



California's Regional Haze State Implementation Plan Workshop

September 17, 2020

Today's Agenda

- Introduction to Regional Haze
- California's Class I Areas
- Review of First Regional Haze Plan
- New Requirements for Second Plan
- Current Progress and Next Steps
- Questions



[nps.gov](https://www.nps.gov)

What is Regional Haze?

Regional Haze: An Overview



Joshua Tree, NP [nps.gov](https://www.nps.gov)

- Regional Haze is defined as “visibility impairment caused by the cumulative air pollutant emissions from numerous sources over a wide geographic area”
- Haze is created when sunlight hits pollution which scatters and absorbs light degrading visibility

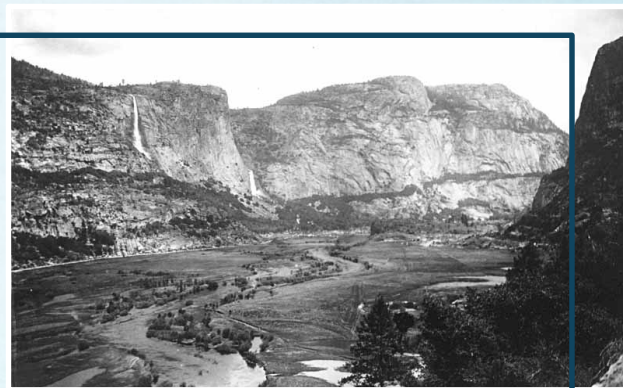
Regional Haze: A Federally-Initiated Program

- First addressed in 1977 Clean Air Act and directed States to prevent future, and remedy existing, impairment of visibility at Class I Areas
- Regional Haze Rule, promulgated in 1999 sets up regulatory framework to improve visibility
- States coordinate with each other and with federal land management agencies to set goals and measure progress toward improving visibility
- California is part of the Western Regional Air Partnership



