New Mexico Environment Department

Regional Haze and Emerging Issues

Air Quality Bureau

Feb 23, 2023

Photo: Rio Grande Gorge and Wheeler Peak, NM

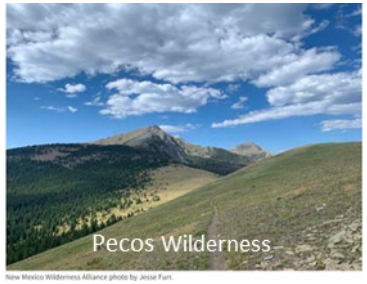
Today's Agenda

- New Mexico Environment Department (NMED) Air Quality Bureau (AQB) – Control Strategies
- Regional Haze planning Background and NMED's work on Step 1 of 8 step guidance.
- Ongoing and Upcoming Initiatives, Rulemakings and Hearings
- Emerging topics (Particulate Matter / dust) and others
- Open session for questions and feedback
- Next steps forward, educational and engagement resources
  - Goal towards strategic planning
  - Engagement strategies

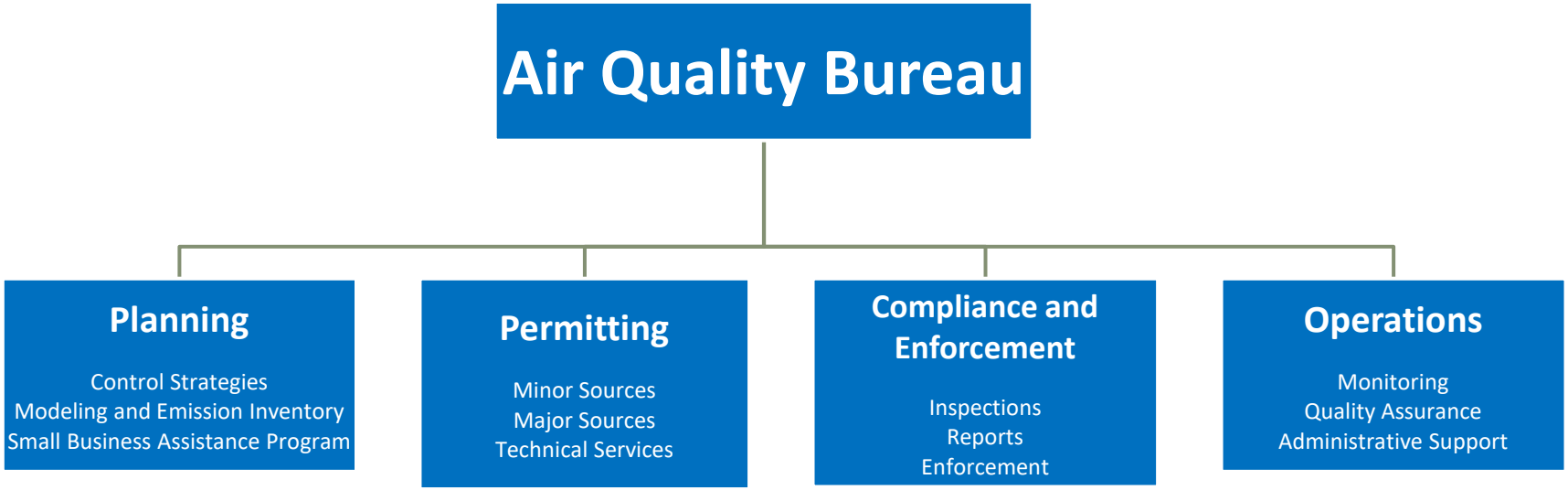
3

Air Quality Bureau – Our Mission

To protect the inhabitants and natural beauty of New Mexico by preventing the deterioration of air quality



AQB – Programs



Jurisdiction over entire state excluding Bernalillo County and tribal lands

Control Strategies

- State Implementation Plan
  - National Ambient Air Quality Standards
    - Six Criteria Air Pollutants
      - ozone and particulate matter included
    - Infrastructure SIPs
      - "Good Neighbor or Transport" SIP included
    - Nonattainment SIPs
      - Violation of Primary NAAQS
  - Regional Haze
    - Visibility in Class 1 Areas
- Other AQ Management Plans
  - Dust Mitigation Plan
  - Ozone Advance
- Rule Adoption
  - Nonattainment New Source Review
  - Ozone Precursor Rule
  - Energy Transition Act
- Special Projects
  - VW, DERA, AQ Studies including Photochemical Modeling
- Air Quality Stakeholder Groups
  - Border 2025, 4CAQG, Ozone Advance, WESTAR/WRAP, NACAA, etc.
- Stakeholder Engagement

Stakeholder Engagement

Objective:

Improve our relationship and engagement process with stakeholders through trust and capacity building for full participation in our processes and make informed decisions regarding air quality and public health.

- Outreach
- Education
- Communication
  - **Your input is Vital**
    - Guides development of SIPs, rules, and programs
    - Allows for local (i.e., New Mexican) solutions
      - NMED AQB v. EPA
        - Region 6 in Dallas, TX, or
        - HQ in Washington, D.C.
  - Continuous Dialogue
    - Beyond individual projects and pollutants

Slide 7

Regional Haze planning overview

- Background info on visibility/regional haze program
- EPA's 8-step guidance on state plans for the 2nd implementation period (2019-2028)
- Overview and NM status update on:
  - Step 1 – Ambient Data Analysis overview

Background on Visibility Protection

- **The Clean Air Act established special goals for visibility in many national parks, wilderness areas, and international parks.**
  - Through the 1977 amendments to the Clean Air Act, Congress set a national goal for visibility as "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution."
  - The Amendments required EPA to issue regulations to assure "reasonable progress" toward meeting the national goal.
- https://www.epa.gov/visibility contains info on EPA's visibility and Regional Haze Program:
  - Learn About Visibility and Regional Haze
  - Visibility in Parks and Wilderness Areas
  - Regional Haze Program
  - Regulatory Actions and Guidance Documents

156 national parks and wilderness areas across the country (Mandatory Class I areas – CIAs)

