



6/16/2021

NPS Formal Consultation Call with Washington State Department of Ecology for Regional Haze SIP Development

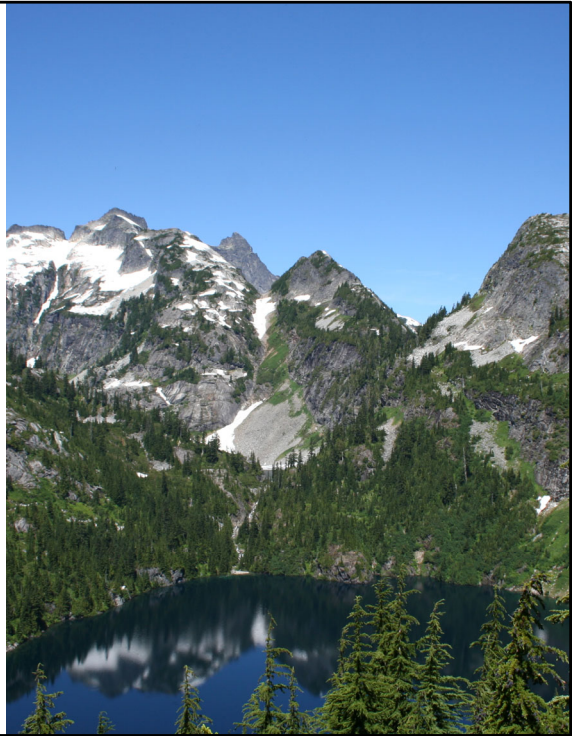
Attendees:

- National Park Service
 - Jalyn Cummings, Interior Regions 8, 9, 10, 12 – Seattle, WA
 - Kirsten King, Air Resources Division (ARD) – Denver, CO
 - Debbie Miller, ARD – Denver, CO
 - Melanie Peters, ARD – Denver, CO
 - Don Shepherd, ARD – Denver, CO
 - Andrea Stacy, ARD – Denver, CO
- Washington State Department of Ecology
 - Anya Caudill
 - Philip Gent
 - Colleen Stinson
- Fish & Wildlife Service
 - Tim Allen
 - Jaron Ming
- Environmental Protection Agency (EPA) Region 10
 - Jeff Hunt

NPS photos from left to right: Great Smoky Mountains NP, Mount Rainier NP, Yellowstone NP, Grand Canyon NP

Agenda

- Welcome & Introductions
- NPS Regional Haze Background
- NPS Class I Areas in Washington
- NPS SIP Feedback for Washington
 - Source Selection & Analysis
 - Aluminum Production
 - Refineries
 - RACT Concerns
 - Pulp & Paper Industry
 - Visibility Benefit and URP Considerations
 - Cement & Glass Manufacturing
- Next-Steps

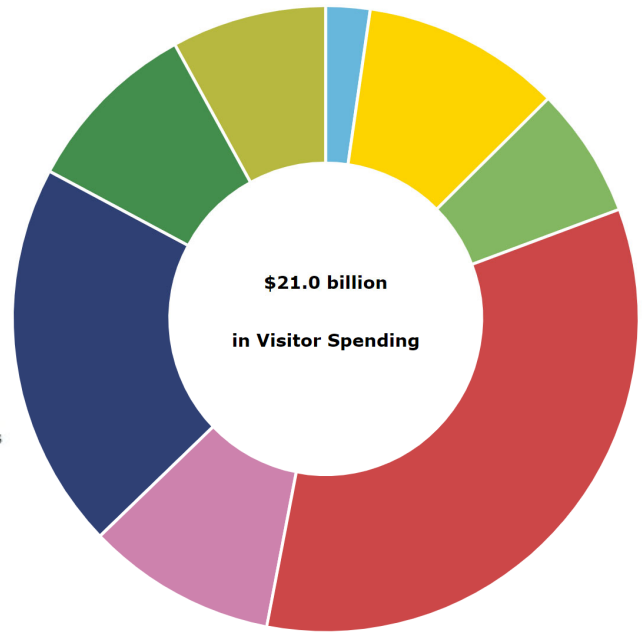


We welcome discussion at any time during this presentation. Please feel free to ask questions or add information along the way.

NPS Photo of Thornton Lakes and Trappers Peak in North Cascades NP, WA.

