



# Arizona 2021 Regional Haze Planning Update

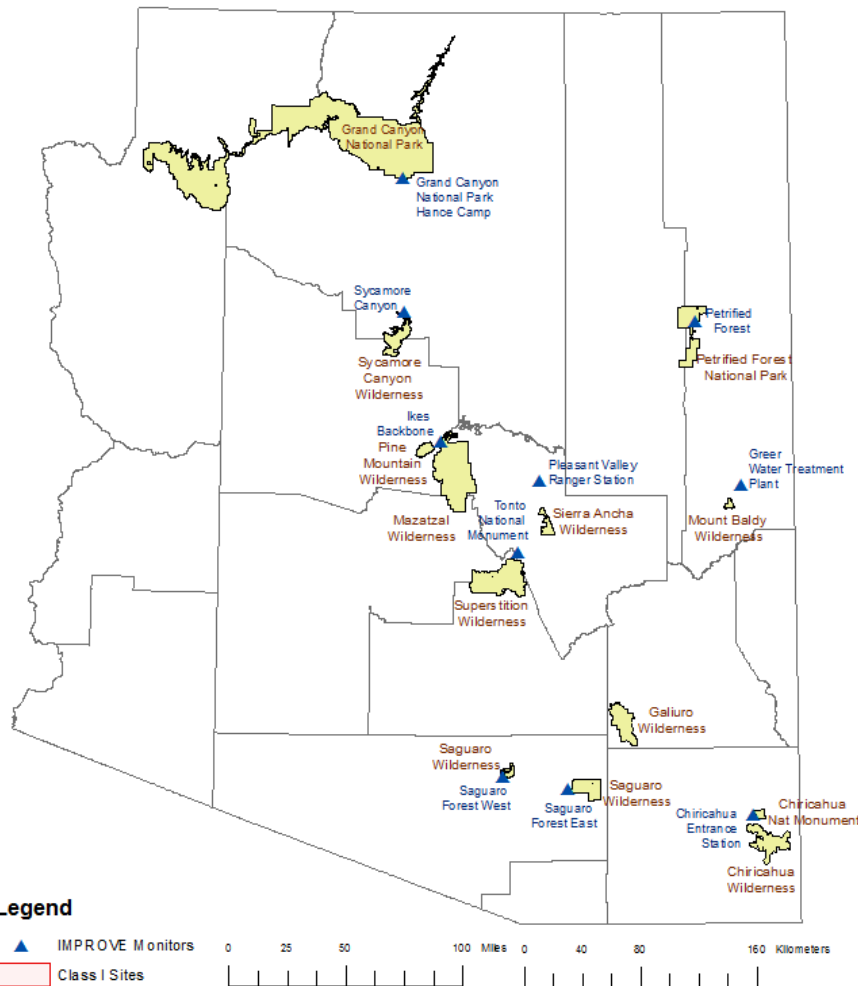
## Nonpoint Sources

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).

# Arizona Class I Areas

## Regional Haze Class I Areas and IMPROVE Monitors



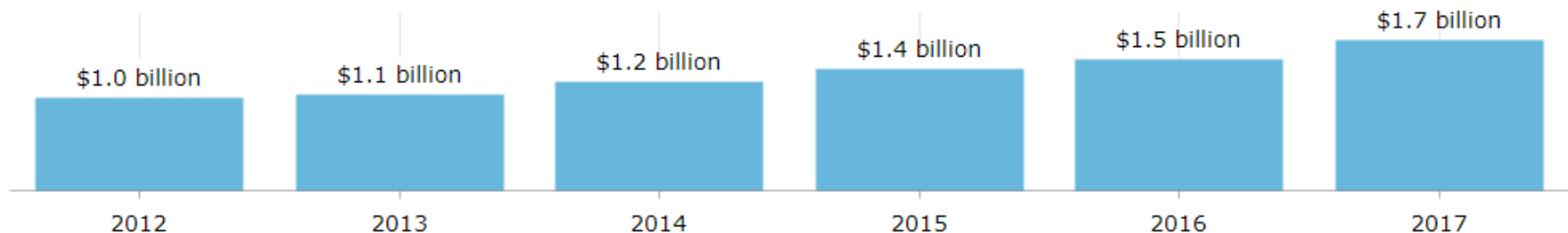
- 9 IMPROVE monitors are operated in Arizona that provide data for the 12 mandatory Class I federal areas.

| 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.