Improve Visibility at Federal Class I Areas - Nationwide

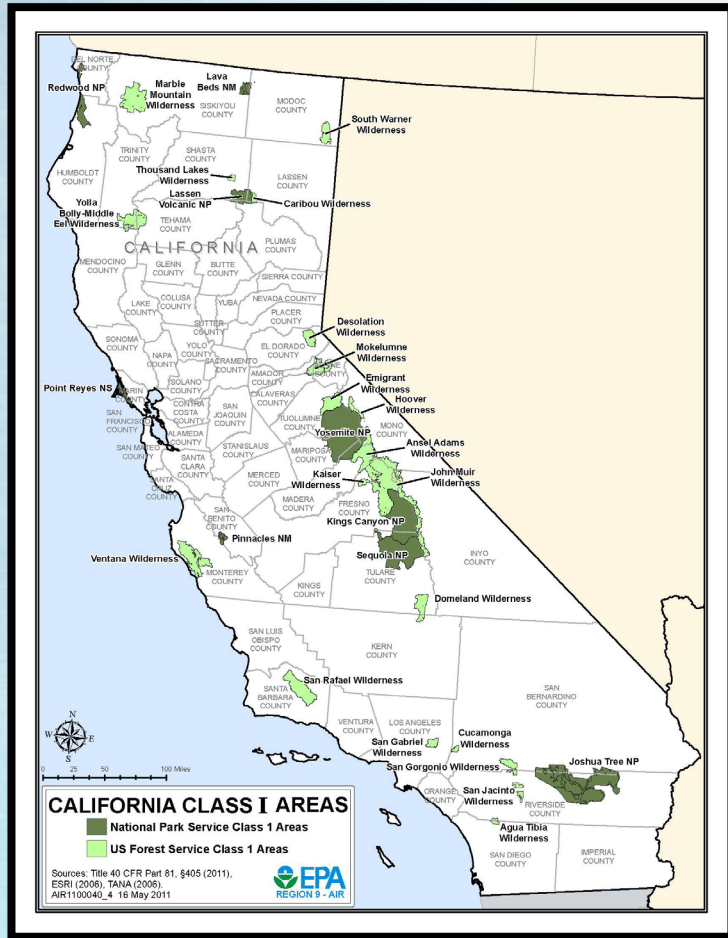




California Class I Areas

California

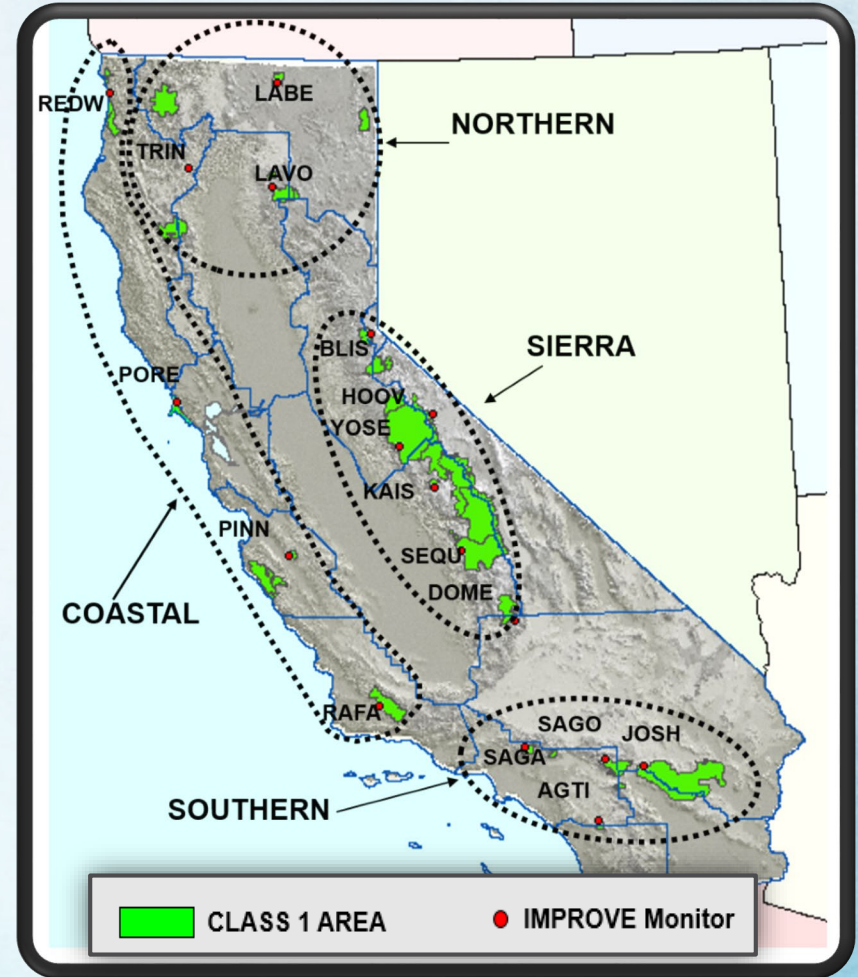
29 Class I Areas



- 1) Redwood National Park
- 2) Marble Mountain Wilderness Area
- 3) Lava Beds National Monument
- 4) South Warner Wilderness Area
- 5) Thousand Lakes Wilderness Area
- 6) Lassen Volcanic National Park
- 7) Caribou Wilderness Area
- 8) Yolla Bolly Middle Eel Wilderness Area
- 9) Point Reyes National Seashore
- 10) Ventana Wilderness Area
- 11) Pinnacles National Monument
- 12) Desolation Wilderness Area
- 13) Mokelumne Wilderness Area
- 14) Emigrant Wilderness Area
- 15) Hoover Wilderness Area
- 16) Yosemite National Park
- 17) Ansel Adams Wilderness Area
- 18) Kaiser Wilderness Area
- 19) John Muir Wilderness Area
- 20) Kings Canyon National Park
- 21) Sequoia National Park
- 22) Dome Land Wilderness Area
- 23) San Rafael Wilderness Area
- 24) San Gabriel Wilderness Area
- 25) Cucamonga Wilderness Area
- 26) San Geronio Wilderness Area
- 27) San Jacinto Wilderness Area
- 28) Joshua Tree National Park
- 29) Agua Tibia Wilderness Area

Monitors and Sub-Regions

- 17 IMPROVE Monitors near Class I Areas
- Pollutants influenced by meteorology and topography in different airsheds
- IMPROVE monitor data show similar pollutants drive haziest days in different regions of State
- Differing pollutant drivers in California's four sub-regions:
Northern, Sierra, Coastal, and Southern



Sources of Regional Haze Pollution

NO_x, SO_x, and PM are precursor emissions that form haze particles in the atmosphere

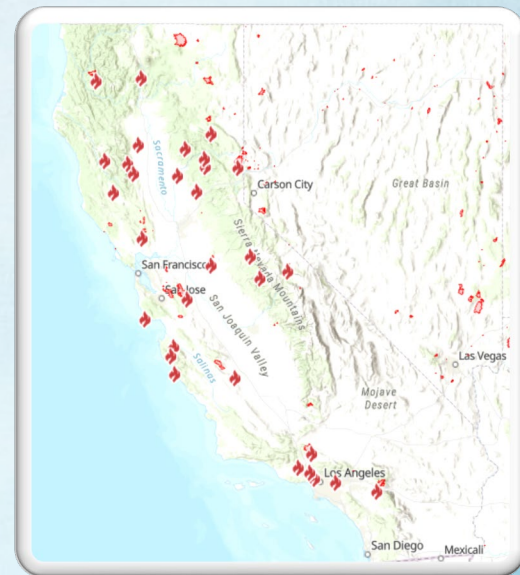
ANTHROPOGENIC SOURCES

- Main sources are stationary, area, and mobile sources
- Focus reducing “anthropogenic impairment” of visibility