By the Numbers

- 423 national park units
- 328 million park visitors
- \$21.0 billion spent in local gateway regions



Nationally in **2019** (a 2020 report was not completed due to the pandemic)

328 million park visitors spent an estimated \$21 billion in local gateway regions while visiting National Park Service lands across the country.

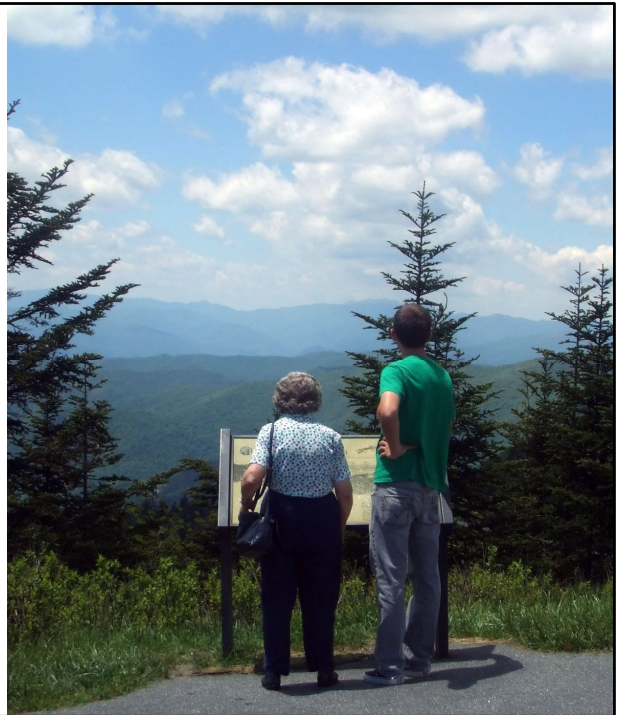
These expenditures supported a total of

- 341 thousand jobs,
- \$14.1 billion in labor income,
- \$24.3 billion in value added, and
- \$41.7 billion in economic output in the national economy.

<https://www.nps.gov/subjects/socialscience/vse.htm>

By the Numbers

- **48** Class I areas
- In **24** states
- **90%** of visitors surveyed say that scenic views are **extremely** to **very** important
- **100%** of visitors surveyed rate clean air in the **top 5** attributes to protect in national parks



List of Class I areas: <https://www.nps.gov/subjects/air/npsclass1.htm>

States with at least one Class I area:

AK, AZ, CA, CO, FL, HI, ID, KY, ME, MI, MN, MT, NC, ND, NM, OR, SD, TN, TX, UT, VA, VI, WA, WY

Statistics citation:

Kulesza C and Others. 2013. National Park Service visitor values & perceptions of clean air, scenic views, & dark night skies; 1988–2011. Natural Resource Report. NPS/NRSS/ARD/NRR—2013/622. National Park Service. Fort Collins, Colorado

NPS photo of Great Smoky Mountains NP, NC & TN



The NPS has an affirmative legal responsibility to protect clean air in national parks.

- 1916 NPS Organic Act: created the agency with the mandate to conserve the scenery, natural and cultural resources, and other values of parks in a way that will leave them unimpaired for the enjoyment of future generations. This statutory responsibility to leave National Park Service units “unimpaired,” requires us to protect all National Park Service units from the harmful effects of air pollution.
- In the 1970 Clean Air Act: authorized the development of comprehensive federal and state regulations to limit emissions from both stationary (industrial) sources and mobile sources. The Act also requires the Environmental Protection Agency to set air quality standards.
- 1977 Clean Air Act Amendments: these amendments to the Clean Air Act provide a framework for federal land managers such as the National Park Service to have a special role in decisions related to new sources of air pollution, and other pollution control programs to protect visibility, or how well you can see distant views. The Act established a national goal to prevent future and remedy existing visibility impairment in national parks larger than 6,000 acres and national wilderness areas larger than 5,000 acres that were in existence when the amendments were enacted. (Class I areas)
- 1990 Clean Air Act Amendments: created regulatory programs to address acid rain and expanded the visibility protection and toxic air pollution programs. The acid rain regulations began a series of regional emissions reductions from electric generating facilities and industrial sources that have substantially reduced air pollutant emissions.

