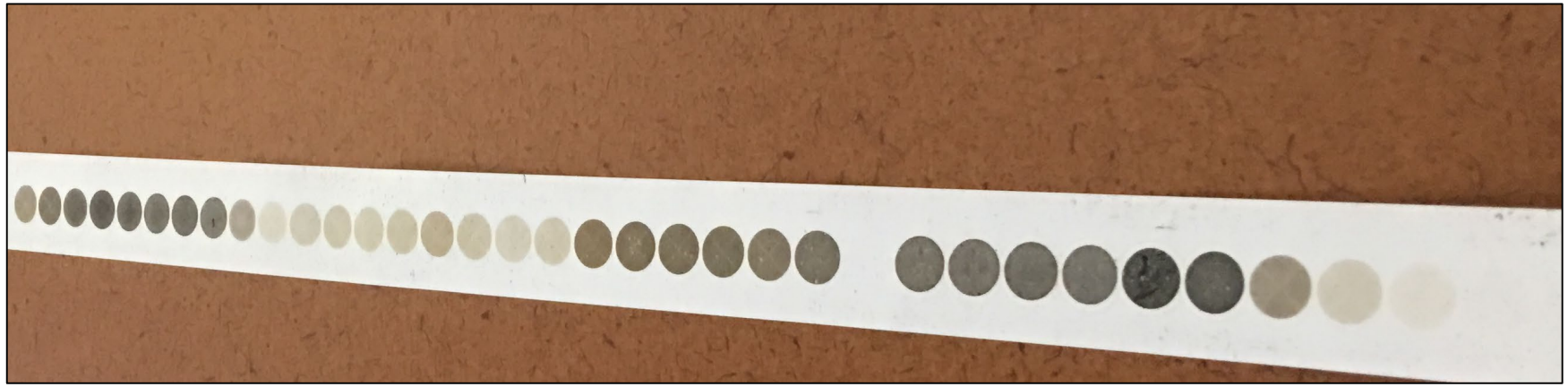


*** Includes exceptional events (such as wildfires)**

STATIONARY PM MONITORS

- Beta Attenuation Monitor (BAM)
  - Measures PM_{10} or $PM_{2.5}$
  - Hourly data reporting
  - Readings displayed on web
  - Equivalent to Federal Reference Method





PORTABLE PM MONITORS

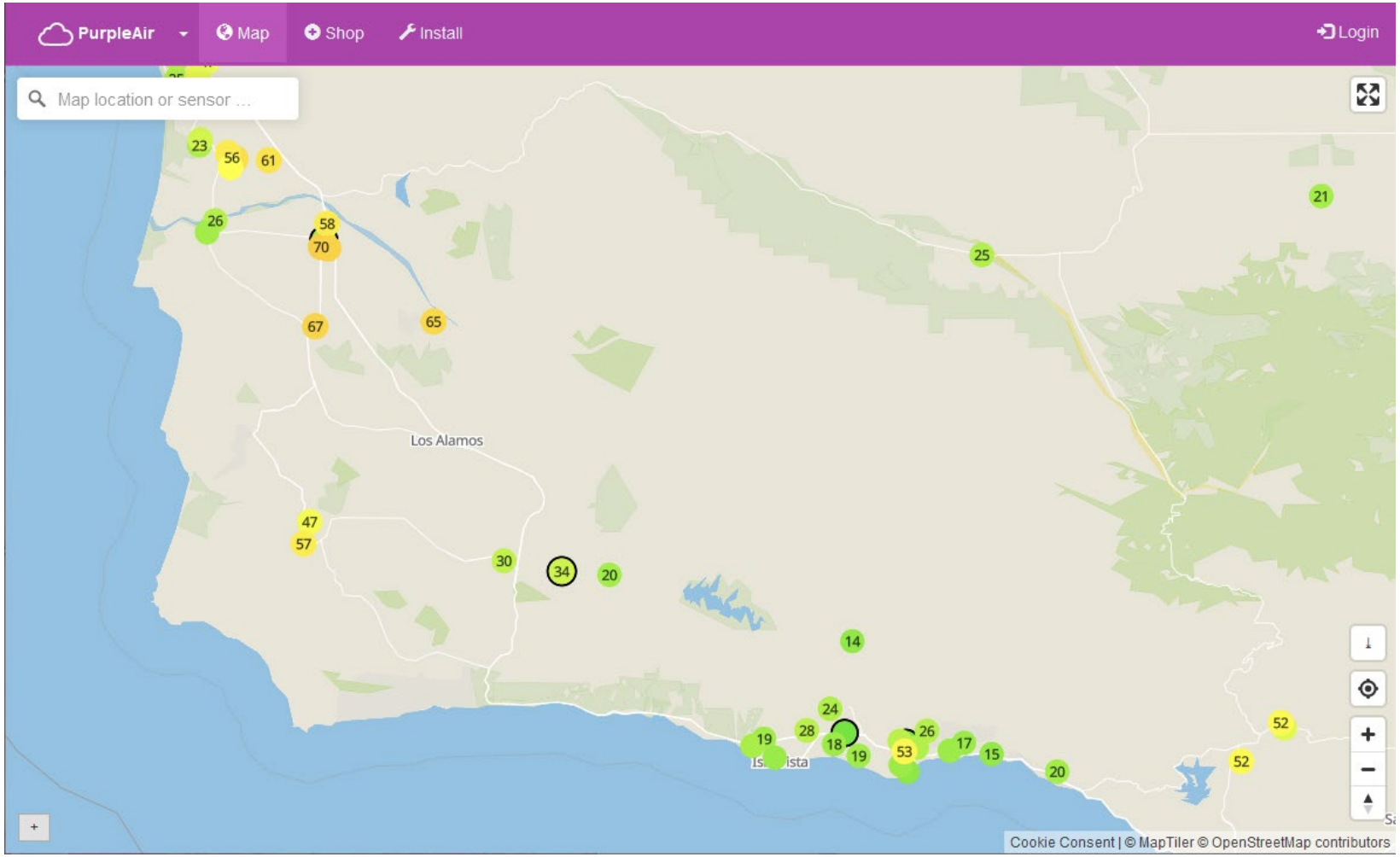
- Environmental Beta Attenuation Monitor (E-BAM)
  - Measures PM_{10} or $PM_{2.5}$
  - Accurate, portable, rapid deployment
  - Hourly data reporting
  - Readings displayed on web
  - Doesn't meet Federal Reference Methods

