



Arizona 2021 Regional Haze Planning Update

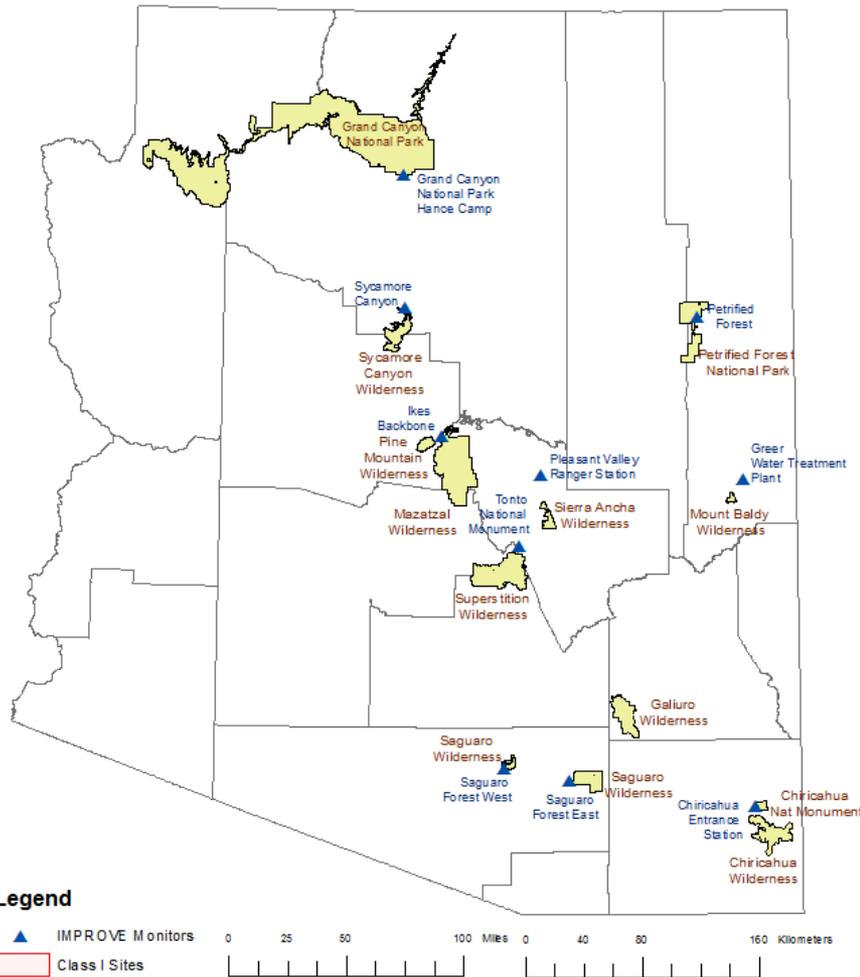
Nonpoint Sources

9/16/2019

Clean Air Act (CAA) Section 169A sets “as a national goal the prevention of any future, and the remedying of any existing, impairment to visibility” in “Class I areas” (i.e. designated national parks and wilderness areas).



Regional Haze Class I Areas and IMPROVE Monitors



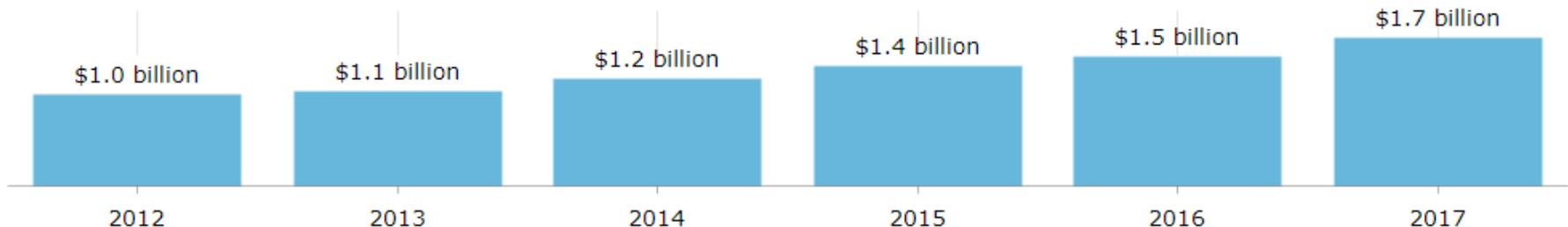
- 9 IMPROVE monitors are operated in Arizona that provide data for the 12 mandatory Class I federal areas.