NPS photo of Washington DC: <https://npgallery.nps.gov/AirWebCams/wash>

Visibility goal:
Restore natural conditions by 2064

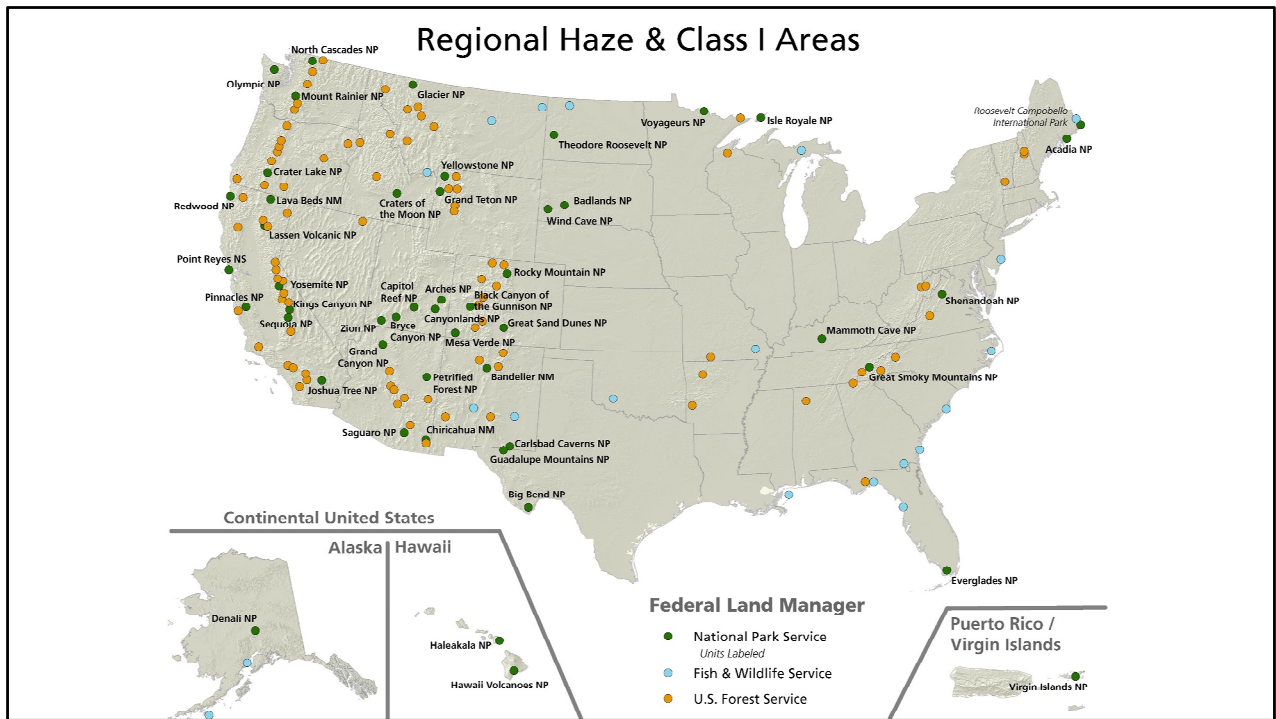


Yosemite NP, California

Left to right images illustrate hazy to clear conditions.