NATURAL SOURCES

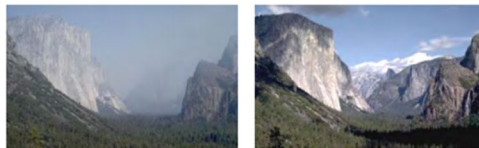
- Wildfire smoke impacts
- Other sources: sea salt, dust events, volcanic ash plumes, biogenic emissions



fires.ca.gov
Fires throughout CA August
2020

2009 Regional Haze Plan

CALIFORNIA REGIONAL HAZE PLAN



California Environmental Protection Agency



Air Resources Board

Final
Adoption Date:
January 22, 2009

Initial Plan Requirements

Determine baseline conditions (2000-2004)

- Haze levels on haziest and clearest days
- Inventory sources of haze pollutants

Assess Best Available Retrofit Technologies (BART)

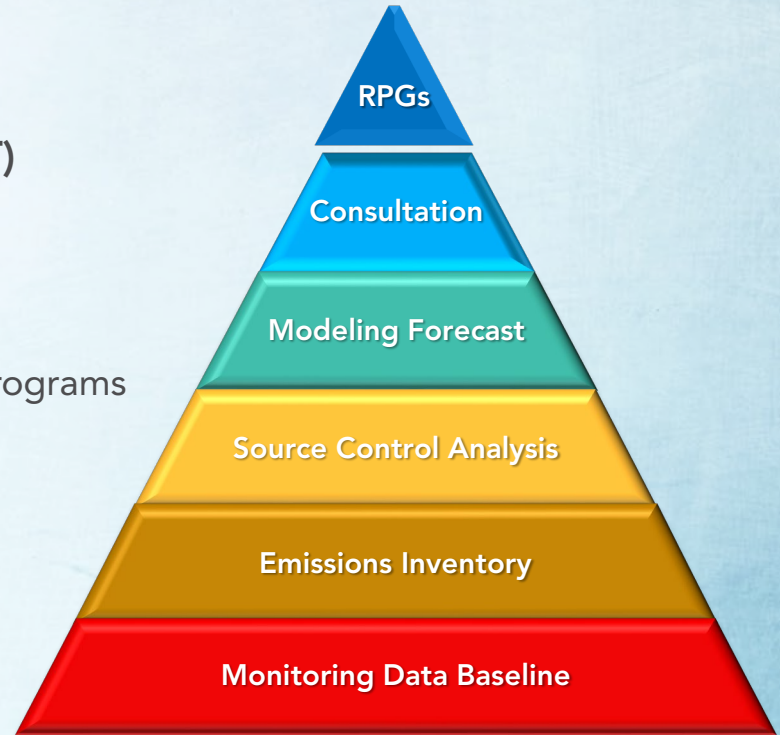
- Analyze older pollution sources for 26 source types
- Retrofit with emission controls that improve visibility