New Mexico's Class I Areas

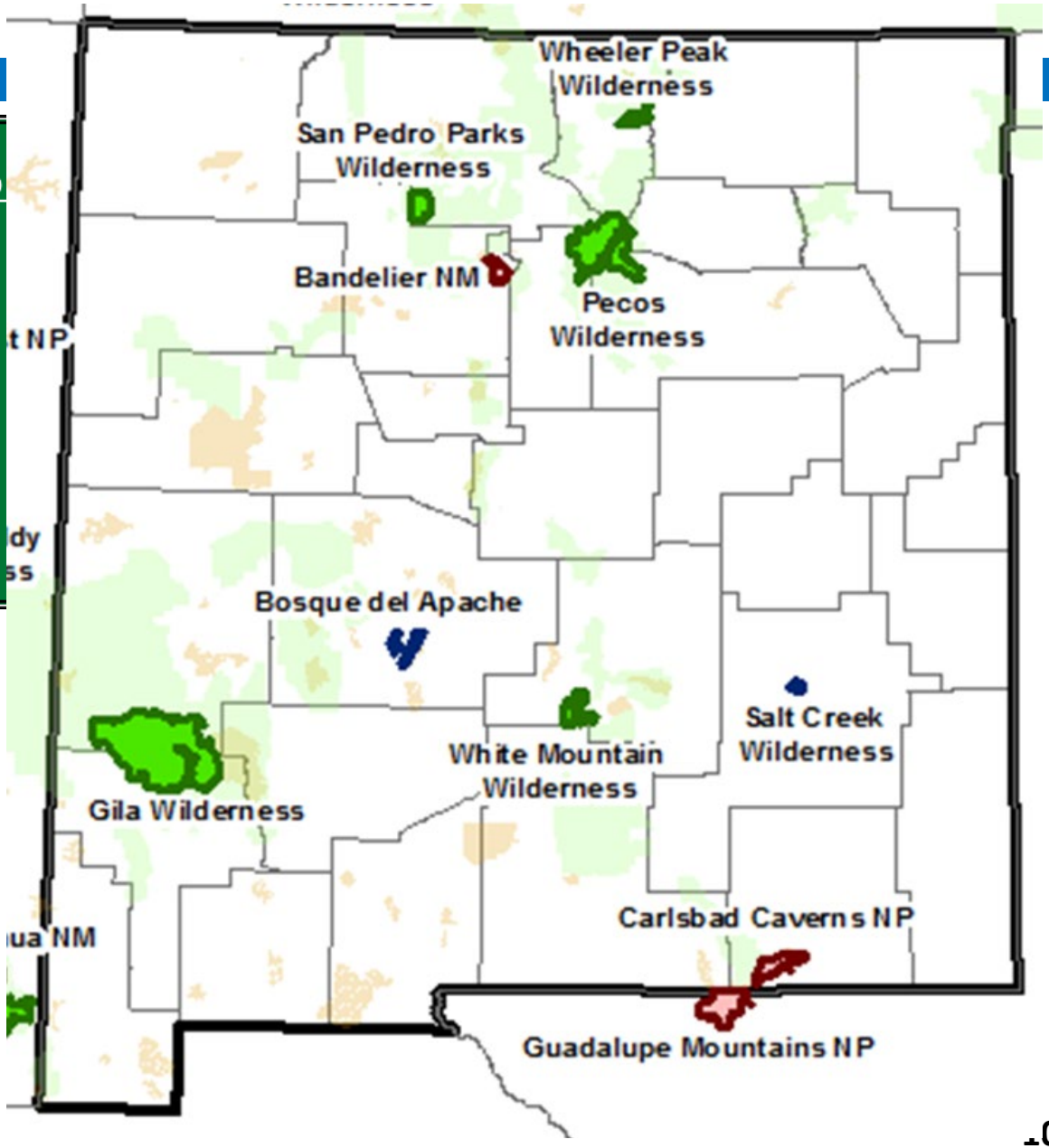
Class I Areas (CIAs) in New Mexico

Bandelier Wilderness Area
Bosque del Apache Wilderness Area
Carlsbad Caverns National Park
Gila Wilderness Area
Pecos Wilderness Area
Salt Creek Wilderness Area
San Pedro Parks Wilderness Area
Wheeler Peak Wilderness Area
White Mountain Wilderness Area

Legend

- U.S. Forest Service Wilderness Areas
- U.S. National Parks/Monuments
- U.S. Fish & Wildlife Areas

Poll question: Which of these areas, if any, have you visited in New Mexico?



Regional Planning Organizations

RPOs current as of August 2019

Western Regional Air Partnership (WRAP) Regional Planning

- Western Regional Air Partnership:
  - Provides data/technical services for Western states
  - Forum for consultation to develop consensus
    - States, Tribes, EPA, & Federal Land Managers

- WRAP "Storyboard"
  - Overview of Western perspective on Regional Haze
  - Accessible content, abundant visuals
  - https://views.cira.colostate.edu/wrap_rhpwg_Storyboard_draftNov20_2019/

Interagency Monitoring of Protective Visual Environments ("IMPROVE") network monitoring sites network

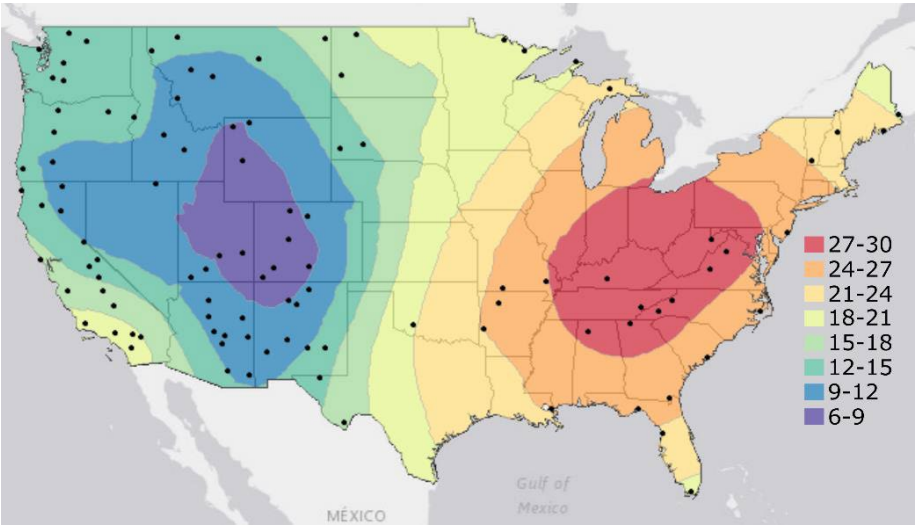
IMPROVE Monitoring Site at Bosque del Apache Wilderness Area – Photo credit: Kip Carrico

- The federal IMPROVE network measures particle mass and converts to light extinction (based on absorption). Light extinction is caused by the following pollutants:
  - Ammonium nitrate
  - Ammonium sulfate
  - Coarse mass
  - Soil
  - Organic carbon
  - Elemental carbon
  - Sea salt

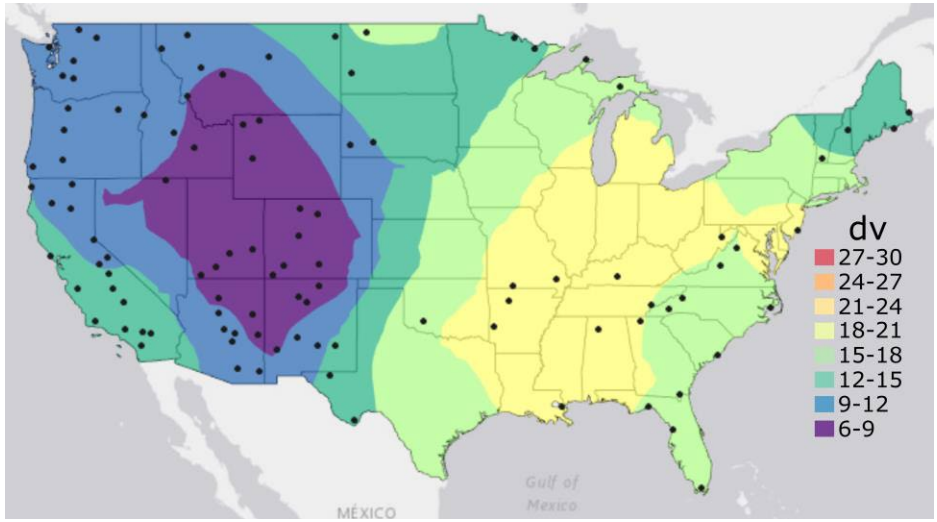
Haze in New Mexico

First Planning Period: Visibility is Improving

2000-2004 Visibility (dv) on 20% most impaired days



2013-2017 Visibility (dv) on 20% most impaired days



The National Park Service estimates that as of mid-2014, emission controls established under the first planning period led to approximately 500,000 tons/year of SO2 and 300,000 tons/year of NOx reductions. EPA estimates that visibility has improved significantly with the average visual range increased by 20 – 30 miles in Class I areas.