PORTABLE PM MONITORS

www.ourair.org/district-videos

LOW-COST PM SENSORS

- Purple Air and Other Sensors:
  - Broad deployment
  - Indicates trends in PM pollution
  - Don't meet Federal Reference Methods
  - EPA evaluating to incorporate on the AirNow website



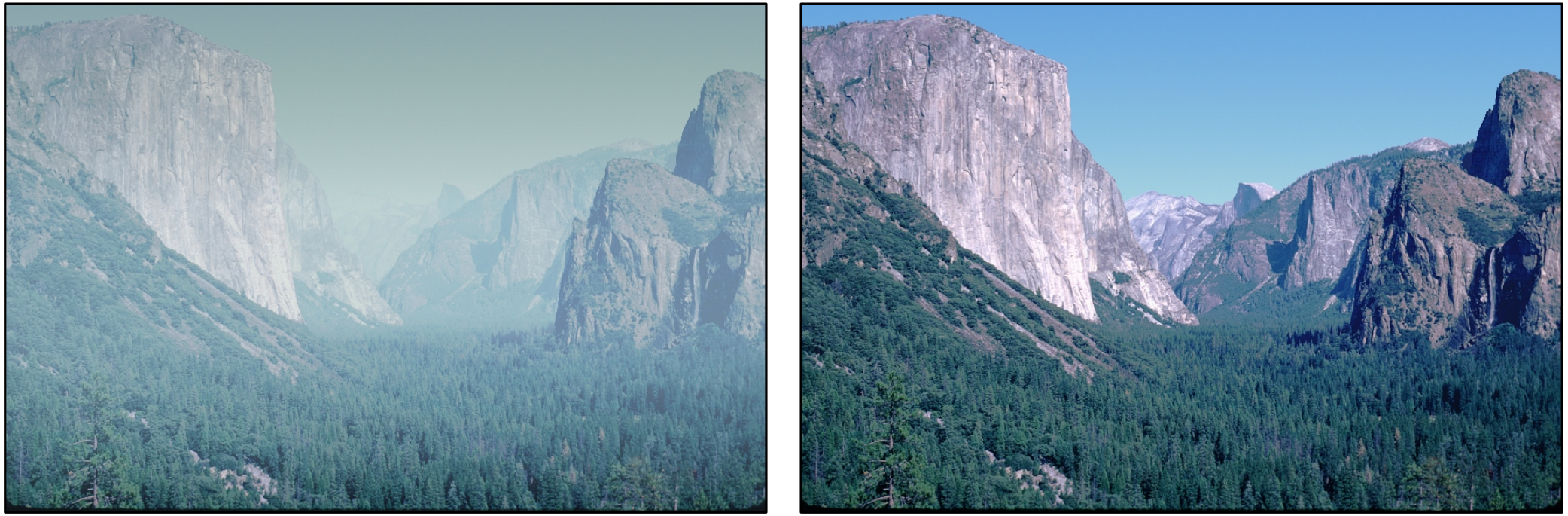
INTERMISSION