Area Name	Acreage
Chiricahua National Monument Wilderness	9,440
Chiricahua Wilderness Area	18,000
Galiuro Wilderness Area	52,717
Grand Canyon NP	1,176,913
Mazatzal Wilderness Area	205,137
Mount Baldy Wilderness Area	6,975
Petrified Forest NP	93,493
Pine Mountain Wilderness Area	20,061
Saguaro Wilderness Area	71,400
Sierra Ancha Wilderness Area	20,850
Superstition Wilderness Area	124,117
Sycamore Canyon Wilderness Area	47,757

- Grand Canyon NP
 - 6,254,238 visitors
 - \$666,912,800 revenue for local communities
 - 9,423 local jobs supported by tourism
 - cumulative benefit of \$938,010,800.

Area	Visits	Jobs	Economic Output
Chiricahua NM	63,132	52	\$3,813,600
Grand Canyon NP	6,254,238	9,423	\$938,010,800
Petrified Forest NP	627,756	525	\$43,524,800
Saguaro NP	964,759	866	\$88,682,500
Sub-Total	7,909,885	10,866	\$1,074,031,700
Other AZ NPs	5,858,664	6,347	\$628,668,300
Total	13,768,549	17,213	\$1,702,700,000

Total Economic Output Contributed to the Arizona Economy



Stakeholder Values	Design Principles
Reasonable progress toward visibility goals	Develop a control strategy that ensures continued progress towards State visibility goals.
EPA approval of SIP	Involve EPA early and often in development cycles for controls and SIP revision.
Produce accurate modeling	Perform model evaluation and calibration using the most recent, complete, and accurate datasets available.
Consider visibility improvement as focus of control analysis	When developing a control analysis methodology, evaluate visibility as a potential screening and/or reasonable progress consideration.
Follow the goals of the Regional Haze roadmap	Where reasonable, ensure the State process is in-line with EPA's recommendations.
Take credit for existing programs	Include existing controls and emission reduction programs in modeling and control analysis.
Affordability for industry and general public	Collect stakeholder feedback on and evaluate the cost of controls during the control analysis. Choose those controls that balance environmental benefit with cost.
Account for international transport	Evaluate available modeled international impacts and attempt to account for transport in visibility analysis.
Cost equity between sources	Stakeholders to lead conversations considering cost equity.
Reach out to sources for future emissions projections	Allow stakeholders ability to evaluate projected emissions and methodologies and provide feedback.

ADEQ Regional Haze Nonpoint Source Screening Flowchart



*Q is calculated as the sum of annual sector emissions of all significant PM species.

Only PM₁₀ emissions from counties within 50km of a coarse mass impacted Class I Areas were utilized for Q.

Significantly Contributing PM Species

2013-2017 Most Impaired Days particulate matter species anthropogenic impact
(% total average anthropogenic light extinction)

Monitor	Class I Area	Ammonium Sulfate	Ammonium Nitrate	Coarse Mass	Species Cumulative Impact ^b
BALD1	Mount Baldy WA	79%	3%	0%	81%
CHIR1	Chiricahua NM Chiricahua WA Galiuro WA	71%	3%	14%	89%
GRCA2	Grand Canyon NP	81%	6%	0%	87%
IKBA1	Mazatzal WA Pine Mountain WA	57%	12%	8%	77%
PEFO1	Petrified Forest NP	58%	6%	9%	72%
SAGU1	Saguaro NP	48%	11%	19%	78%
SIAN1 ^a	Sierra Ancha WA				
SYCA1 ^a	Sycamore Canyon WA				
TONT1	Superstition WA	53%	8%	15%	76%

^a Values cannot be calculated for these sites for 2013-2017 due to incomplete data. Sites will be reviewed with substituted data when available.

^b Cumulative percentage may not match the sum of the individual species percentages due to rounding.

Nonpoint Source Screening Results

Source Sector	SCC	2014 Emissions (tpy)			
		NO _x	PM ₁₀	SO ₂	Q
★ Non-Residential Construction Dust	2311020000	0	15,536	0	15,536
Locomotives – Mobile	2285002006	18,045	541	11	18,597
★ Mining & Quarrying	2325000000	0	44,753	0	44,753
★ Paved Road Dust	2294000000	0	14,501	0	14,501
★ Unpaved Road Dust	2296000000	0	107,924	0	107,924
Vegetation and Soil – Biogenics	2701220000	13,192	0	0	13,912

★ Sources for which ADEQ is currently evaluating controls.
Additional sectors will be evaluated for controls as time permits.