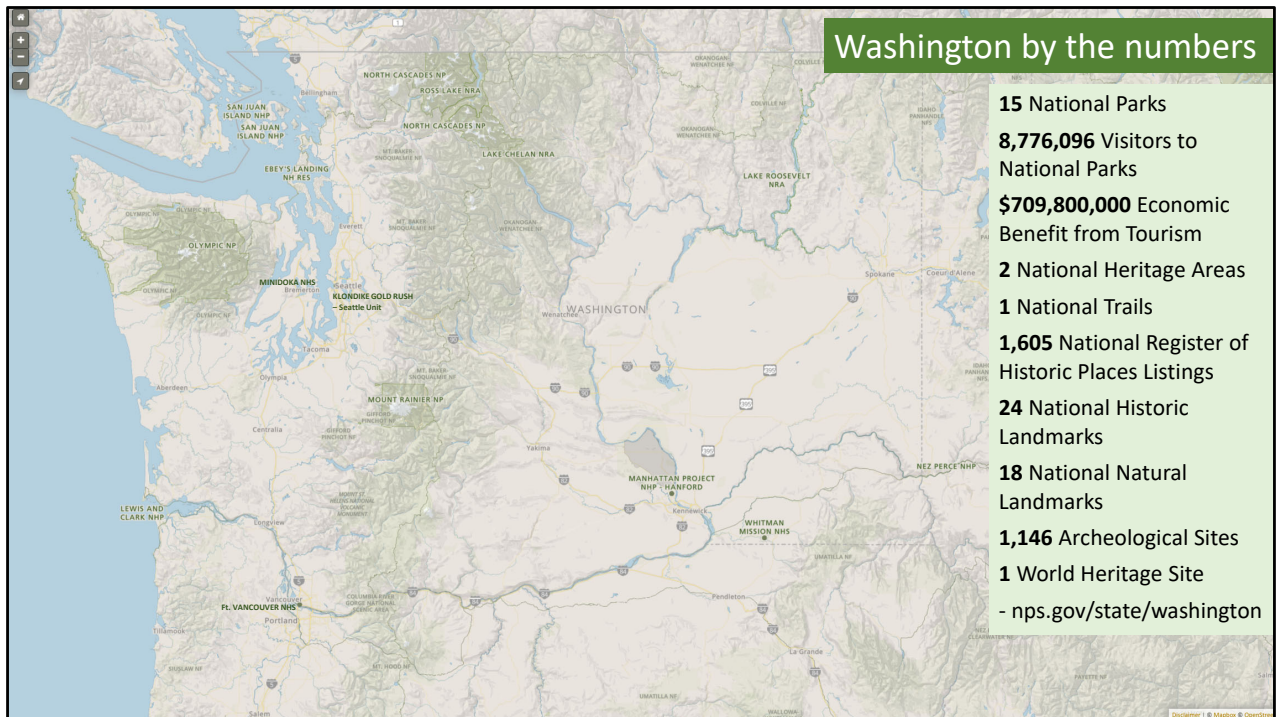
Haze obscures the color and detail in distant features.

NPS photos



As you know, the NPS is one of three Federal Land Managers (FLMs) with responsibility for the 156 Class I areas nationwide. The NPS manages 48 Class I areas including Mount Rainier, North Cascades, and Olympic National Parks

NPS map of Class I areas, 2020



Units managed by the National Park Service in Washington

1. [Ebey's Landing](#) National Historical Reserve in Coupeville, WA
2. [Fort Vancouver](#) National Historic Site in Vancouver, OR,WA
3. [Klondike Gold Rush - Seattle Unit](#) in Seattle, WA
4. [Lake Roosevelt](#) National Recreation Area on the Canadian border going to Coulee Dam along the Columbia River, WA
5. Lake Chelan National Recreation Area in Stehekin Valley, WA
6. [Lewis and Clark](#) National Historical Park from Long Beach to Cannon Beach, OR,WA
7. [Manhattan Project](#) National Historical Park in NM,WA,TN
8. [Minidoka](#) National Historic Site in Jerome, ID & Bainbridge Island WA
9. [Mount Rainier](#) National Park in Ashford, Enumclaw, Packwood, Wilkeson, WA
10. [Nez Perce](#) National Historical Park in four states ID,MT,OR,WA
11. [North Cascades](#) National Park in Marblemount, WA
12. [Olympic](#) National Park
13. Ross Lake National Recreation Area in Marblemount, WA
14. [San Juan Island](#) National Historical Park in Friday Harbor, WA
15. [Whitman Mission](#) National Historic Site in Walla Walla, WA

Affiliated areas:

- [Ice Age Floods](#) National Geologic Trail in WA,OR,ID,MT
- [Lewis & Clark](#) National Historic Trail in Sixteen States: IA,ID,IL,IN,KS,KY,MO,MT,NE,ND,OH,OR,PA,SD,WA,WV
- [Oregon](#) National Historic Trail in ID,KS,MO,NE,OR,WA,WY
- [Wing Luke Museum](#) Affiliated Area in Seattle, WA

2019 [Visitor Spending Effects - Economic Contributions of National Park Visitor Spending - Social Science \(U.S. National Park Service\) \(nps.gov\)](#)

NPS map. 2021.



Mt. Rainier is so large it can create its own weather. View from outside the Jackson Visitor Center.



Olympic coast sea stacks, Olympic National Park. Credit:

WA Class I Parks Fundamental Resources Values... Clean Air, Scenic Vistas and Viewsheds



Glacier-covered peaks rise above blue waters of Ross Lake, North Cascades National Park.

