



NEVADA DIVISION OF
**ENVIRONMENTAL
PROTECTION**



Nevada Department of
**CONSERVATION &
NATURAL RESOURCES**

Stakeholder Outreach

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2021 Nevada Regional Haze SIP Development



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What is Regional Haze?

- Regional haze is visibility impairment caused by the cumulative air pollutant emissions from numerous sources over a wide geographic area.
- July 1, 1999 – EPA promulgated Regional Haze Regulations.
- The ultimate goal of the Regional Haze Rule is to return the nation's Class I areas to natural visibility conditions by 2064.
- The program intends to remedy existing, and prevent future, human-caused impairment of visibility in mandatory Federal Class I areas.
- The program addresses visibility, or aesthetics, rather than health impacts and concerns.



The Clean Air Act defines Class I areas as certain national parks, wilderness areas, national memorial parks, and international parks that were in existence on August 7, 1977.

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Jarbidge Wilderness Area



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Nevada's Class I Area



150 Miles of Trails



113,167 Acres



JARB1 IMPROVE Monitor

- Location receives more precipitation compared to the rest of the state.
- Mountainous terrain with creeks, lakes, and small bodies of water makes Jarbidge a popular hiking destination.



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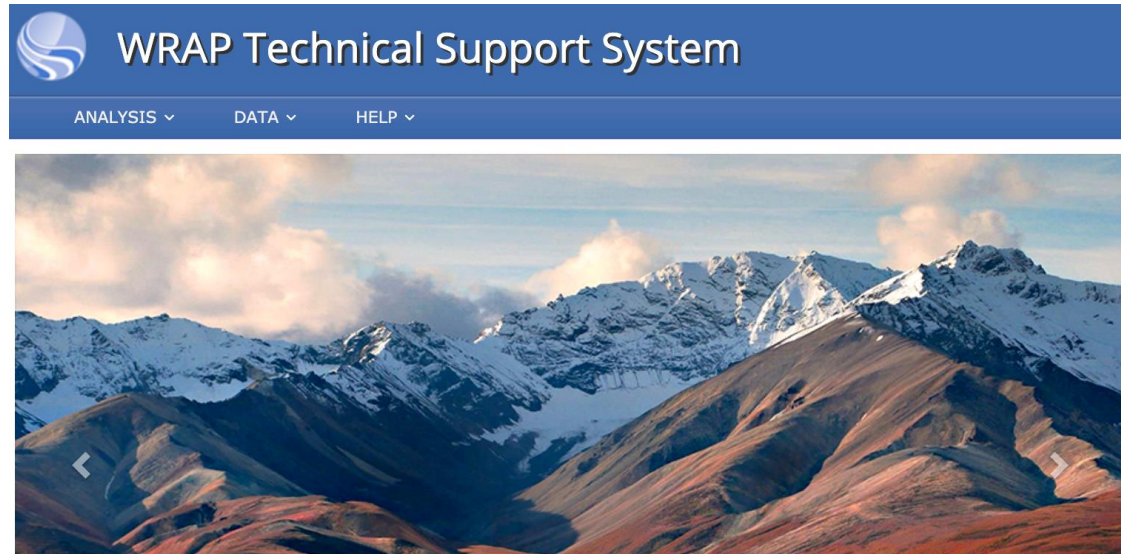
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Ambient Air Monitoring at Jarbidge WA

- JARB1 IMPROVE (Interagency Monitoring of PROtected Visual Environments)
 - Managed by US Forest Service
 - Provides ambient air data on visibility impairing pollutants in the Jarbidge Wilderness area
- Data collected from the JARB1 IMPROVE monitor is translated to the Technical Support System (TSSv2) that displays ambient air data through tables and graphs.
- Will also display modeling results as they are finalized.