Develop and document long term strategy

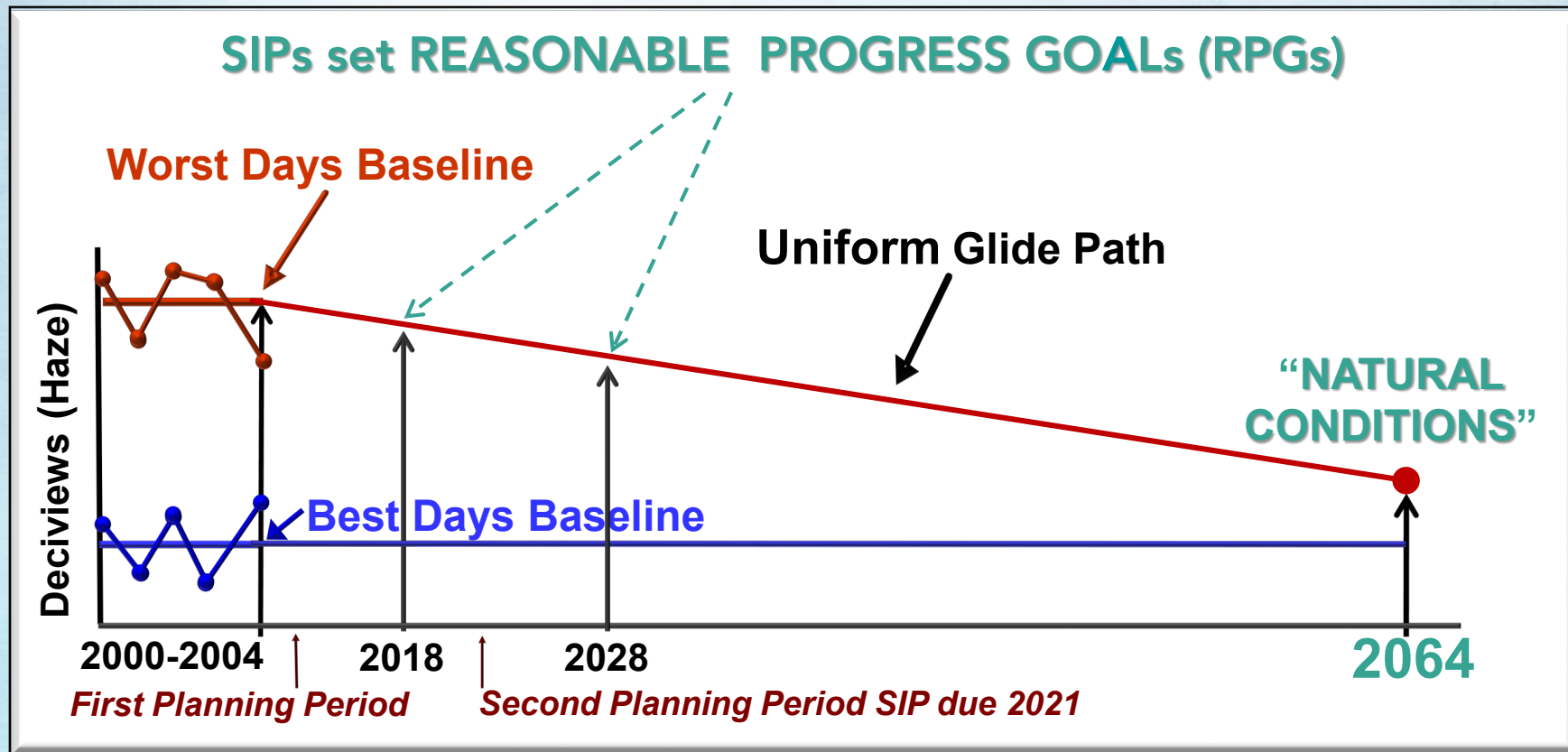
- Benefits from existing Statewide pollution control programs
- Include BART reductions
- Model emission reductions in 2018
- NOx reduction strategy selected

Set Reasonable Progress Goals (RPG) for 2018

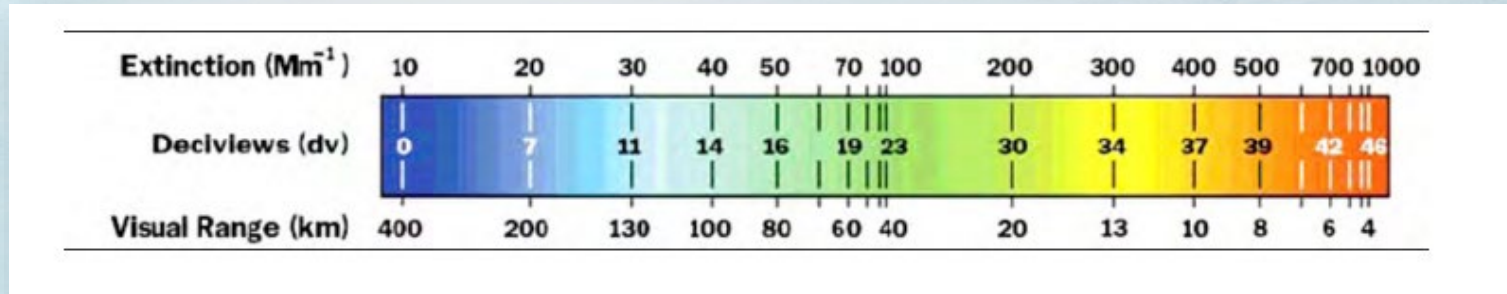
- Consult with States and FLMs
- Explain progress towards Natural Conditions



Rate of Progress – The Glide Path



Haze and Visibility Terminology



Less AIR POLLUTION means...

Less LIGHT EXTINCTION means...