NPS Class I Areas in Washington

A National Park's Foundation Document identifies the park's purpose, significance, fundamental resources and values. Fundamental resources and values are those features, systems, processes, experiences, stories, scenes, sounds, smells, or other attributes determined to merit primary consideration during planning and management processes because they are essential to achieving the purpose of the park and maintaining its significance.

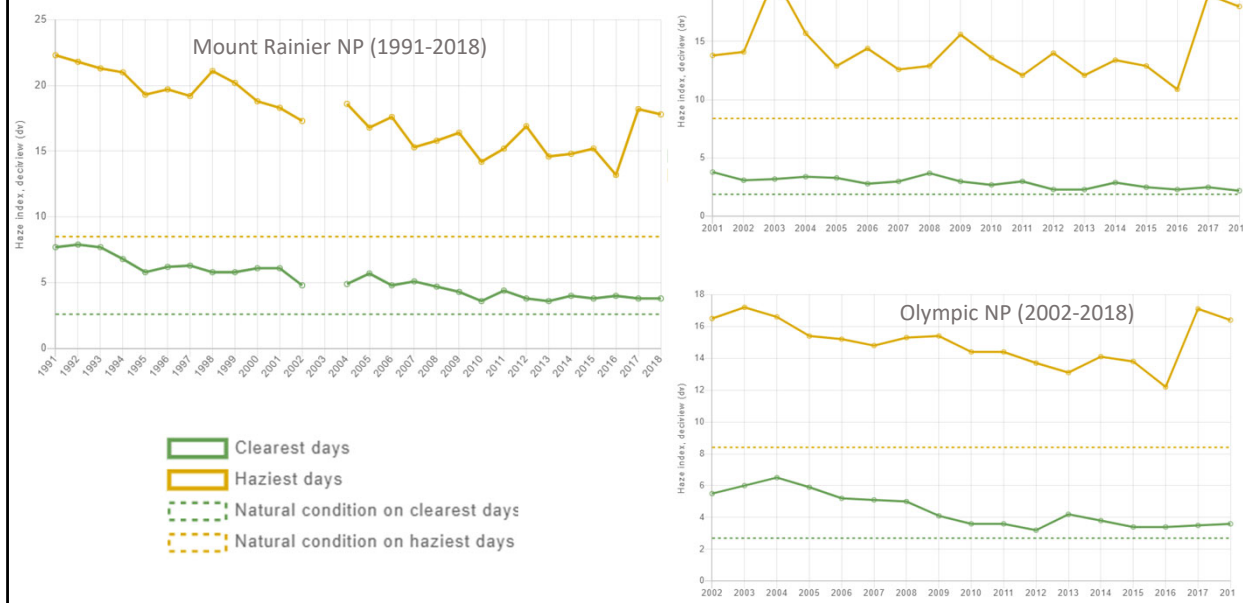
Across the three Class I parks in WA—ALL include scenery as a fundamental resource value with MORA and OLYM explicitly calling out clean air, scenic vistas and viewsheds.

The purpose of North Cascades National Park is to preserve a dynamic wilderness landscape of dramatic alpine scenery including a vast expanse of glaciated peaks, countless cascading streams, and deep forested valleys for the benefit and inspiration of all. The park's Foundation document also states "North Cascades landscapes, defined by majestic mountain scenery that includes alpine meadows, countless cascades, towering mountains, and forested valleys, were formed by dynamic ecological and geophysical processes that are still active in the complex today. Natural soundscape, dark night skies, and good air quality predominate, supporting natural ecosystem function and providing an unrivaled wilderness experience."

Important to highlight, air quality contributes to the ecological health of the park's flora and fauna.

*NPS photos of Mount Rainier and Olympic NPs
North Cascades NP photo ©Andy Porter*

Long-term Visibility Trends



There is a long history of visibility monitoring in our Class I areas in Washington.