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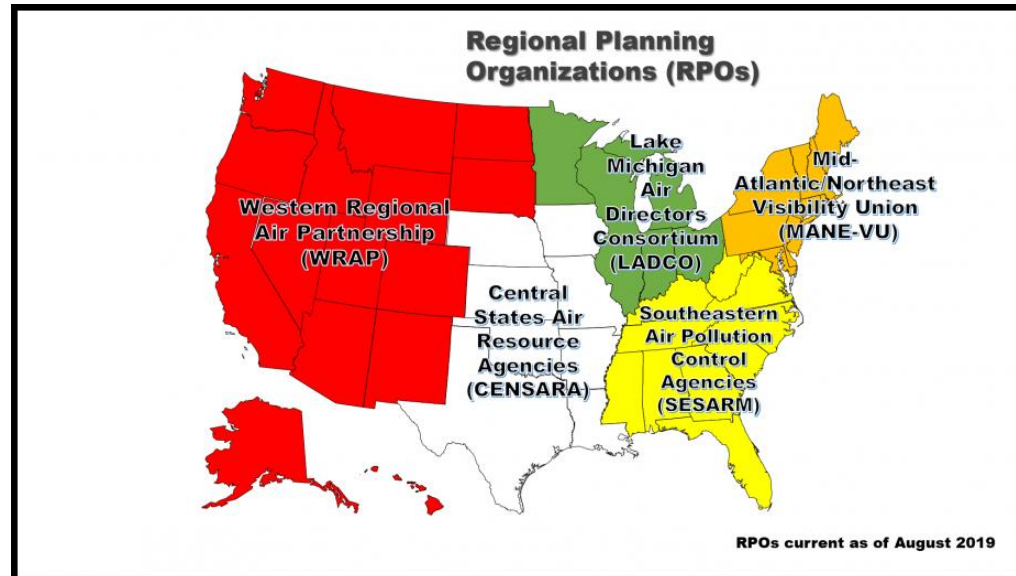
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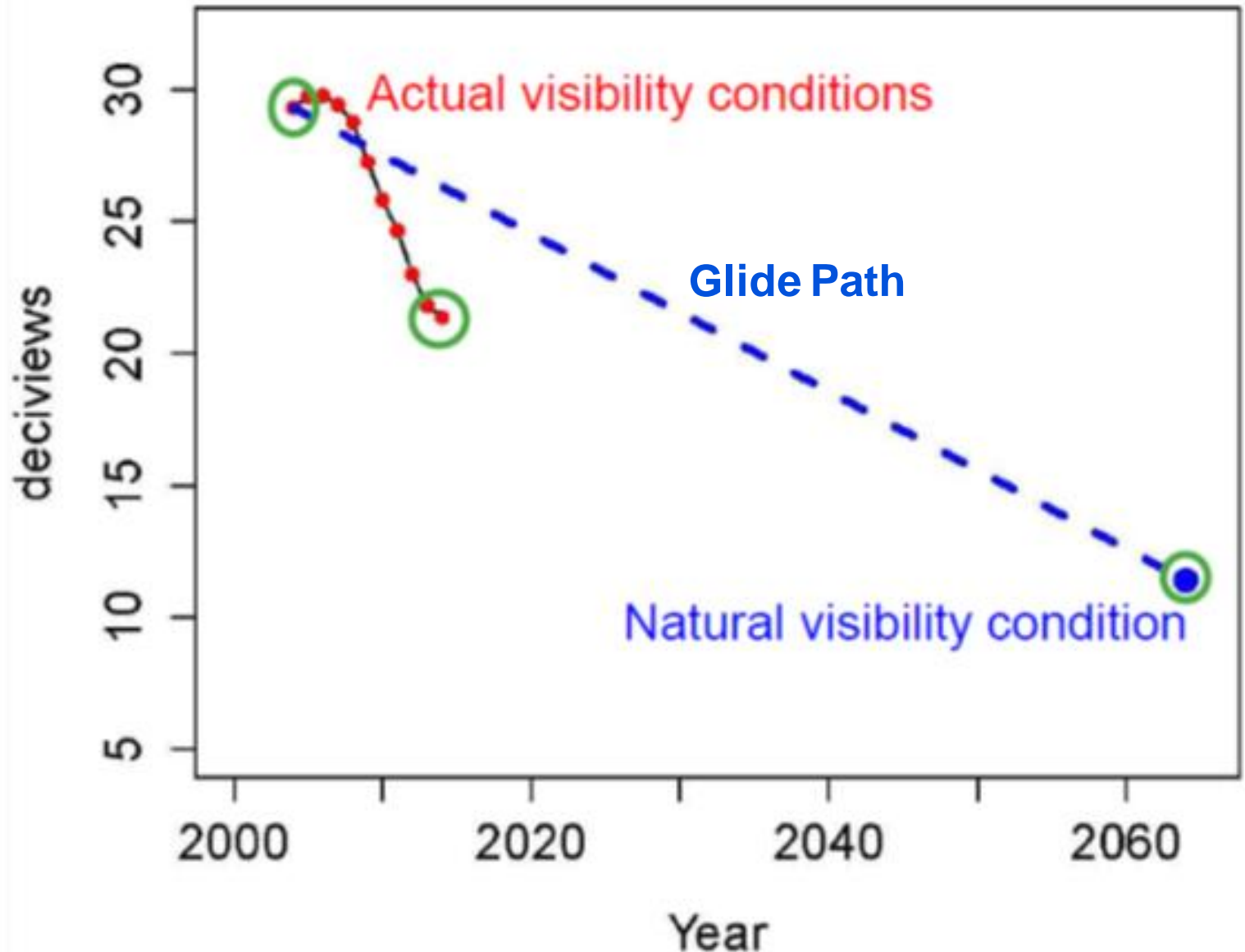
A Regional Effort