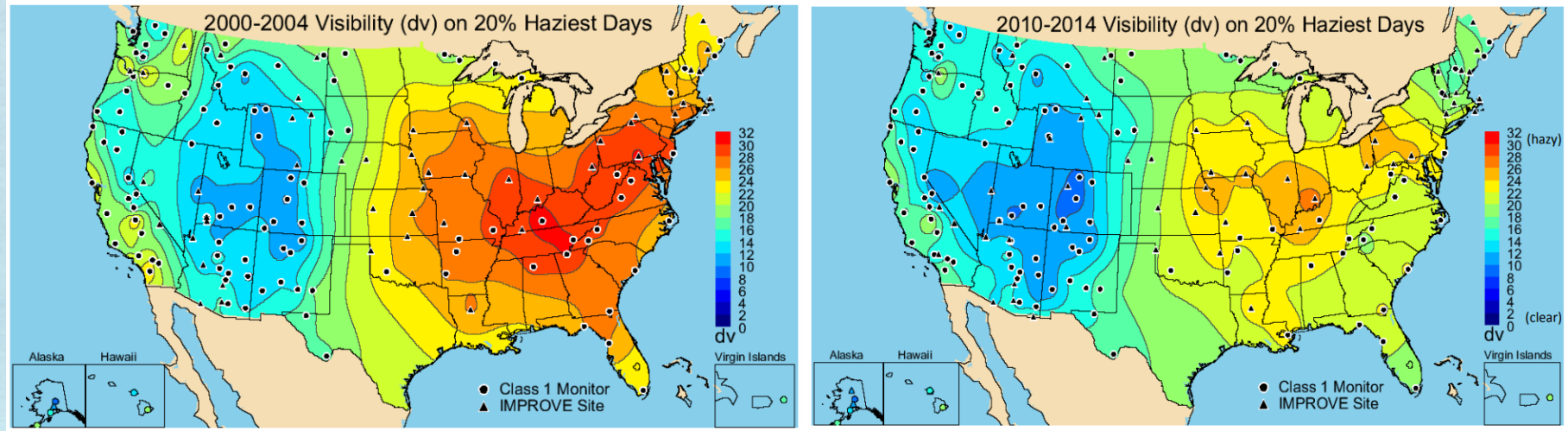
Lower DECIVIEWS means...

Longer VISUAL RANGE and better

VISIBILITY

- Monitors measure amount and type of pollutants
- Pollutant type scatters or absorbs light impacting light extinction
- Convert Light Extinction to Deciviews to measure progress
- Convert Light Extinction to Visual Range to get another measure of reducing haze

Visibility Improvement



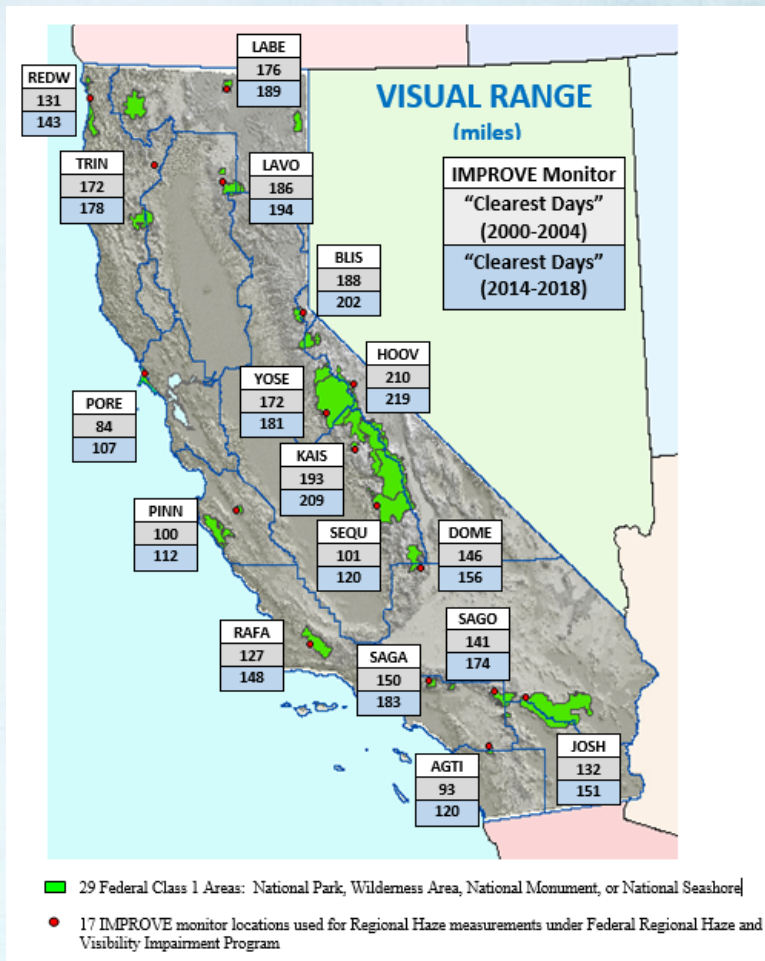
2000 - 2004

2010 - 2014

Nationwide, visibility is improving!