■ Nonpoint sector control evaluation will follow:

Step 1

- **Research available control measures**

Step 2

- **Evaluate existing sector controls**

Step 3

- **Evaluate technical feasibility and four factors for remaining controls**
 - Cost of compliance will be evaluated for initial cost, annual cost, and cost per ton (\$/ton) of emissions reduction

Step 4

- **Select Reasonable Progress Measures (future)**

Step 5

- **Model Cumulative Visibility Impacts (future)**

1. Research Available Control Measures

- List of available control measures obtained from
 - ❖ 1990 CAA Preamble, Appendix C1 – Available Fugitive Dust Control Measures (57 FR 18070-18077, April 28, 1992.)
 - ❖ Other PM10 areas in the Southwest (e.g., West Pinal Moderate PM10 Area)

2. Evaluate Existing Controls

- Evaluate existing measures based on the following criteria
 - ❖ How does level of control compare to list of available measures? Do existing controls include available measures?
 - ❖ Do existing measures meet SIP enforceability guidelines?
 - ❖ Where are existing measures applicable?

3. Evaluate Potential New Measures

- Evaluate potential new measures for areas where existing measures can be considered for strengthening or where no measures currently exist based on the following steps
 - ❖ Technical feasibility
 - ❖ Four Factor analysis
 - [1] Cost of Compliance
 - [2] Time Necessary for Compliance
 - [3] Energy and Non-AQ Environmental Impacts of Compliance
 - [4] Remaining Useful Life of Potentially Affected Sources

4. Select Reasonable Progress Measures

- Areas for implementation (“in and near”)