Source: EPA's slides on Guidance on Regional Haze State Implementation Plans for the Second Implementation Period, September 10 2019.

Slide 16

EPA's 8-step guidance on state plans for the 2nd implementation period (2019-2028)

- NM's state plan development process
- NM's status update on EPA/WRAP Guidance Step 1

State implementation plan guidance (EPA) for current 2nd implementation period 2019-2028

Step 1	Ambient data analysis
Step 2	Determination of affected Class I areas in other states
Step 3	Selection of Sources for Analysis
Step 4	Characterization of Factors for Emission Control Measures
Step 5	Decisions on Control Measures Necessary to Make Reasonable Progress
Step 6	Regional Scale Modeling of the LTS to set RPGs for 2028
Step 7	Progress, Degradation, and URP glidepath checks
Step 8	Additional Requirements for SIPs

Mostly completed – under internal review
In progress

EPA/WRAP Step 1

Ambient Data Analysis

Step 1 – Ambient data analysis

- For each implementation period, the Regional Haze Rule requires states to calculate the following for each of it's Mandatory Class I areas:
  - The baseline, current, and natural visibility conditions;
  - Progress to date;
  - and a Uniform rate of progress.

- Additional guidance on how to complete this task is provided in the 2018 EPA Technical Guidance on Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program document addresses this step and can be found here: https://www.epa.gov/visibility/technical-guidance-tracking-visibility-progress-second-implementation-period-regional

WRAP Technical Support System (TSS)

TSS Ambient Data Analysis - Expr

views.cira.colostate.edu/tssv2/Express/AmbientDataAnalysisTools.aspx

WRAP Technical Support System

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MONITORING | EMISSIONS | MODELING | HELP

Ambient Data Analysis - Express Tools

The tools below provide a variety of graphical products for exploring and analyzing haze and visibility data from the Interagency Monitoring of Protected Visual Environments (IMPROVE) network, particularly as demonstrated by the speciated composition and long-trend trends in aerosol light extinction at IMPROVE monitoring sites that represent federal Class 1 Areas.

These express tools provide the quickest and most direct way to generate data products. They are designed with a very basic user interface (UI) in order to be simple and straightforward to use. Each numbered row/item below represents a single tool that produces a unique report. Make your selections from the dropdown menus and then click the **Submit** button to generate your results. You can mouse-over the hyperlinked tool names in the "**Product**" column in order to get a brief description and preview of the tool's output. Because new tools will be added over time and old tools periodically retired, you should not depend upon the sequential numbering of the tools in order to reference them. If you wish to obtain or share a unique reference to an individual tool, you can click on the tool's sequence number in the "**#**" column for a popup window that displays the tool's unique ID and Code, values that will remain unchanged even if the tool's sequence number changes. To save or share a link to a specific instance of a tool's output report, first make your selections from the tool's menus and then click on the link icon in the "**URL**" column to obtain the full URL to the associated report, which is considered a "permalink" that can be used as an embedded hyperlink in documents, web pages, and papers.

Charts

#	Product	Filters	URL	Actions
1	CIA 5-year Extinction Composition	Area: New Mexico; Group: Most Impaired Days		Submit
2	CIA Annual Extinction Composition	Area: New Mexico; Parameter: 7 selected; Group: Most Impaired Days; Start Year: 2000; End Year: 2018		Submit
3	CIA Daily Extinction Composition	Area: New Mexico; Parameter: 7 selected; Group: Most Impaired Days; End Year: 2014		Submit
4	URP Glidepath - M.I.D. or Clearest	Area: New Mexico; Parameter: DV; Group: Most Impaired Days		Submit
5	URP Glidepath - M.I.D. and Clearest	Area: New Mexico; Parameter: DV		Submit

Tables

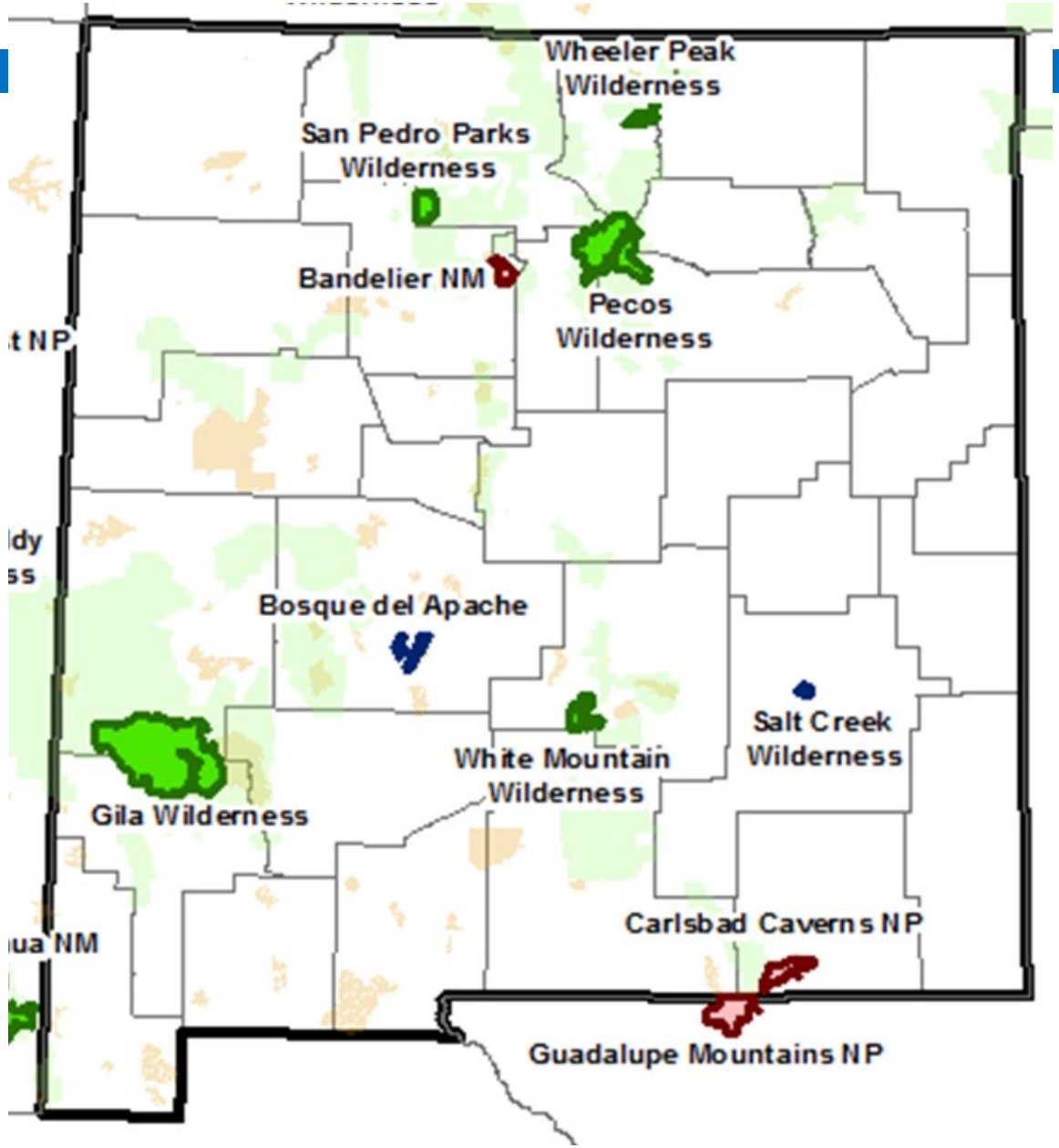
#	Product	Filters	URL	Actions
6	State Deciview Trends, all CIAs	Area: Colorado; Group: Most Impaired Days		Submit
7	State Extinction Trends, per CIA	Area: Colorado; Group: Most Impaired Days		Submit
8	5-yr Running Average Visibility Trends DRAFT	State:		