Visibility in California

- Clearest Days' visibility improved 10-40% since baseline years
- Clearest Days' visual range now averages 164 miles Statewide, from 147 miles
- Uneven progress on Worst Days due to wildfire smoke
 - Monitor visibility ranges from 26-67 miles
 - Statewide average 47 miles improved from 30 miles





John Muir Wilderness USFS



Hoover Wilderness USFS



South Warner Wilderness USFS

New Requirements for Second Plan

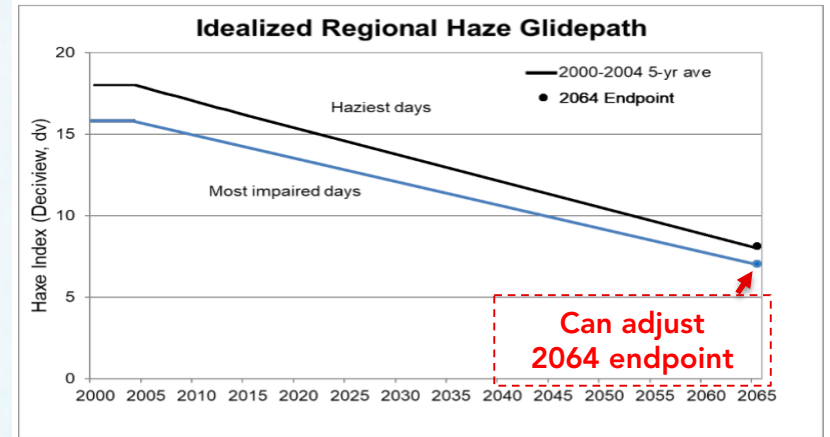


Mokelumne Wilderness USFS



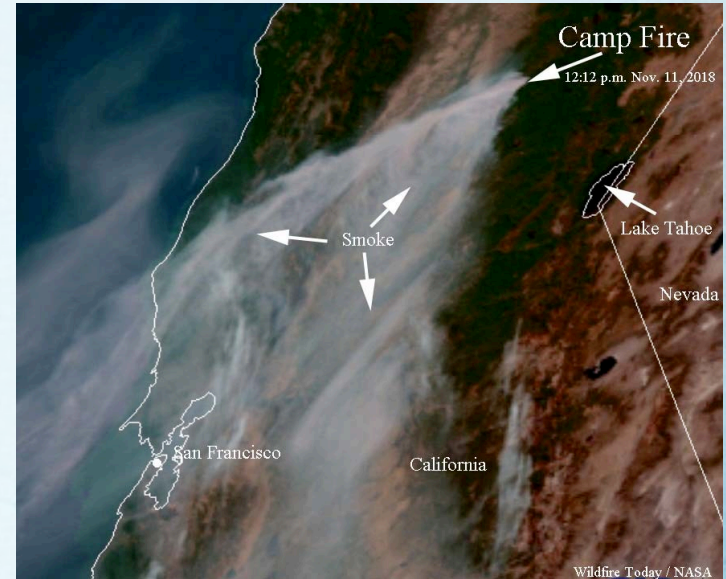
Key Haze Rule Revisions

- Changed progress metric from "Worst Haze Days" to "Most Anthropogenically Impaired Days" (MIDs)
- EPA adjusted 2064 endpoint and states can now adjust for prescribed burning and international emissions
- Mid-Term Progress Reports no longer considered SIP revisions
- SIP due July 31, 2021