5. Model Cumulative Visibility Impacts from All Selected Reasonable Progress Measures

Step 1. Research Available Control Measures

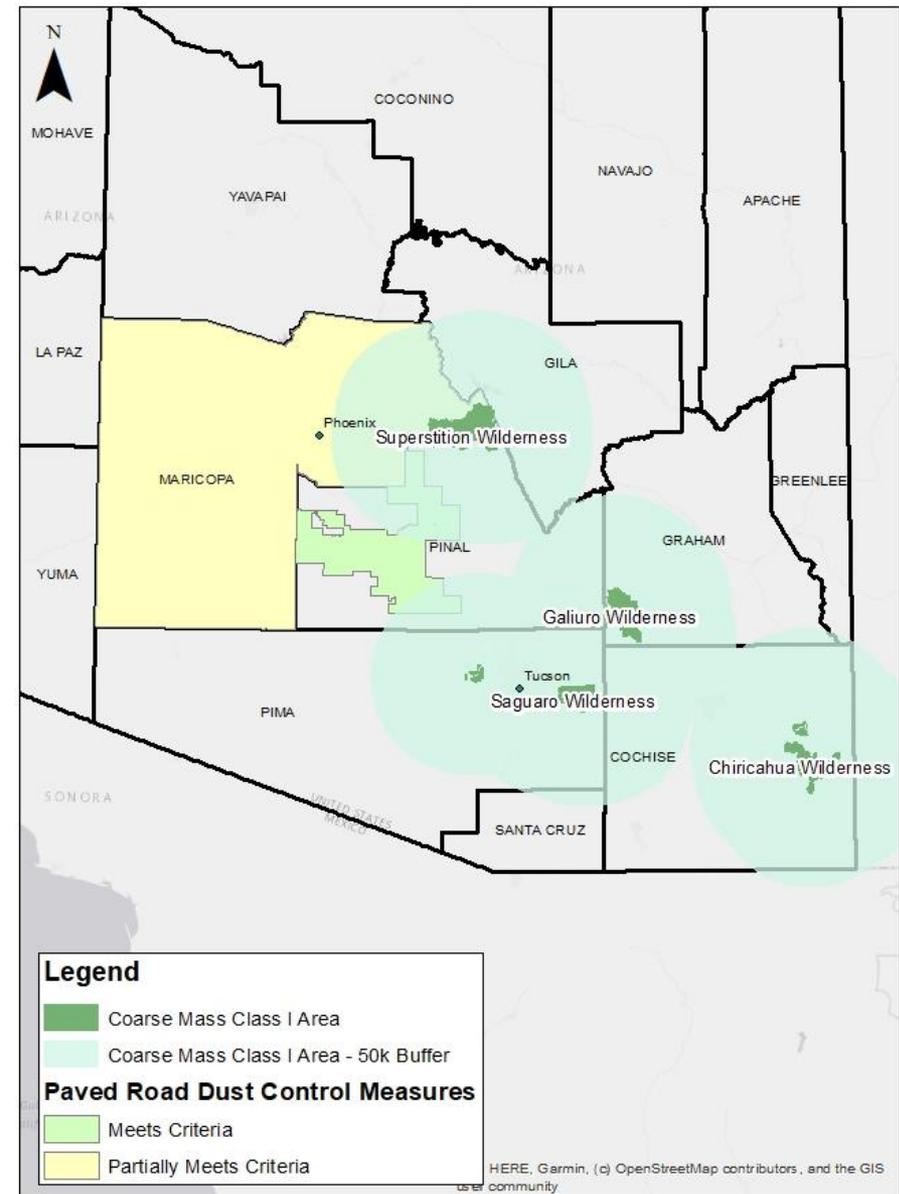
Paved Roads

1. Pave, vegetate, or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.
2. Require haul trucks to be covered.
3. Provide for traffic rerouting or rapid cleanup of temporary (and not readily preventable) sources of dust on paved roads (water erosion, runoff, mud/dirt carryout areas, material spills, skid control sand). Delineate who is responsible for cleanup.
4. Require improved material specification for and reduction of usage of skid control sand or salt (e.g., require use of coarse, nonfriable material during snow and ice season).
5. Require curbing and pave or stabilize (chemically or with vegetation) shoulders of paved roads.
6. Provide for storm water drainage to prevent water erosion onto paved roads.
7. Stabilize medians of paved roads.
8. Ensure stabilization during weed abatement/vegetation management on unpaved shoulders of paved roads.
9. Employ PM10 certified street sweepers.

Step 2. Evaluate Existing Controls

Paved Roads

- Evaluate for level of control and enforceability



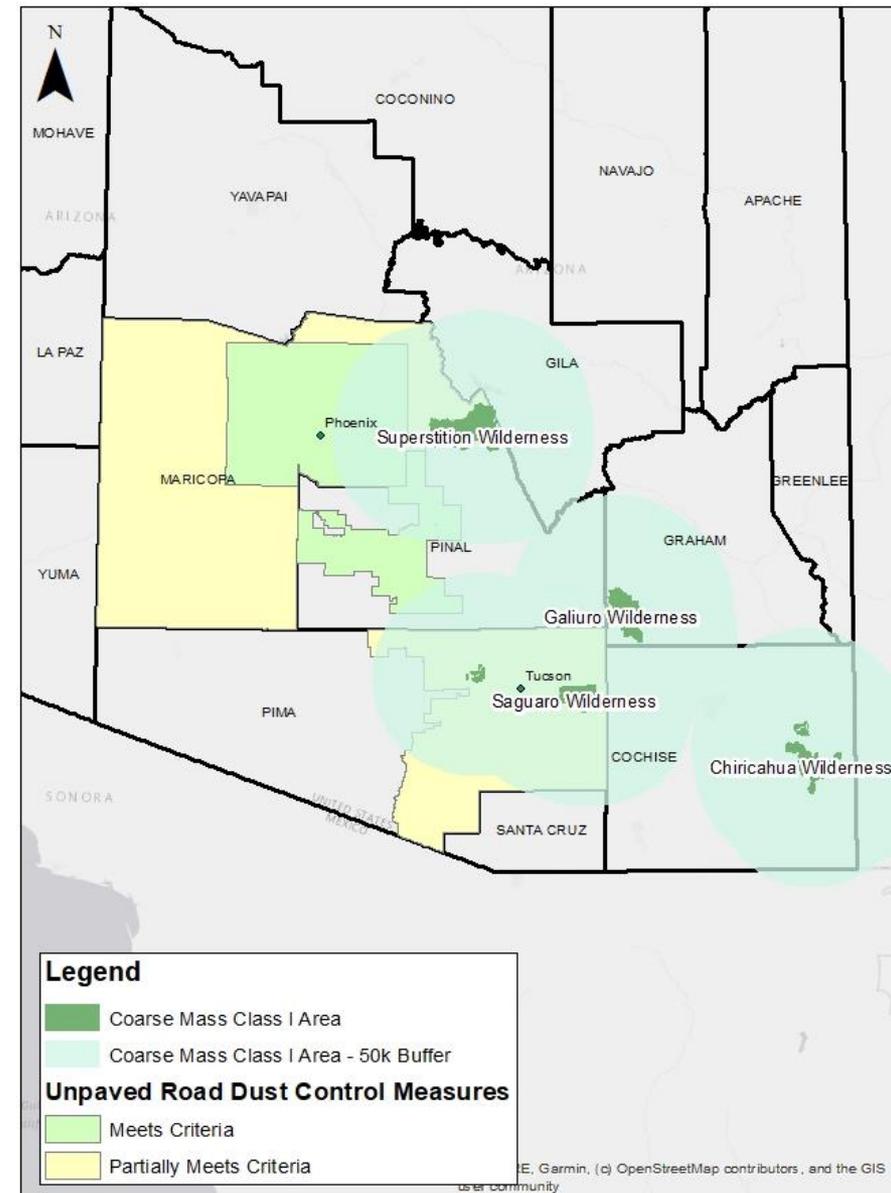
Step 1. Research Available Control Measures