1) **Question break?**

2) **Stretch break (3 minutes)**

FEDERAL PLANNING REQUIREMENTS

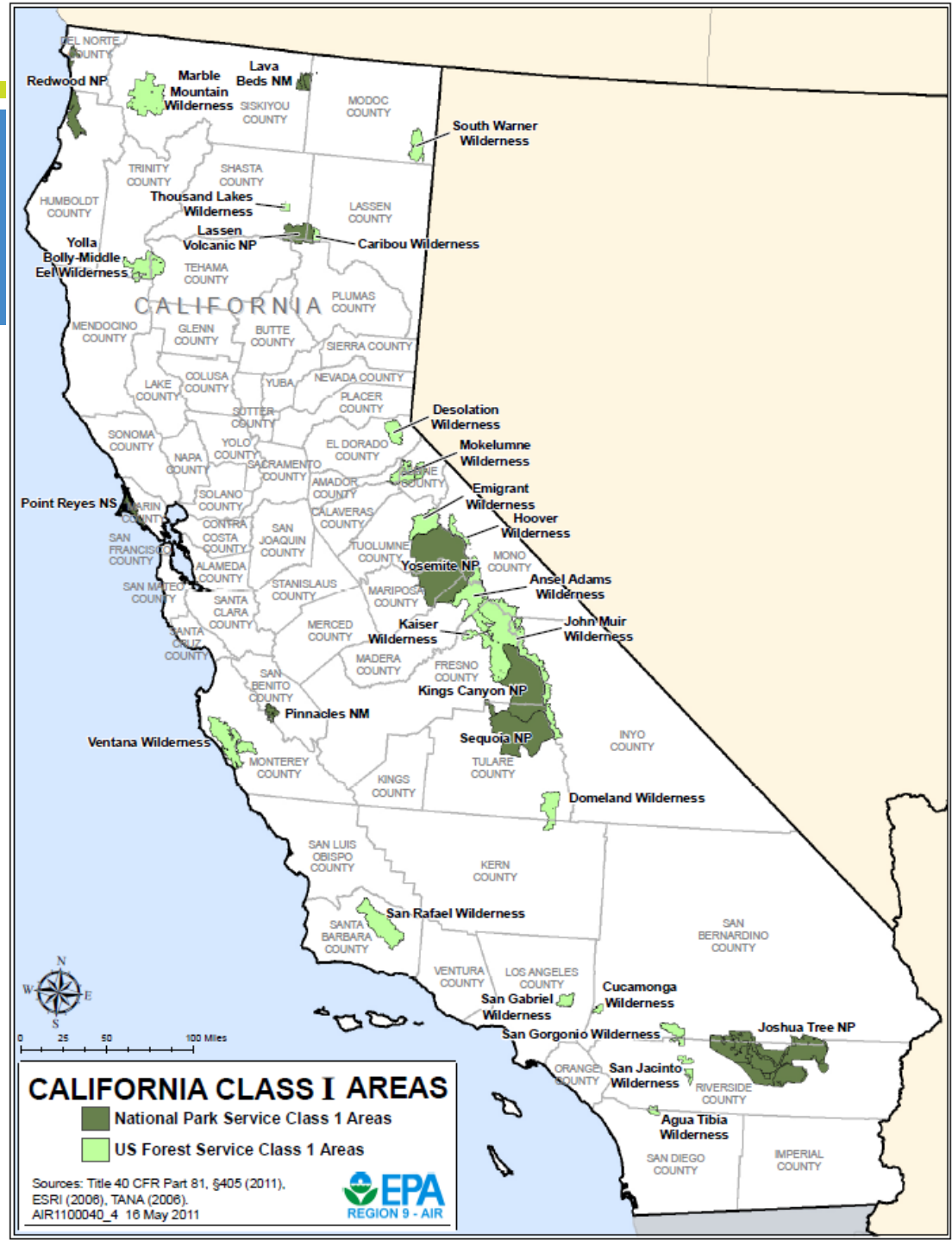
- 1977 Federal Clean Air Act:
  - Regional Haze is the lack of visibility due to air pollution
  - National goal to reduce haze at national parks and wilderness areas (Class I areas)