Type here to search

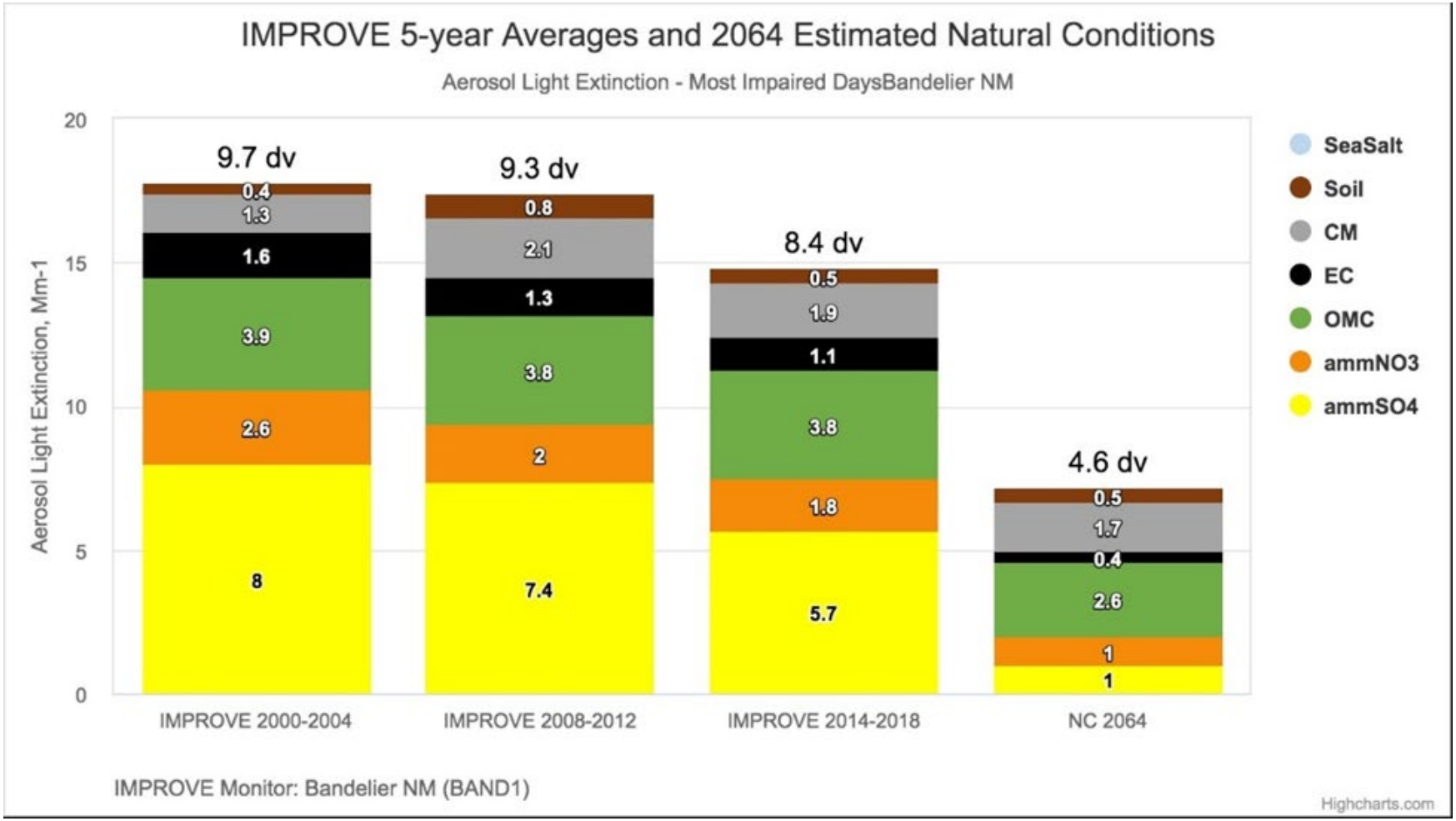
5:31 PM
2/20/2023

New Mexico CIAs

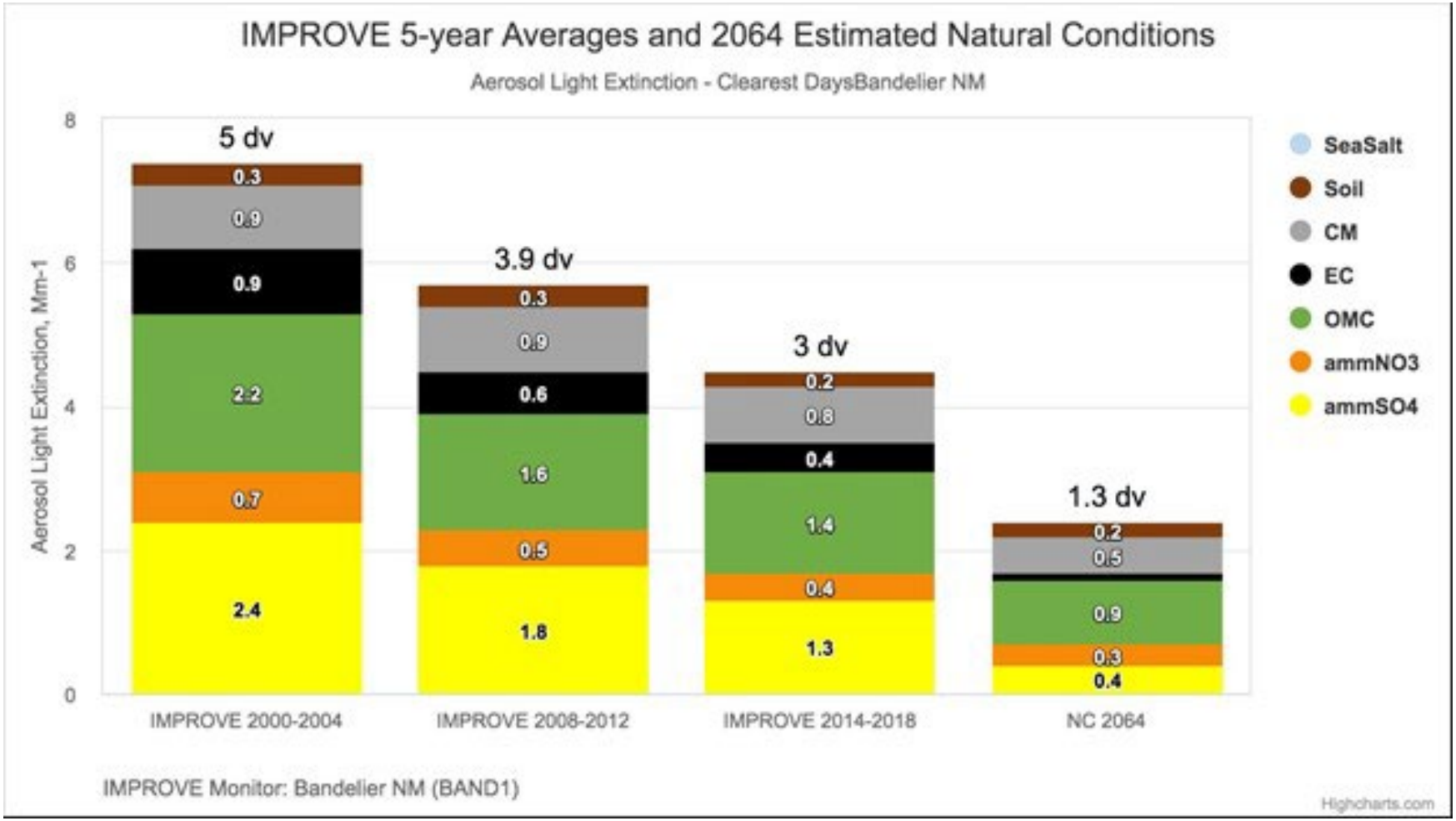
Photo credit: Rhett Zyla



Example Step 1 Analysis – “20% Most Impaired Days”



Example Step 1 Analysis – “20% Clearest Days”



Future webinars in 3-part series (March – April 2023) will cover step 2 and 3 in EPA's 2nd implementation period guidance.