- Improving visibility is a regional effort that requires interstate coordination. Nevada, and all other western states, collaborate through the Western Regional Air Partnership (WRAP).
- Assists states, tribes, federal land managers, local air agencies, and US EPA in Regional Haze implementation.
- Provides technical analyses, databases, and coordination.
 - TSSv2 – ambient air data and trends
 - Emission inventory development
 - Regional Modeling
 - Consultation and coordination efforts
 - SIP development





Achieving Natural Conditions in Concept



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Achieving Natural Conditions at Jarbidge

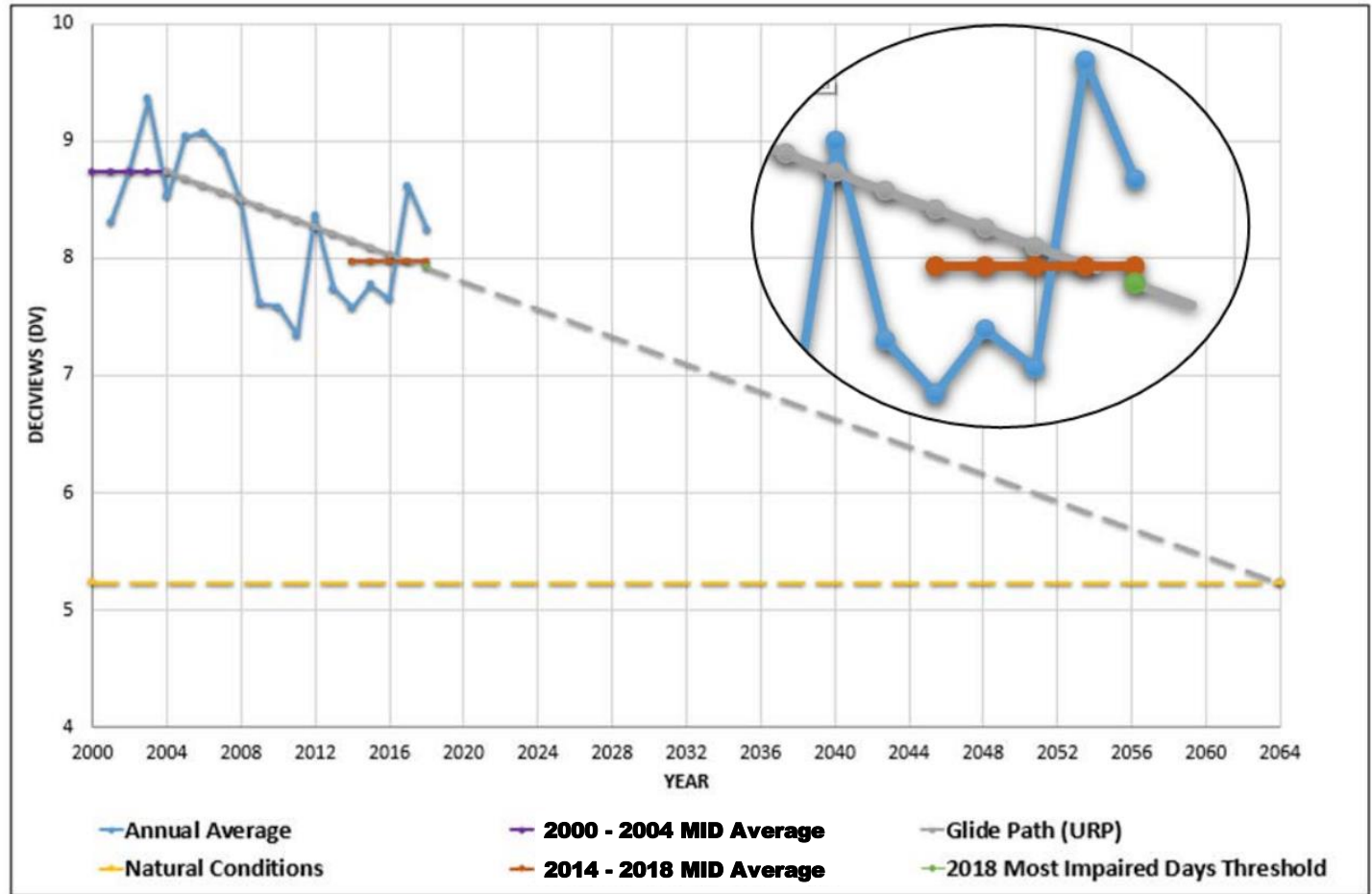
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Class I Area	2014-2018 Clearest Days (dv)	Clearest Days Threshold (dv)	Below Clearest Days Threshold?	2014-2018 MID (dv)	MID 2018 URP Value (dv)	On Track for URP?
Jarbidge WA	1.84	2.56	Yes	7.97	7.92	No



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Nevada's Regional Haze History

Hazy



Clear

- **1st Period Regional Haze SIP**
 - Submitted November 18, 2009
 - Addressed 2008-2018
 - 4 sources selected for BART determinations
- **1st Period Progress Report**
 - Submitted November 18, 2014
 - Concluded that 1st SIP requires no substantive revision
- **2nd Period Regional Haze SIP**
 - Will address 2018-2028
 - RHR was revised January 2017
 - New due date set to July 31, 2021.



1st Period BART Determinations

Source	1 st Period BART Controls
NVEnergy – Tracy	Unit 1 and 2: LNB + FGR, use of PNG and/or low-sulfur No. 2 fuel oil. Unit 3: LNB + SNCR, use of PNG and/or low-sulfur No. 2 fuel oil.
NVEnergy – Fort Churchill	Unit 1 & 2: LNB + FGR, use of PNG and/or low-sulfur No. 2 fuel oil.
NVEnergy – Reid Gardner Decommissioned in 2017.	Unit 1-3: ROFA + Rotamix, existing wet soda ash FGD.
SCE – Mohave Decommissioned in 2010.	Unit 1 & 2: LNB + OFA, conversion from coal to natural gas.