- Mount Rainier: 30 years
- North Cascades: 20 years
- Olympic: 19 years

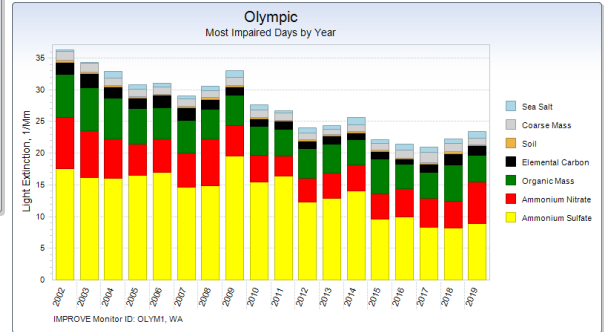
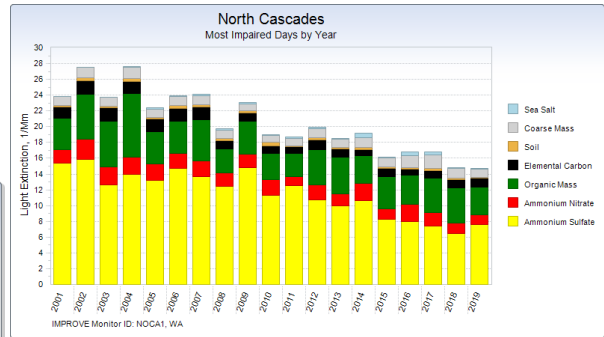
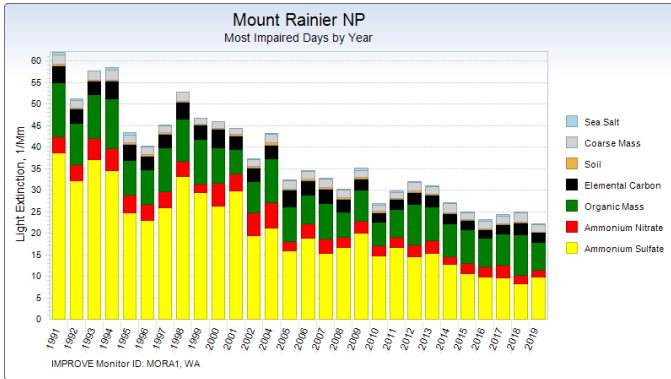
Monitoring data show significant improvement on both the haziest and clearest days since the late 1990's. The regional haze metric is now based on most-impaired days rather than haziest. Still, it is interesting to see the range of visibility conditions experienced by park visitors and monitored in the park. Also, note that 2017 was a high fire year in the Pacific Northwest, likely accounting for the elevated haze on haziest days across the region that year.

Progress has been made since the first Regional Haze planning phase, and we want to continue to make progress over this second planning phase as well.

Long term visibility trend graphs from:

- Mount Rainier NP: [https://www.nps.gov/subjects/air/park-conditions-trends.htm?tabName=trends&parkCode=MORA¶mCode=Visibility&startYr=1989&endYr=2018&monitoringSite=MORA1%20\(IMPROVE\)&timePeriod=Long-term](https://www.nps.gov/subjects/air/park-conditions-trends.htm?tabName=trends&parkCode=MORA¶mCode=Visibility&startYr=1989&endYr=2018&monitoringSite=MORA1%20(IMPROVE)&timePeriod=Long-term)
- North Cascades NP: [https://www.nps.gov/subjects/air/park-conditions-trends.htm?tabName=trends&parkCode=NOCA¶mCode=Visibility&startYr=2001&endYr=2018&monitoringSite=NOCA1%20\(IMPROVE\)&timePeriod=Long-term](https://www.nps.gov/subjects/air/park-conditions-trends.htm?tabName=trends&parkCode=NOCA¶mCode=Visibility&startYr=2001&endYr=2018&monitoringSite=NOCA1%20(IMPROVE)&timePeriod=Long-term)
- Olympic NP: [https://www.nps.gov/subjects/air/park-conditions-trends.htm?tabName=trends&parkCode=OLYM¶mCode=Visibility&startYr=2002&endYr=2018&monitoringSite=OLYM1%20\(IMPROVE\)&timePeriod=Long-term](https://www.nps.gov/subjects/air/park-conditions-trends.htm?tabName=trends&parkCode=OLYM¶mCode=Visibility&startYr=2002&endYr=2018&monitoringSite=OLYM1%20(IMPROVE)&timePeriod=Long-term)

Haze Composition on Most Impaired Days



These annual extinction bar graphs show that over the period of record, light extinction has decreased on most impaired days. Ammonium sulfate historically dominated impairment and is still the most important contributor to anthropogenic haze in NPS Class I areas in Washington. Ammonium nitrate is most significant for Olympic NP and will likely be a proportionally more significant component of haze at all three areas as ammonium sulfate levels continue to decrease. Notice that the most impaired days metric does not show a spike in 2017 when regional wildfires caused impairment on haziest days to spike. This is a good indication that the most impaired days metric is appropriately focusing on days affected primarily by emissions from anthropogenic sources.