Step 1	Ambient data analysis	Today's webinar Feb 23, 2023
Step 2	Determination of affected Class I areas in other states	March 30, 2023 (4-6 pm) Registration link: https://nmed-oit.webex.com/weblink/register/r6c096f2ae243a01fe7a7cd4de2d23c48
Step 3	Selection of Sources for Analysis	April 27, 2023 (4-6 pm) Registration: https://nmed-oit.webex.com/weblink/register/r8fa2b740e432b0a25b9be037d8406a17
Step 4	Characterization of Factors for Emission Control Measures	
Step 5	Decisions on Control Measures Necessary to Make Reasonable Progress	
Step 6	Regional Scale Modeling of the LTS to set RPGs for 2028	
Step 7	Progress, Degradation, and URP glidepath checks	
Step 8	Additional Requirements for SIPs	

Webinar info and registration links also available on NMED Event Calendar:
https://www.env.nm.gov/events-calendar/

NM's Regional Haze planning website: https://www.env.nm.gov/air-quality/reg-haze/

ng × Cisco Webex Meetings - Register × +

v.nm.gov/air-quality/reg-haze/

The blue skies and scenic vistas of New Mexico are considered some of the most beautiful in the United States, but air pollution can threaten those views. Human-caused pollution of varied concentrations and sizes in the atmosphere can, along with natural events like dust storms and wildfires, impair or reduce visibility. Widespread visibility impairment caused by man-made pollutants over a broad geographic area is known as regional haze.

EPA Requirements on Regional Haze

New Mexico is required to develop and submit to EPA its own regional haze plans. NMED cooperates with the City of Albuquerque Environmental Health Department (EHD), which implements air quality regulations in Albuquerque and Bernalillo County. Because NMED and EHD have separate jurisdictions, they submit separate Regional Haze State Implementation Plans to EPA.

The facilities of interest undergo a "four factor analysis" to assess application of potential emission control technologies. Theses factors are: the cost of control, time necessary to install controls, energy and non-air quality impacts, and remaining useful life. Submitted analyses and correspondence are available below.

EPA's Regional Haze program addresses reduced visibility in national parks and wilderness areas. EPA refers to these areas as "Class I Areas." There are 156 of these, 116 of which are in Western states.

New Mexico has 9 mandatory federal Class I Areas:

- Bandelier Wilderness Area
- Bosque del Apache Wilderness Area
- Carlsbad Caverns National Park
- Gila Wilderness Area
- Pecos Wilderness Area (southern part) (Northern Pecos Wilderness)
- Salt Creek Wilderness Area
- San Pedro Parks Wilderness Area
- Wheeler Peak Wilderness Area
- White Mountain Wilderness Area

For inquiries related to the development of the NM Regional Haze SIP, contact Mark Jones at 505-629-6626 or mark.jones@env.nm.gov. For inquiries related to the Albuquerque – Bernalillo County Regional Haze SIP, contact Ken Miller, City of Albuquerque at 505-768-2660 or kjmiller@cabq.gov. Input on New Mexico's Regional Haze Planning can also be sent to nm.regionalhaze@env.nm.gov.

Stakeholder Comments and Outreach Info.

Regional Haze Facility Level Four Factor Analysis

to search

NMED/Albuquerque Regional Haze contacts

Roles	Name	Email	Phone
leadership / direction	Kirby Olson	kirby.olson@env.nm.gov	505-629-5107
project manager	Michael Baca	michael.baca1@env.nm.gov	505-629-7891
technical lead	Mark Jones	mark.jones@env.nm.gov	505-629-6626
technical support	Neal Butt	neal.butt@env.nm.gov	505-629-2972
emissions Inventory, modeling, Interstate Impacts	Sufi Mustafa, Angela Raso Roslyn Higgin	sufi.mustafa@env.nm.gov angela.raso@env.nm.gov roslyn.higgin@env.nm.gov	
Albuquerque EHD – coordination	Ken Miller	kjmiller@cabq.gov	505-768-2660

Regional Haze NMED AQB website: https://www.env.nm.gov/air-quality/reg-haze/ (you may sign up to receive notices from our listserv on the website as well.) You may contact Mark Jones and Michael Baca for interest in additional engagement opportunities or questions/comments.

Additional resources for learning about visibility at Mandatory Class I area national parks wilderness areas

- New Mexico Environment Department Air Quality Bureau (NMD AQB) Regional Haze planning homepage: https://www.env.nm.gov/air-quality/reg-haze/

- EPA Visibility and Regional Haze: https://www.epa.gov/visibility

- Interagency Monitoring of Protected Visual Environments (IMPROVE): http://vista.cira.colostate.edu/Improve/

- Western Regional Air Partnership (WRAP) Technical Support System v2 - http://views.cira.colostate.edu/tssv2/
  - Story-board: https://views.cira.colostate.edu/wrap_rhpwg_Storyboard_draftNov20_2019/

San Pedro Parks Wilderness Area

Photo credit: Mark Jones

Bandelier Wilderness Area

Photo credit: Rhett Zyla

Wheeler Peak Wilderness Area

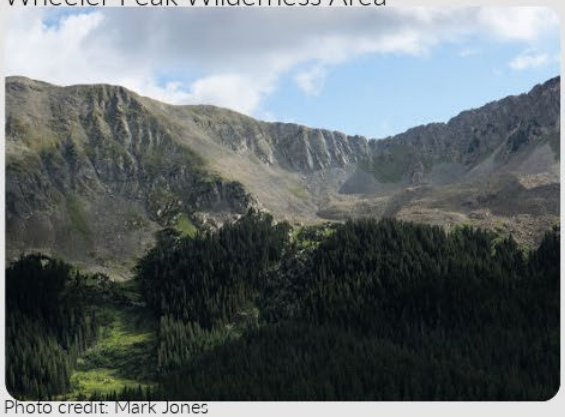


Photo credit: Mark Jones

Boseque del Apache Wilderness Area

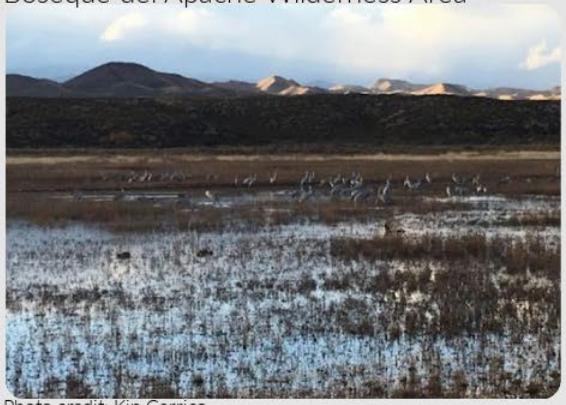


Photo credit: Kip Carrico

White Mountain Wilderness Area

Photo credit: Rhett Zyla

Photo credit: Rhett Zyla

Pecos Wilderness Area

Photo credit: Rhett Zyla

Gila Wilderness Area

Photo: https://www.fs.usda.gov/

Salt Creek Wilderness Area

Photo credit: Jeff Howland, https://wilderness.net/

Carlsbad Caverns National Park

Photo credit: Photo credit: National Park Service (unidentified photographer, https://www.nps.gov/im/chdn/cave.htm)