Abbreviation		Abbreviation	
LNB	Low NOx Burner	SNCR	Selective Non-Catalytic Reduction
FGR	Flue Gas Recirculation	ROFA	Rotating Opposed Fire Air System
PNG	Pipeline Natural Gas	FGD	Flue Gas Desulfurization

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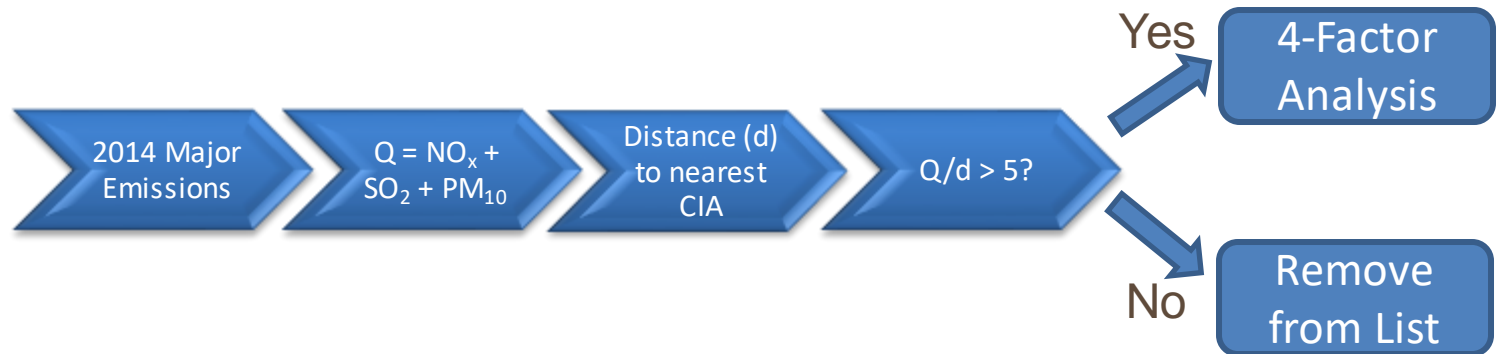


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2nd Period: Initial Source Screening Process

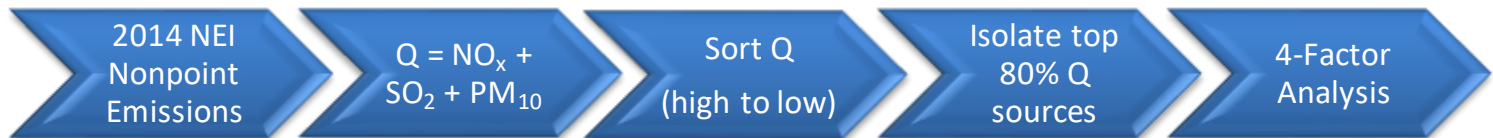
• Point Source Flow Chart

Q is measured as annual tons of facility-wide emissions for the year 2014.
d is measured as distance in kilometers to nearest Class I area (CIA) boundary



• Nonpoint Source Flow Chart

Sources such as unpaved roads, agriculture, some mining activities.
Counties within 50 km of the nearest CIA boundary are analyzed.
Top contributing source sectors continue on to 4-factor analyses.





Q/d Analysis Source Screening Results (2014 Emissions Inv.)

Source	Q (tpy)	d (km)	Q/d
NVEnergy - Valmy	12,173	162	75.10
Lhoist North America - Apex	1,662	88	18.84
Nevada Cement Company	1,482	102	14.55
NVEnergy – Tracy	683	82	8.38
NNEI – TS Power	834	131	6.39
Graymont Western – Pilot Peak	673	131	5.15

- **Surrogate metric for source visibility impacts**
- **WRAP recommended approach**
- **Set Q/d threshold of 5**
- **McCarran Airport over 5, but emissions not regulated by state**