Most-impaired days annual light extinction composition stacked bar graph from: <http://vista.cira.colostate.edu/Improve/aqrv-summaries/>

Source Selection

- NPS initially recommended 19 sources for consideration.
- Washington engaged with us early and selected 17 sources for analysis including 15 that we originally recommended.
- We are satisfied that Washington considered the point sources with the greatest potential to affect visibility in our Class I areas.



Kudos to Washington for being the first western state to engage with the NPS on source selection back in 2018 and for selecting a reasonable set of sources to evaluate.

Our original recommendations for source selection were based on a Q/d analysis of Washington sources affecting NPS managed Class I areas where Q was $(NO_x + SO_2)$. We used a maximum distance of 1,000km and selected facilities contributing to the top 80% of visibility impairment at each NPS Class I area.

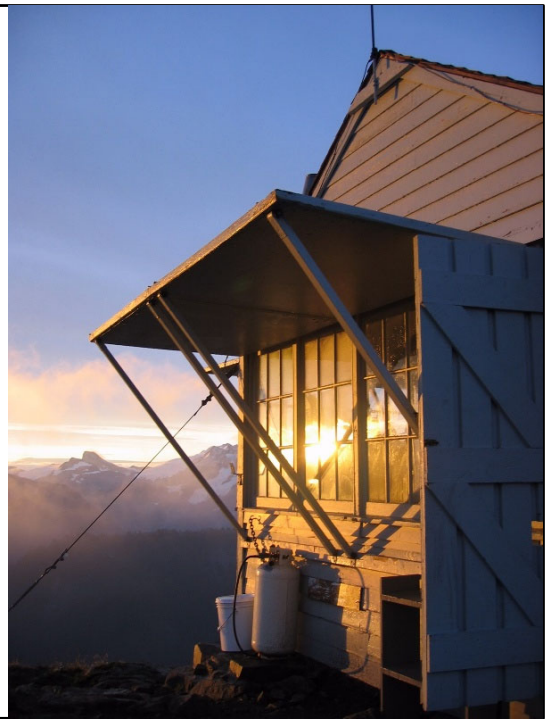
Washington used a Q/d threshold of 10 that was modified to include two additional sources. Even though this Q/d is high, in this case, the result was satisfactory.

Sources selected for analysis by Washington included 15 of the original 19 that we recommended including **our top 13 sources**.

NPS Photo of Fiddlehead Ferns in Olympic NP by Mike Gurling.

Aluminum Production

- We appreciate Washington's stipulation through Agreed Orders that Alcoa facilities will need to conduct complete four-factor analyses if they come out of curtailment.
- We request notification and opportunity to review the analyses if this occurs.



During our call, Ecology shared that a local air district is working with Alcoa on nonattainment issues relevant to the Intalco facility. They are expecting a permit modification that will require emission controls before re-starting. This will be a permit change, minimum condition meaning, if they re-start the facility this is the condition they have to be in. Evidence may suggest that if they extend emission stacks that would get them out of non-attainment, but Washington law does not allow facilities to extend stacks just for dispersion purposes. The state and facility are looking at wet scrubber feasibility. Intalco is also working on data to input into the models. The Agreed Order pertaining to Regional Haze will still be required This should improve potential future analyses as they will have and they will have real costs from the recent PSD process.

Ecology staff will add NPS staff to list serve regarding SIP development for nonattainment areas.

Ecology also provided an update that, Wenatchee closed a couple of years ago and is no longer in curtailment. This facility is approaching the its end of life without operations (i.e., losing production capacity). IMPROVE monitors may already be showing changes due to curtailments as actual emissions have been lower than permitted emissions in recent years.

NPS Photo of Sunrise at Copper Lookout in North Cascades NP.

Refineries

- This industry is responsible for a significant portion of haze causing air pollution affecting NPS Class I areas in Washington.
- Emission control opportunities are likely technically feasible and cost effective.
- All technically feasible, cost-effective controls that can reduce haze causing emissions from sources affecting visibility in Class I areas should be required in this planning period.