AQ Monitoring Data, Current Projects and Emerging Issues

Upcoming rulemakings, particulate matter, ozone, and other topics

Current Projects and Emerging Issues

Upcoming Rulemakings

- Incorporation by Reference 20.2.80, 82, and 83 NMAC
  - NSPS, NESHAP, and MACT (40 CFR 60, 61, & 63)
  - Delegation of standards
    - Last update in 2017
  - NMED as the main agency to implement and enforce these federal air rules
  - June 2023 hearing anticipated
    - March 2023 hearing request

NAAQS

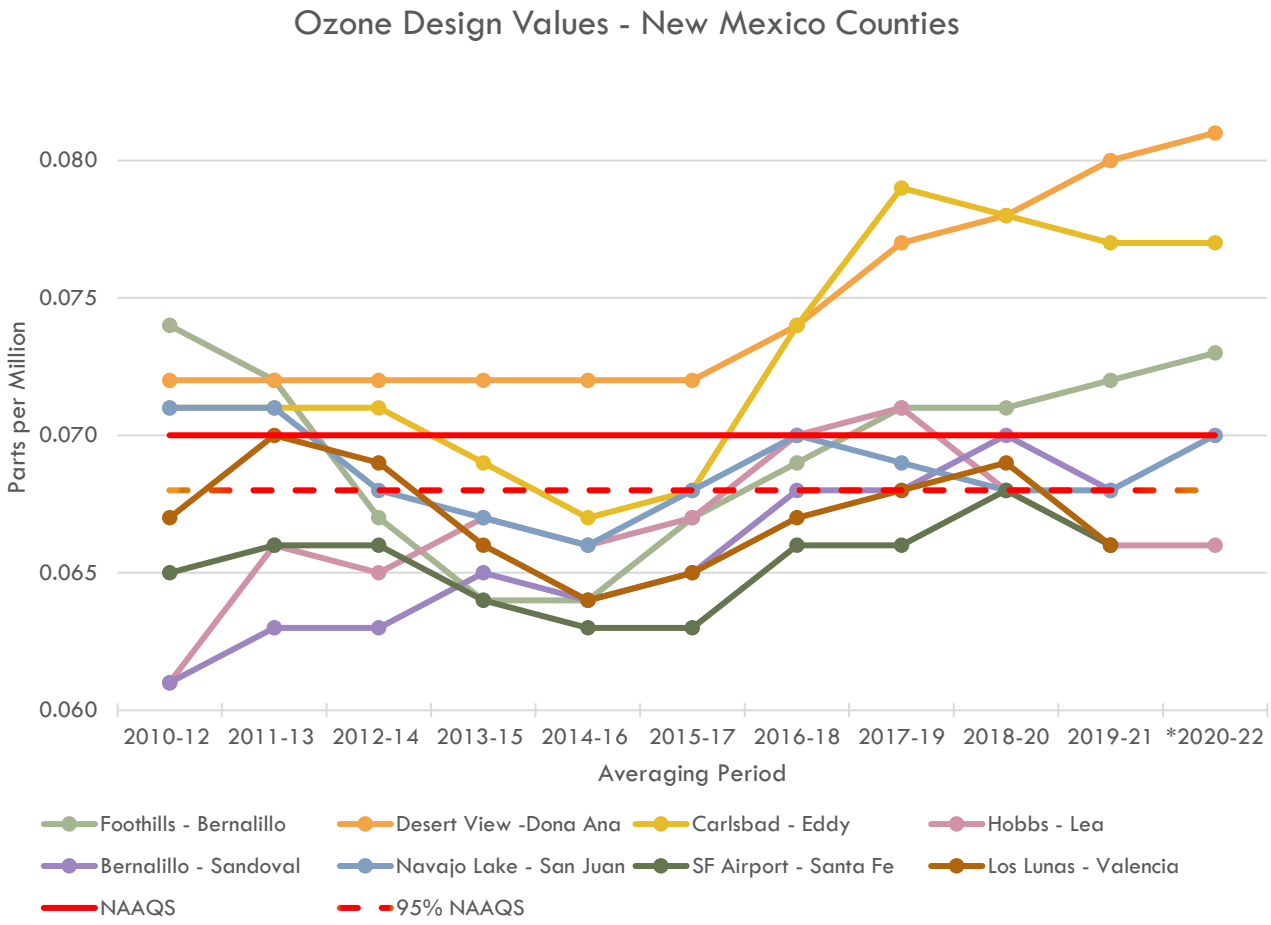
- Ozone
  - Ozone Advance
  - SIP Planning for Nonattainment Area(s)
    - Sunland Park
      - International Transport Influence
      - CAA 179B Demonstration
    - Permian Basin
      - Monitors show values above NAAQS
      - Redesignation by EPA pending
- Particulate Matter - PM_{10} and $PM_{2.5}$
  - New PM NAAQS Proposed
    - PM_{10} unchanged
    - $PM_{2.5}$ annual standard
      - Lower from 12 → **<u>9-10 µg/m³</u>**
  - Dust Storms and Wildfire Smoke
    - PM_{10} - Exceedances in San Juan County

Ozone Air Quality

Design Values (DVs) compare air quality in an area to the NAAQS.

Ozone DVs = 3-yr average, of the annual 4th Maximum daily 8-hr average.

*Preliminary data pending validation and subject to change.