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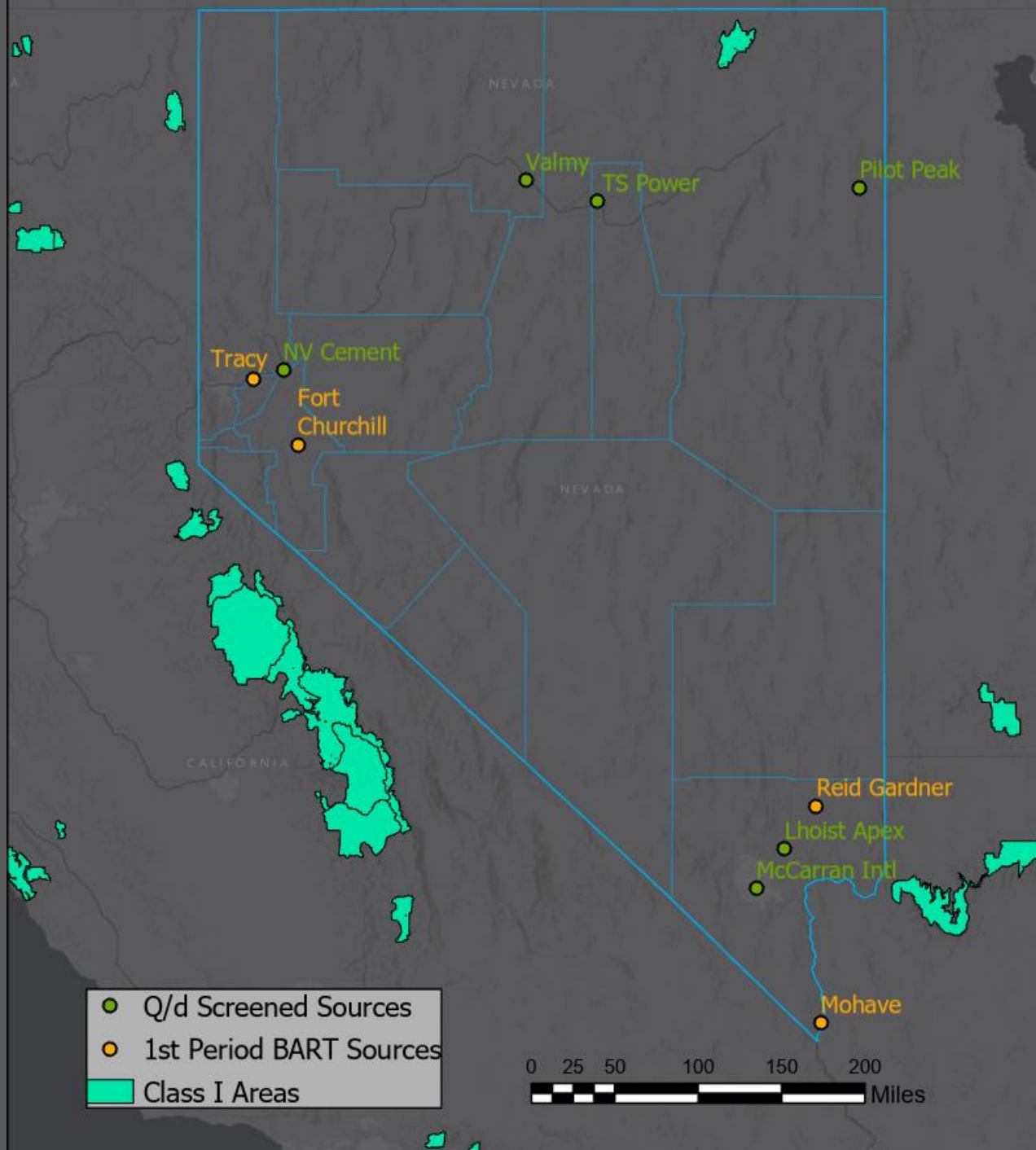
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Point Source 4-Factor Analysis Process

Aug 2019

- Source Screening (Q/d Analysis)