Yosemite National Park

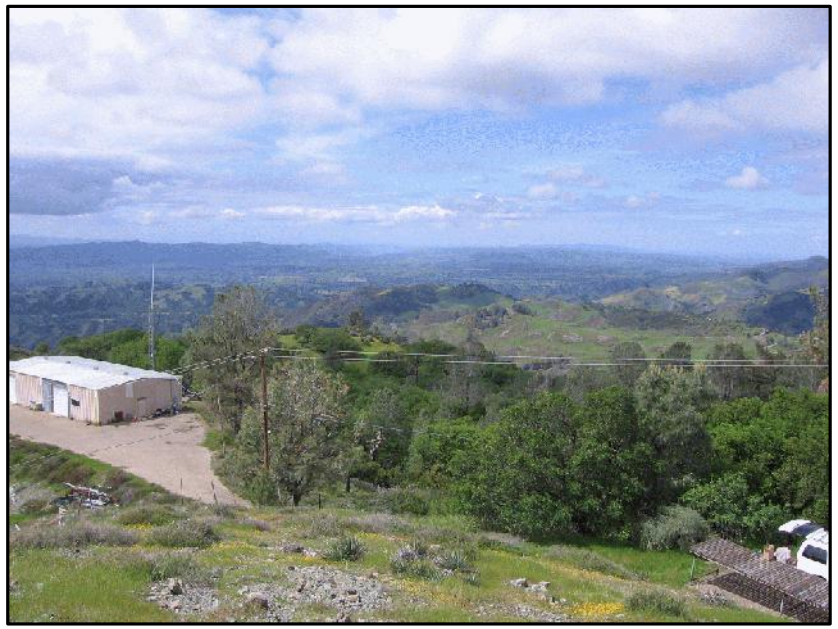
FEDERAL PLANNING REQUIREMENTS

- 1999 Regional Haze rule:
  - States develop plans to improve visibility at Class I areas
  - Goal to attain natural conditions by 2064
- California Regional Plan approved in 2011
  - Progress Report every 5 years
  - Full Plan update every 10 years
- US EPA installed 17 PM monitoring stations near Class I areas in CA