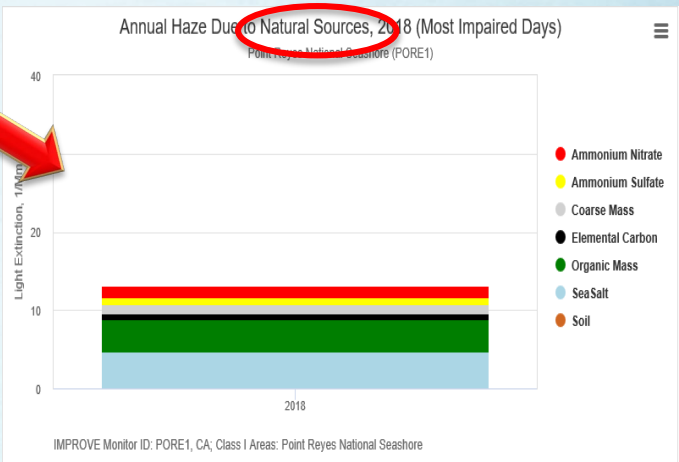
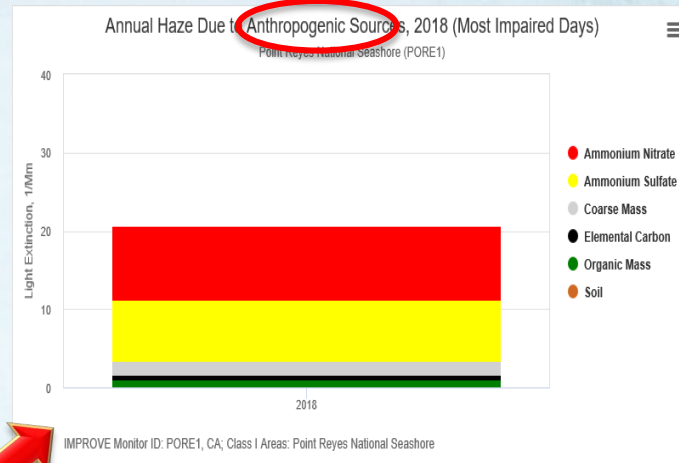
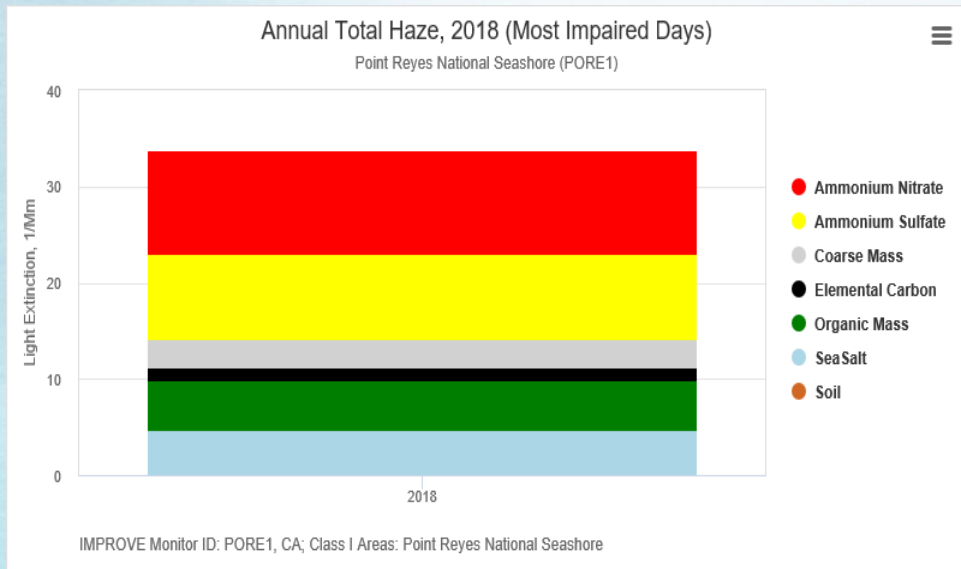
Other Considerations

- Remove impact from Extreme Episodic Events (e.g. wildfire smoke)
- Evaluate all sources that might impair visibility at Class I Areas
- Continue early consultation with Federal Land Managers
- Set 2028 Reasonable Progress Goals



The New Metric

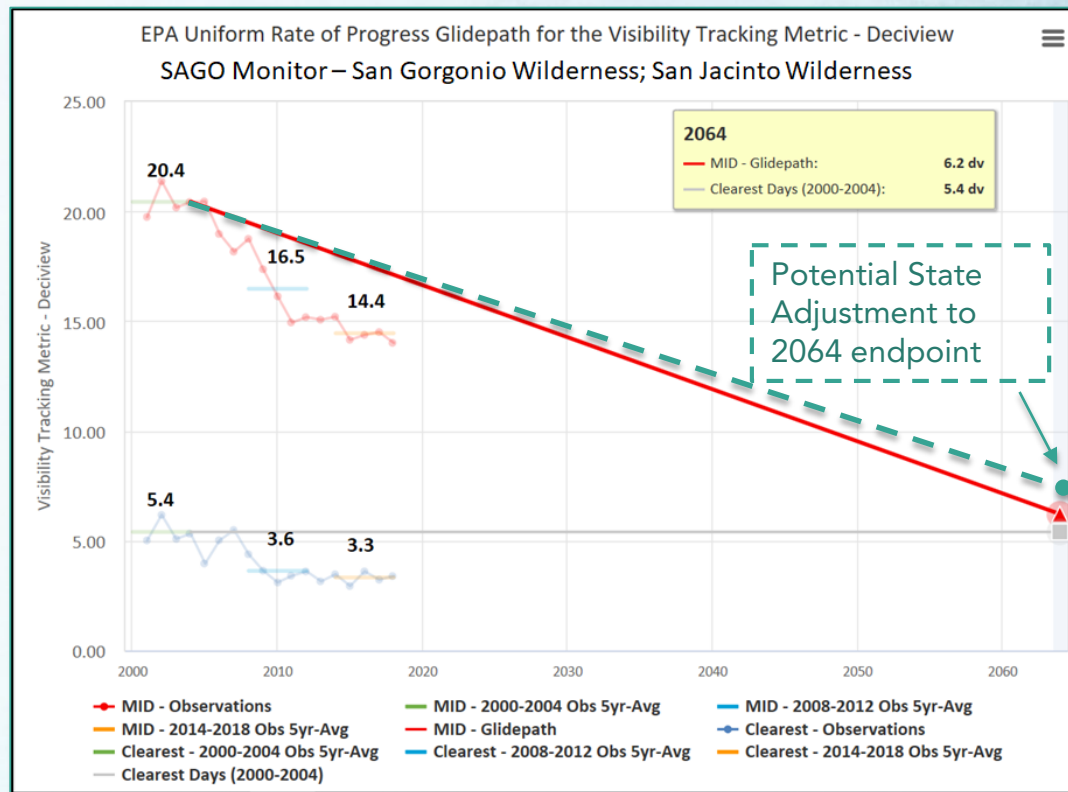
Anthropogenic and Natural contributions are split to calculate Most Impaired Days