Unpaved Roads

1. Develop traffic reduction plans for unpaved roads. Use of speed bumps, low speed limits, etc., to encourage use of other (paved) roads.
2. Pave unpaved roads [asphalt concrete, concrete, chip-seal].
3. Chemically stabilize unpaved roads [dust suppressants other than water].
4. Apply and maintain surface gravel.

Step 2. Evaluate Existing Controls – *Unpaved Roads*

- Evaluate for level of control and enforceability



Step 3. Evaluate Potential New Measures

Technical Feasibility

- E.g., Measure involves elimination of the source, causes increase in other emissions producing activities (commute route length increase), etc.

[1] Cost of Compliance

- Capital/Implementation Costs
- Cost Effectiveness (\$/ton)

[2] Time Necessary for Compliance

[3] Energy and Non-AQ Environmental Impacts

[4] Remaining Useful Life of Potentially Affected Sources

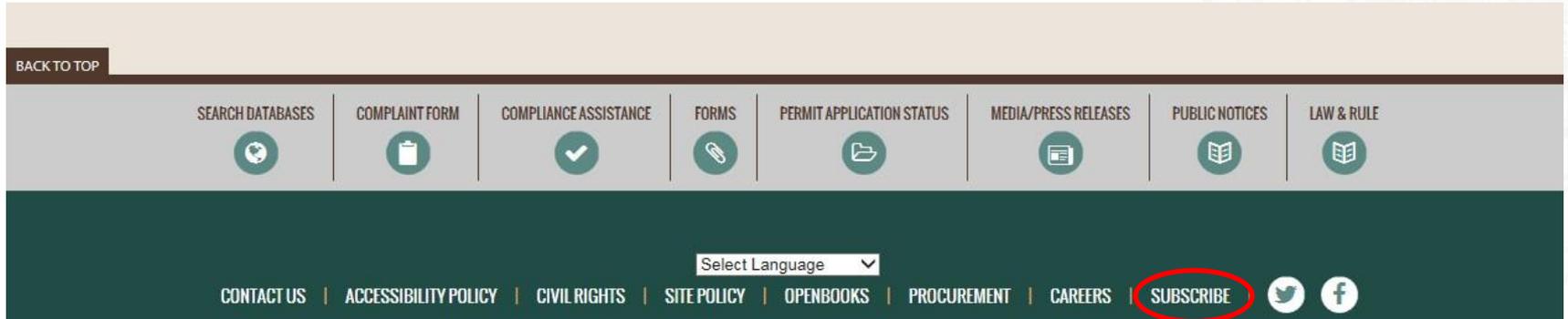
Planning Task	End Date	Tentative Stakeholder Feedback Deadline	Stakeholder Input
Control Measure Analysis	Jan 15 th , 2019	Dec 1 st , 2019	4-Factor submissions & supporting information
2028 Control Scenarios Modeling	Mar 2020	Dec 1 st , 2019	Controlled modeling parameters
Public Comment Period	May 2021	May 2021	General Stakeholder feedback

SIP Submittal Date is 7/31/2021

EPA Reform Roadmap Schedule

- ~~Dec 2018 – Finalized tracking metric~~
- ~~Spring 2019 – Finalized guidance & natural visibility~~
- Summer 2019 – Revised visibility modeling
- ???? – Revised Rule

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SAVE **CANCEL**



- State Implementation Plan ⓘ
- Agricultural Best Management Practices ⓘ
- Air Quality State Implementation Plans ⓘ
- Annual Emission Inventory Questionnaire ⓘ
- New Source Review ⓘ
- Ozone ⓘ
- Particulate Matter ⓘ
- Regional Haze** ⓘ
- Startup, Shutdown and Malfunction
- Sulfur Dioxide (SO2) ⓘ
- West Pinal County PM10 Nonattainment Area ⓘ
- Yuma ⓘ

Thank you

Questions?

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ADEQ RH 2021 Planning Webpage - <http://www.azdeq.gov/2021-regional-haze-sip-planning>