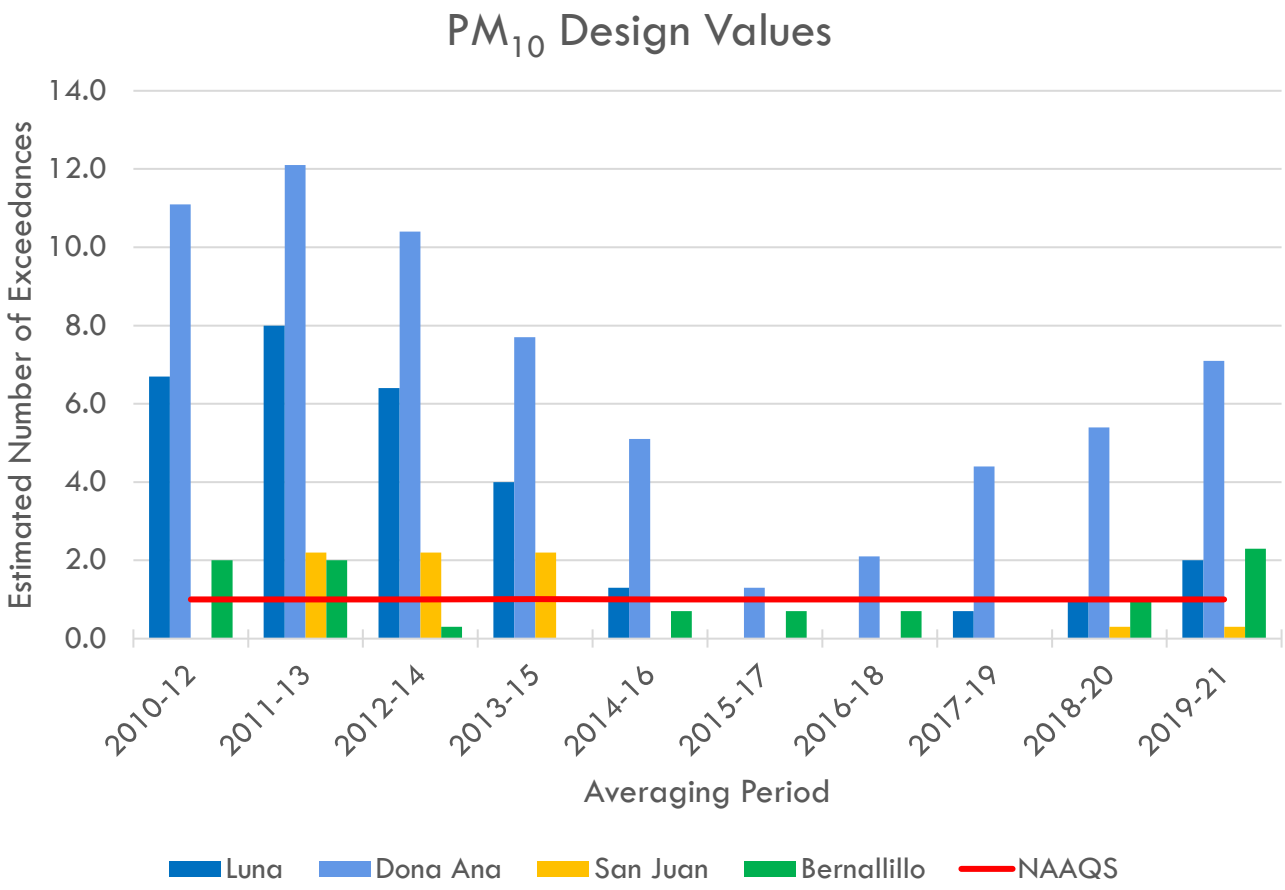
DVs: https://www.epa.gov/air-trends/air-quality-design-values

Monitoring Data: https://www.epa.gov/outdoor-air-quality-data

Particulate Matter Air Quality

Design Values (DVs) compare air quality in an area to the NAAQS.

PM10 DVs = 3-yr average, of the expected number of exceedances. Not to exceed 1.0/year.

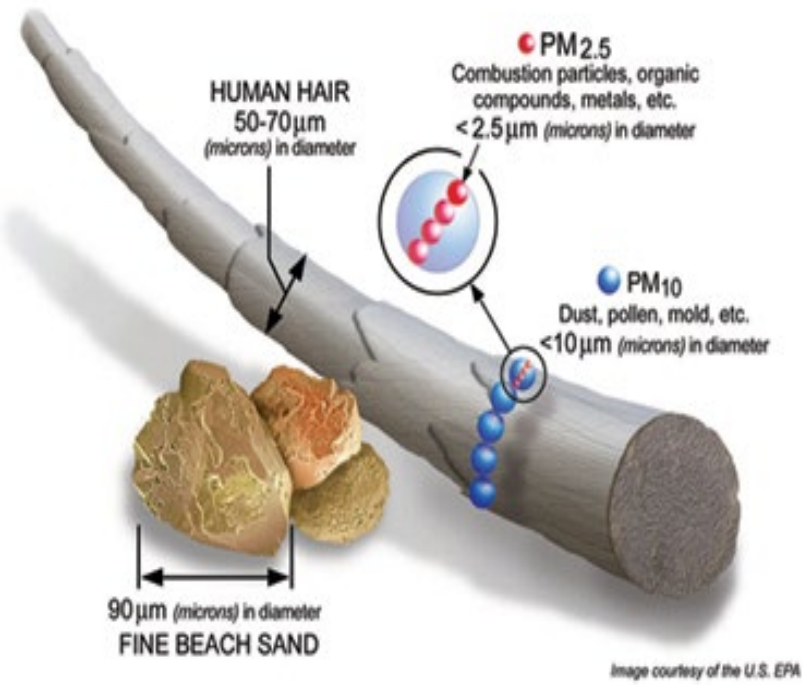


DVs: https://www.epa.gov/air-trends/air-quality-design-values

Monitoring Data: https://www.epa.gov/outdoor-air-quality-data

Particulate Matter-PM_{10} & $PM_{2.5}$

- Aerosols-Solids or Liquid Droplets
  - Soil Dust
  - Sea Spray
  - Biological (Pollen, Spores, Viruses, etc.)
  - Smoke
  - Fly Ash
  - Sulfates
  - Nitrates
  - Organic Carbon
  - Elemental Carbon/Soot
  - Air Toxins