Dec 2019

- Four-Factor Analysis

Fall 2020

- Quantify and Model Potential Controls and Emission Reductions

Late 2020

- Set Reasonable Progress Goals

2021

- Set Emission Limits Consistent with Selected Controls and Schedule Compliance Date

Regional Haze 4 Factors:

1. Cost of Compliance
2. Time Necessary for Compliance
3. Energy and Non-Air Quality Environmental Impacts
4. Remaining Useful Life of the Source

Regional Modeling Progress

1

2014 Base Year

Status: Completed

Purpose: Model Calibration

2

Representative Year

Status: Modeling Underway

Purpose: Platform for 2028 Projections

3

2028 OTB/OTW

Status: Emission projection underway

Purpose: Evaluate visibility with currently planned controls

4

2028 Control Scenario

Status: Control analysis underway

Purpose: Evaluate visibility conditions with 4-factor controls

RH Modeling

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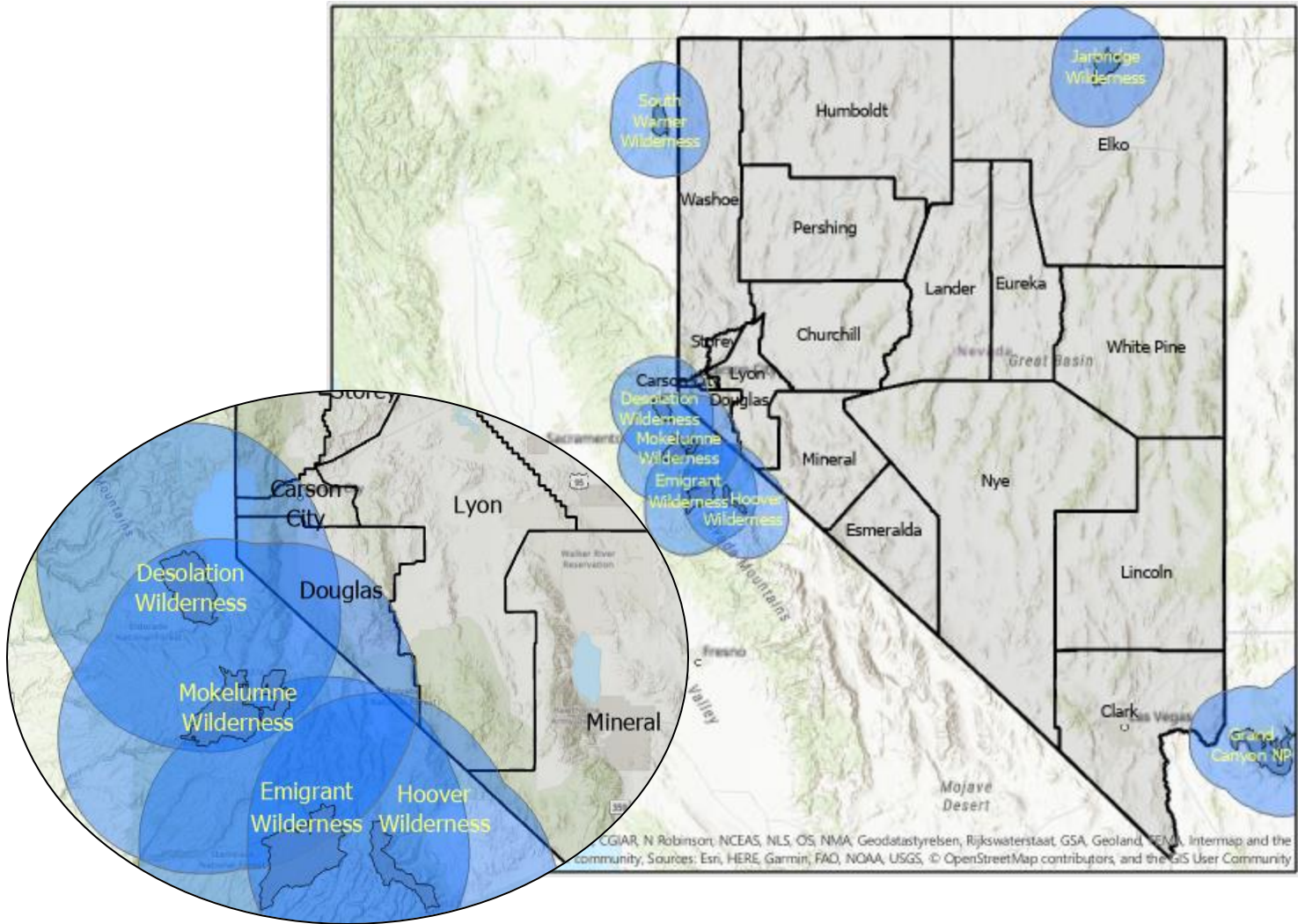