Source: WRAP, TSS v.2

New Metric for Progress on MIDs

- Each monitor has different Glide Path and different 2064 endpoint
- SAGO monitor in Southern CA is below Glide Path on MIDs
- Glide Path can be adjusted at 2064 Endpoint with modeled impact from International and Prescribed Burning Emissions
- Clearest Days improving



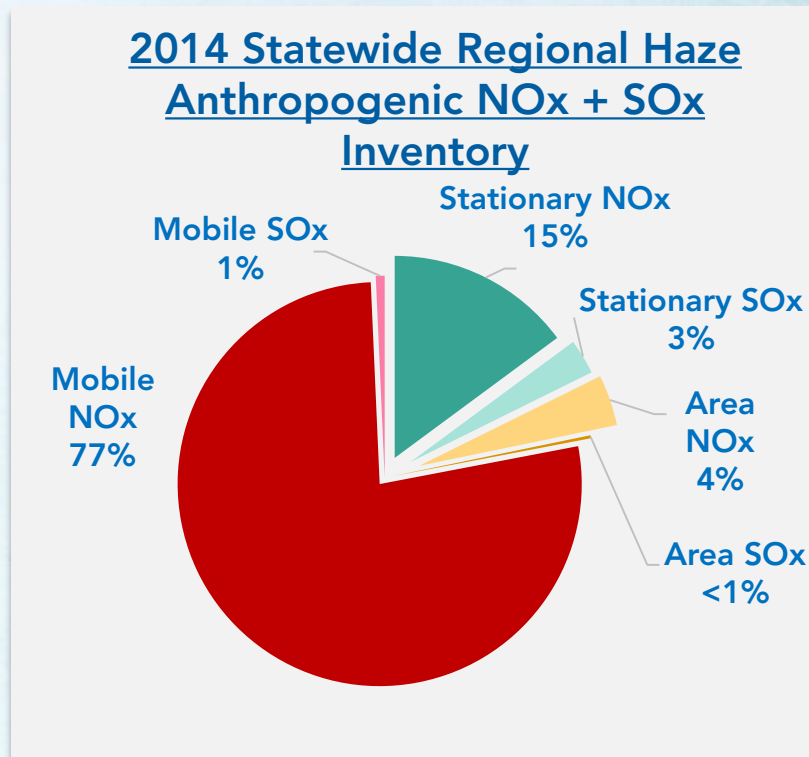
Current Progress and Next Steps



View at Redwood National Park, [nps.gov](https://www.nps.gov)

California Statewide Inventory: 2014

- WRAP modeling uses 2014 as baseline for 2028 forecast
- Mobile sources in California are largest anthropogenic category
- Reducing mobile NO_x emissions will reduce particle pollution



Process for Second SIP

- WRAP modeling
 - supports 2028 reasonable progress goals
 - adjust 2064 endpoint for international and prescribed burning impacts
- CARB and Air Districts review sources that might impair visibility using $Q/d = 7$
 - Annual $\text{NO}_x + \text{SO}_x + \text{PM}$ is "Q"
 - Distance to Class I Area in kilometers is "d"
- Quantify benefits from State mobile source controls



Current Efforts

- Baseline and future inventories submitted to WRAP
- Working with local Air Districts to assess stationary sources
- Ongoing consultations with Federal Land Managers, EPA, and other western states
- WRAP modeling for 2028 goals and endpoint adjustments underway
- WRAP maintains monitoring data



Next Steps - Timeline

End of 2020

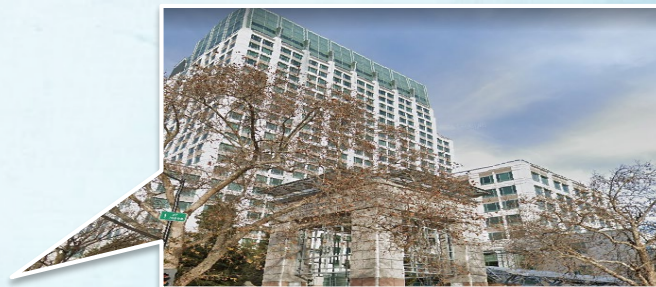
- Finalize stationary source analyses
- Complete analysis of monitoring data
- Incorporate modeling results
- Begin drafting SIP

Early 2021

- Complete initial draft
- Continue consultation with the FLMs and submit draft for review
- Host second workshop

July 2021

- Present Regional Haze Plan to CARB Board
- Submit to EPA



Thank You for your Questions!



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