PM Health Effects

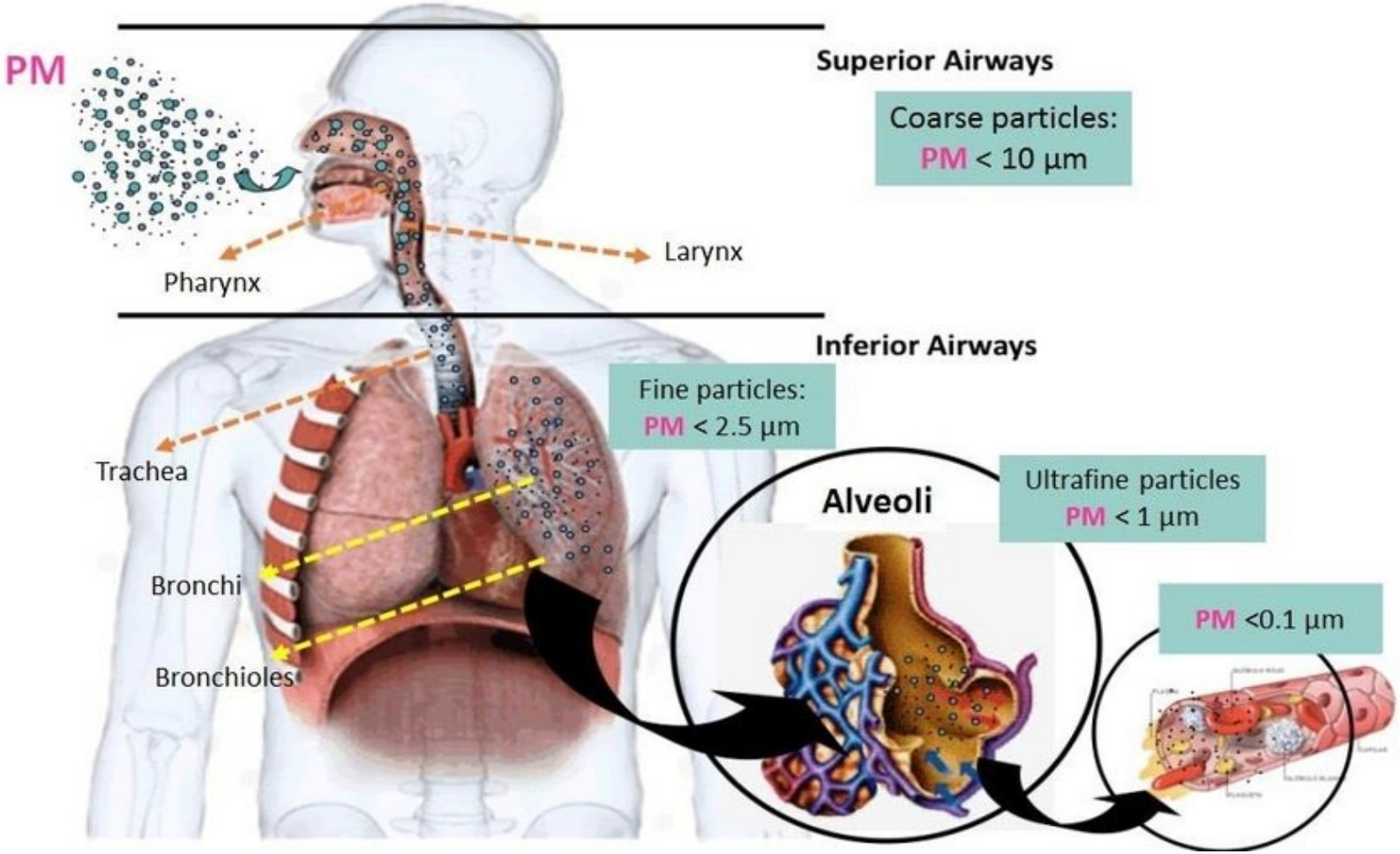


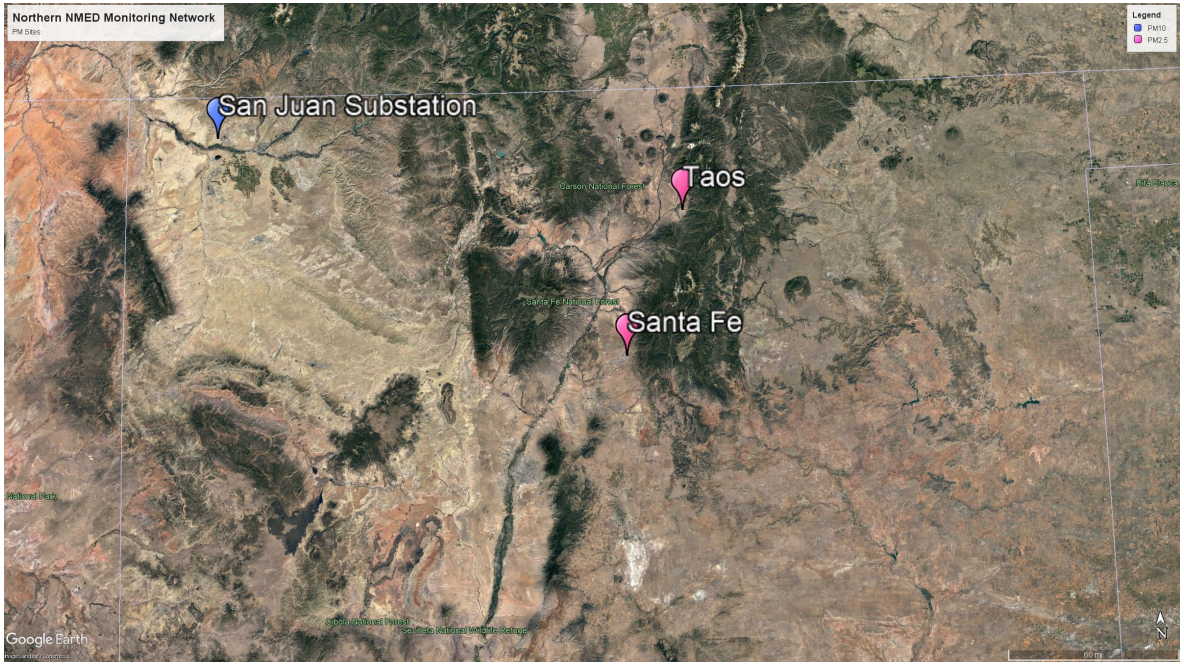
Image taken from ResearchGate

Monitoring for PM (South)

- PM_{10} Sites
  - Anthony
  - Desert View
  - West Mesa
  - Holman
  - Chaparral
  - Deming
- $PM_{2.5}$ Sites
  - Anthony
  - Desert View
  - Las Cruces
  - Santa Teresa
  - Hobbs

Monitoring for PM (North)

- PM_{10} Site
  - San Juan Substation
- $PM_{2.5}$ Sites
  - Santa Fe
  - Taos



Nonattainment for NAAQS

- 1987 PM_{10} NAAQS
  - 150 µg/m^3 (24-hr Standard)
    - Three-year average
    - No more than one exceedance/year
  - Anthony PM Nonattainment Area
- Nonattainment status results in:
  - SIP Development
    - Elevated controls and permitting requirements
    - Emission inventory
  - Possible adverse economic impact
- Not appropriate in some situations (Exceptional Events Rule)

Exceptional Events Rule 40 CFR 50.14

- PM exceedances due to Wildfires, Stratospheric Intrusions, Fireworks, Wind Blown Dust events
- Demonstration may be submitted to EPA for exceptional events that resulted in a violation of the NAAQS
- Exceptional Events Demonstration must include:
  - Clear Causal Relationship
  - Human Activity Unlikely to Recur or Natural Event
  - Not Reasonably Controllable or Preventable

PM_{10} Mitigation Plans

CAA section 319

40 CFR 51.930

- Required for Recurring Events

NMED's Dust Mitigation Plan applies to Luna and Doña Ana Counties

- Public notification and education programs
  - Advanced notice of event/forecasting
  - Outreach and Education mechanisms
  - Health advisories
- Implement mitigation measures
  - Minimize public exposure
  - Measures to abate controllable sources
    - Part 23 (Fugitive Dust Rule)
- Consultation with air quality managers
- Periodic review and evaluation
  - Three-year schedule

Slide 40

Q&A, Feedback, & Next Steps

- Questions, comments, or ideas
  - Projects, plans or rules
  - Enhanced stakeholder engagement efforts
- Additional resources
  - Contact information and websites

Wrap-up & next stakeholder engagement webinars

- **Additional stakeholder engagement events**
  - March 30th, 2023 – 4 pm – 6 pm
  - April 27th, 2023 – 4 pm – 6pm
  - https://www.env.nm.gov/events-calendar/
- Regional Haze Feedback
  - Comments, questions or requests for additional engagement
    - nm.regionalhaze@env.nm.gov, mark.jones@env.nm.gov or (505) 629-6626
  - Website: https://www.env.nm.gov/air-quality/reg-haze/
- Control Strategies
  - Armando Paz; armando.paz@env.nm.gov; (505) 629-3242
  - Mark Jones; mark.jones@env.nm.gov; (505) 629-6626
  - Neal Butt; neal.butt@env.nm.gov; (505) 629-2972
  - Michael Baca; michael.baca1@env.nm.gov; (505) 629-7891

AQ Resource Library

- NMED
  - Homepage: https://www.env.nm.gov/
  - AQB: https://www.env.nm.gov/air-quality/
    - Planning: https://www.env.nm.gov/air-quality/planning-section/
    - Monitoring: https://aqi.air.env.nm.gov/
  - EIB: https://www.env.nm.gov/opf/environmental-improvement-board/
  - SmartComment Portal: https://nmed.commentinput.com/comment/search
- EPA
  - Clean Air Act: https://www.epa.gov/clean-air-act-overview
  - NAAQS: https://www.epa.gov/criteria-air-pollutants/naaqs-table
  - Nonattainment Areas: https://www.epa.gov/green-book
  - NM SIP: https://www.epa.gov/sips-nm
  - AirNow: https://www.airnow.gov/
  - Fire and Smoke: https://fire.airnow.gov/
  - Air Data: https://www.epa.gov/outdoor-air-quality-data
  - Design Values: https://www.epa.gov/air-trends/air-quality-design-values