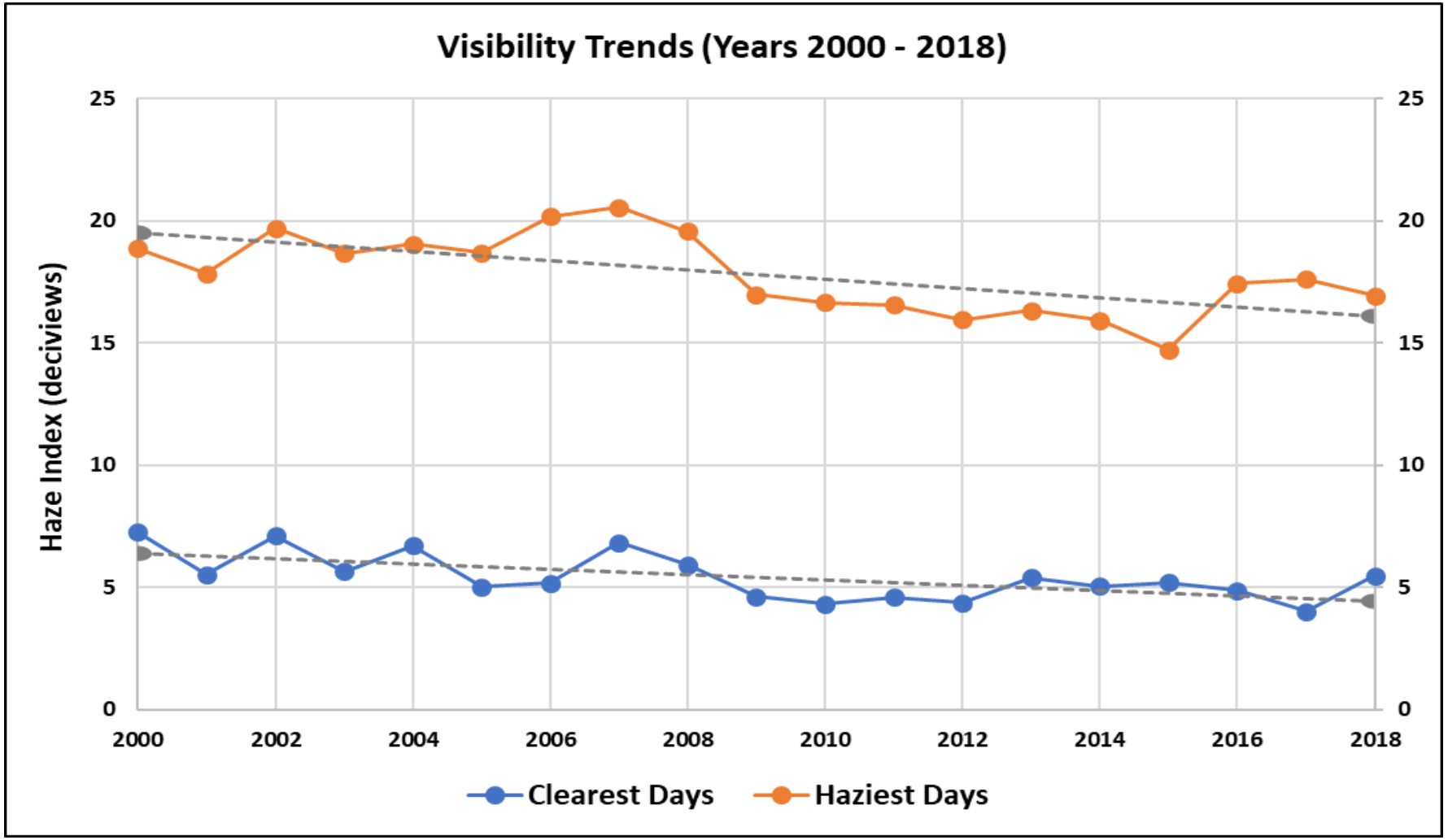
SAN RAFAEL WILDERNESS

- Located at US Forest Service station, northeast of Santa Ynez at 3,100 ft elevation.



- Monitoring Equipment:
  - PM_{10} Teflon filter
  - $PM_{2.5}$ Teflon filter
  - $PM_{2.5}$ Nylon filter
  - $PM_{2.5}$ Quartz filter

SAN RAFAEL WILDERNESS



Haze Index	Visibility
21	31 miles
14	62 miles
7	125 miles
0	250 miles

STATE PLANNING REQUIREMENTS

- California Health & Safety Code §40001
  - Air Districts shall adopt rules to attain and maintain the ambient air quality standards.
- Senate Bill 25 (1999): Children's Environmental Health Protection Act
  - CARB, in coordination with OEHHA, to revise the highest priority AAQS to protect children.
  - PM_{10} and $PM_{2.5}$ AAQS updated in 2002.
- Senate Bill 656 (2003)
  - Reduce public exposure to PM_{10} and $PM_{2.5}$ and help meet the CAAQS/NAAQS.
  - SB 656 rule adoption schedule approved by Board of Directors in 2005.
    - Rule 345 – Control of Fugitive Dust from Construction & Demolition (2010).

STATE PLANNING REQUIREMENTS

- Assembly Bill 617 – Community Air Protection (2017)
  - BARCT requirements apply to large industrial sources subject to Cap and Trade.

AB 617 Rule Development Schedule – Adopted December 2018

Rule #	Rule Name	AB 617 Rule Schedule
361	Boilers (Between 2-5 MMBtu/hr)	Amended - June 2019
342	Boilers (5 MMBtu/hr and greater)	Amended - June 2019
363	Particulate Matter (PM) Control Devices	2020
333	Reciprocating Internal Combustion Engines	2021
358	Stationary Gas Turbines	2021
362	Miscellaneous Combustion Sources	2021

RULE DEVELOPMENT PROCESS

- Draft Rule 363 – PM Control Devices
  - Affects Imerys, a diatomaceous earth processing plant in Lompoc
  - Draft rule will be based on a South Coast AQMD rule (as adopted in 2009) and may require:
    1) Lower PM emission limits on large baghouses, and
    2) Additional monitors or tests to verify emissions.

Event	Potential Timing
Workshop and/or CAC	Fall 2020
Board of Directors: Rule Consideration	December 2020
Rule Implementation	1-2 years after adoption

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CONTACT INFORMATION

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