Point Source 4-Factor Analysis Resources

- **Regional Haze Guidance**
 - [August 2019 Final Guidance on Regional Haze](#)
 - Step 4: Characterization of factors for emission control measures (p. 28)
- **Control Technology Resources**
 - [RACT, BACT, LAER Clearinghouse](#)
- **Cost of Controls**
 - [EPA Air Pollution Control Cost Manual](#)
 - Chapter 2: Cost Estimation: Concepts and Methodology



Nonpoint Source Screening Results



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- Counties within 50 km of a Class I area are considered for nonpoint 4-factor analyses





Nonpoint Source Screening Results

- 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	NV County within 50 km
JARB1	Jarbridge WA	65%	0%	5%	Elko
BLIS1	Desolation WA Mokelumne WA	42%	4%	2%	Washoe Carson Douglas
LABE1	South Warner WA	52%	5%	0%	Washoe
HOOV1	Hoover WA	62%	6%	0%	Lyon
GRCA2	Grand Canyon NP	81%	6%	0%	Clark

- Only class I areas that are significantly impacted by coarse mass are considered further
- Only state regulated source sectors will be evaluated

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Nonpoint Source 4-Factor Analysis Process

Step 1

- Determine existing controls

Step 2

- Research available sector controls

Step 3

- Evaluate technical feasibility of available controls

Step 4

- Conduct 4-Factor for remaining controls

Tentative Schedule

Q3 2020

- Evaluation of Submitted 4-Factor Analyses

Q4 2020

- Draft Decisions on Implementation of Selected Controls

Q1 2021

- SIP Drafting and Begin Formal FLM Consultations

Q2 2021

- Public Comment and Finalize SIP

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Useful Links

- **NDEP Regional Haze Webpage**
 - <https://ndep.nv.gov/air/planning-and-modeling/regional-haze-and-bart>
- **WRAP Regional Haze Webpage**
 - <http://wrapair2.org/reghaze.aspx>
- **Technical Support System (TSSv2)**
 - <http://views.cira.colostate.edu/tssv2/>

Request to be on the NDEP Regional Haze ListServ for updates by emailing smcneece@ndep.nv.gov.



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Abbreviations

Abbreviation		Abbreviation	
EPA	Enironmental Protection Agency	RHR	Regional Haze Rule
JARB1	Jarbidge IMPROVE monitor	WA	Wilderness Area
TSSv2	Technical Support System (version 2)	NP	National Park
WRAP	Western Regional Air Partnership	OTB/OTW	On-the-Books/On-the-Way
RPO	Regional Planning Organization	SNCR	Selective Non-Catalytic Reduction
MID	Most Impaired Days	ROFA	Rotating Opposed Fire Air System
dv	deciviews	FGD	Flue Gas Desulfurization
URP	Uniform Rate of Progress	LNB	Low NOx Burner
SIP	State Implementation Plan	FGR	Flue Gas Recirculation
BART	Best Available Retrofit Technology	PNG	Pipeline Natural Gas



Questions?

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