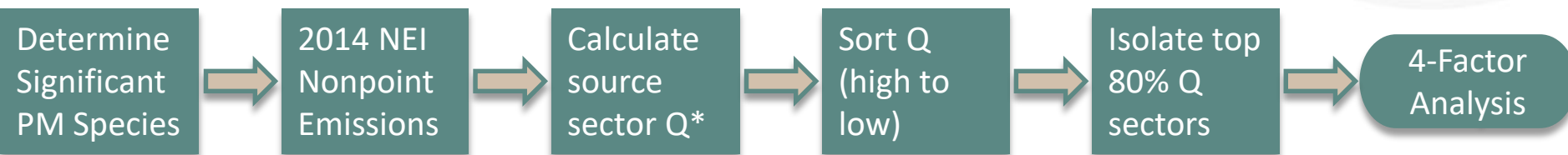
| Area                | Visits            | Jobs          | Economic Output        |
|---------------------|-------------------|---------------|------------------------|
| Chiricahua NM       | 63,132            | 52            | \$3,813,600            |
| Grand Canyon NP     | 6,254,238         | 9,423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

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 PM<sub>10</sub> 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 <sup>b</sup> |
|--------------------|--|------------------|------------------|-------------|--|
| BALD1              | Mount Baldy WA                               | 79%              | 3%               | 0%          | 81%                                    |
| CHIR1              | Chiricahua NM<br>Chiricahua WA<br>Galiuro WA | 71%              | 3%               | 14%         | 89%                                    |
| GRCA2              | Grand Canyon NP                              | 81%              | 6%               | 0%          | 87%                                    |
| IKBA1              | Mazatzal WA<br>Pine Mountain WA              | 57%              | 12%              | 8%          | 77%                                    |
| PEFO1              | Petrified Forest NP                          | 58%              | 6%               | 9%          | 72%                                    |
| SAGU1              | Saguaro NP                                   | 48%              | 11%              | 19%         | 78%                                    |
| SIAN1 <sup>a</sup> | Sierra Ancha WA                              |                  |                  |             |  |
| SYCA1 <sup>a</sup> | Sycamore Canyon WA                           |                  |                  |             |  |
| TONT1              | Superstition WA                              | 53%              | 8%               | 15%         | 76%                                    |

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

<sup>b</sup> 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 <sub>x</sub>      | PM <sub>10</sub> | SO <sub>2</sub> | 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”)

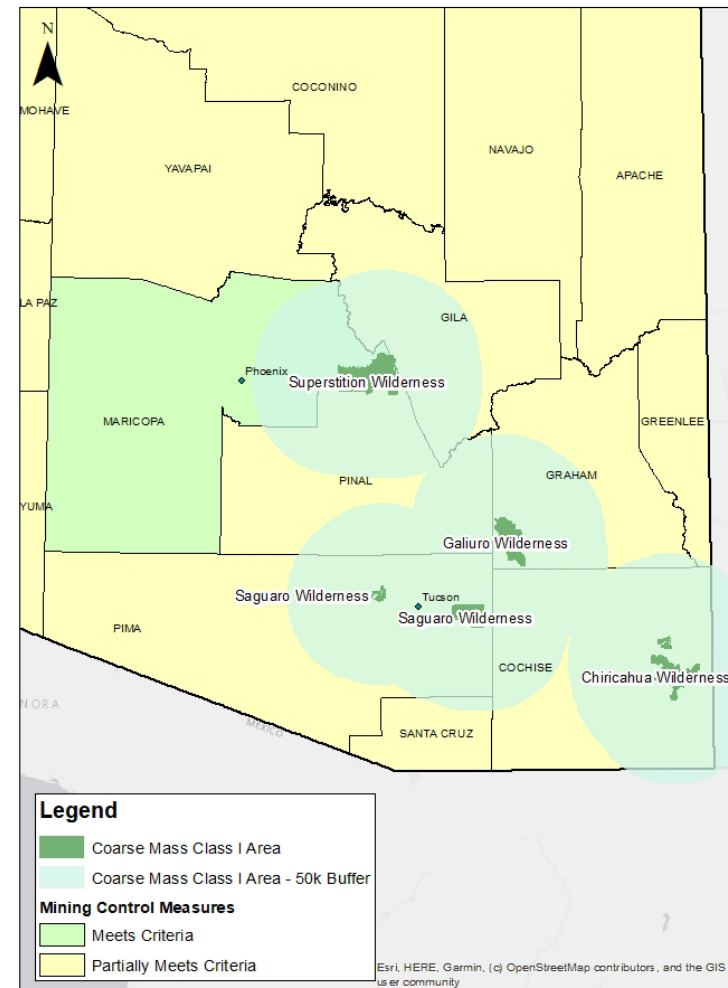
## 5. Model Cumulative Visibility Impacts from All Selected Reasonable Progress Measures

## Step 1. Research Available Control Measures

1. Require paving, chemically stabilizing, or otherwise stabilizing permanent unpaved haul roads, and parking or staging areas at commercial, municipal, or industrial facilities.
2. Establish dust control measures for material storage piles. [e.g., watering, windbreaks, etc.]
3. Establish dust control measures for mineral tailings. [e.g., watering, chemical stabilization, revegetation, application of crushed rock]
4. Require haul trucks to be covered
5. Establish dust control measures for material crushing, screening, processing, handling, conveying or other dust producing operations. [e.g., spray bars, hooding, watering, dust suppressants]

## Step 2. Evaluate Existing Controls

- 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 (vehicle travel 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

# Arizona Stakeholder/Planning Process

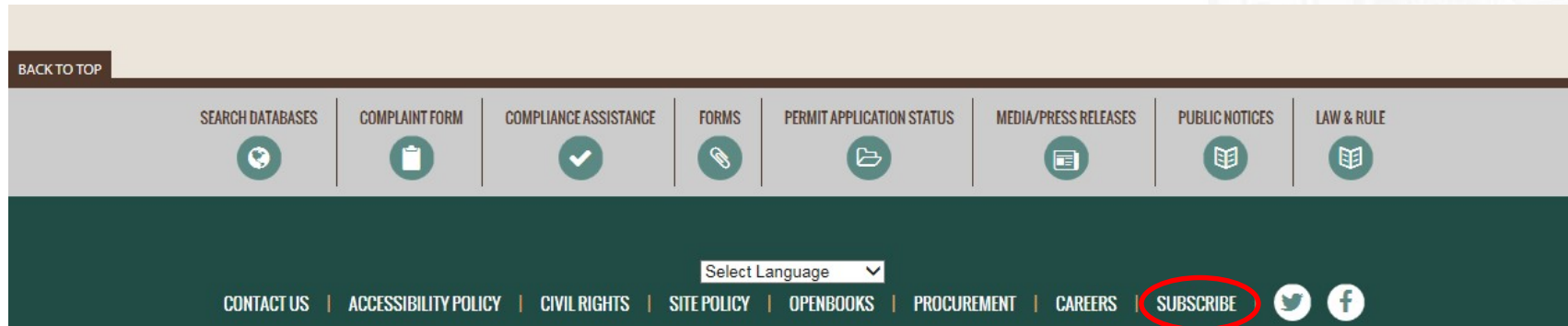
| Planning Task                   | End Date                    | Tentative Stakeholder Feedback Deadline | Stakeholder Input                             |
|---------------------------------|-----------------------------|---|---|
| Control Measure Analysis        | Jan 15 <sup>th</sup> , 2019 | Dec 1 <sup>st</sup> , 2019              | 4-Factor submissions & supporting information |
| 2028 Control Scenarios Modeling | Mar 2020                    | Dec 1 <sup>st</sup> , 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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- ☐ 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?

Please contact:

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