Refineries are responsible for a significant portion of haze causing air pollution affecting NPS Class I areas in Washington. For example, the top two sources contributing to visibility impairment at North Cascades National Park are the BP Cherry Point and Tesoro Northwest Refineries.

NPS ARD staff provided technical review of the Refinery sector four-factor analyses to Washington Ecology staff in November, 2020. We support Ecology's use of the EPA Cost Control Manual to correct facility/consultant estimates when calculating the cost-effectiveness of technically feasible controls. We agree that SCR is likely cost effective and would be a robust approach to reducing NO_x emissions in the region.

Refineries (continued)

- Reliance on the state RACT process is not appropriate. In fact, this approach circumvents the Regional Haze Rule by avoiding
 - Established Timelines
 - FLM involvement
 - Four-factor based criteria for requiring controls
- States should have sufficient authority to implement any SIP that the state adopts.
- WA should not need to fall back on a RACT rule that may provide less stringent controls and undermine the ability for the FLMs to provide input on controls.

From WA Ecology draft SIP (pg 201):

Ecology's initial review of the refineries' FFA for SCRs indicated the results were very different from the EPA Control Cost Manual for SCR systems and worksheet model. Ecology compared the EPA Control Cost Manual costs to the refineries FFA. Ecology's results using the EPA Control Cost Manual were that SCR controls were cost-effective for the FCC units and various heaters/boilers. Because the Class I Areas in the state are meeting reasonable progress goals, Ecology does not have enforcement authority to implement controls under the Regional Haze Rule (RHR). Ecology decided to use the RACT statute (RCW 70A.15.2230) and do a RACT analysis using information from the refineries and the EPA Control Cost Manual in an action separate from this RH SIP.

Ecology plans to use our state's RACT process to identify reasonable controls and subsequent rulemaking to enforce controls that are identified in the RACT analysis. Because the timeframe for doing a RACT analysis and rulemaking is long (approximately three years) and the installation needs to be aligned with scheduled maintenance, Ecology is being proactive and laying the groundwork for controls needed in the next implementation period (2028 – 2038).

We note, EPA has been clear that 2028 projections below the URP glidepath do not represent a "safe harbor" for avoiding otherwise reasonable emission controls. Further, states should have sufficient authority to implement any SIP that the state adopts. As Ecology outlines in the draft SIP the RACT process is expected to take at least three years and will rely on criteria other than the CAA RP defined four-factors to identify controls that are "reasonably available." This extended timeline and alternate process circumvent the Regional Haze Rule and will not apply the same level of rigor for reducing haze causing emissions that affect our Class I areas.

Discussion: WA Ecology staff do not have options other than the RACT process available at this time. Ecology emphasizes that their rulemaking process can include NPS involvement and that they intend to take any comments NPS provides for the draft RH SIP. NPS staff recognize that the public comment period includes FLMs as well, but this is different from our special review/input role under the RHR. We understand this isn't an issue that can be quickly fixed but wanted to highlight this as an issue that is of concern to us. Refineries are the biggest sources of haze causing emissions affecting NPS Class I areas in WA. Whatever the process, we support Washington Ecology's efforts to reduce emissions from this sector.

Pulp & Paper

- The costs of potential emission controls are consistently overestimated in the four-factor analyses for this industry. This results from:
 - Unsupported retrofit factors (> 1)
 - Overestimated fuel costs
 - Improperly handled control equipment operating hours (entered directly)
 - Incorrect CEPCI (too low)
 - Normalized stoichiometric ratio overestimated for SNCR on solid fuel boilers
- Based on our analysis a number of the emission reduction technologies evaluated are below the state's cost effectiveness threshold and should be required. We will follow up with detailed analyses.
- We recommend that Ecology consider setting a cost-effectiveness threshold similar to the \$10,000/ton threshold established by Oregon. This would promote a "level playing field" for Pulp & Paper in the region.

Based upon our application of the methods described in EPA's Control Cost Manual, the reduced control costs and resulting improved cost-effectiveness indicate that additional emission units should be controlled.

NPS will provide source-specific calculation worksheets and summary documentation for Washington's consideration.

*Note include CEPCI definition... (Chemical Engineering Plant Cost Index)

Visibility Benefit

- Washington identifies several technically feasible and cost-effective emission control opportunities for pulp & paper facilities in the draft SIP and chooses not to require these controls based on a 2016 visibility benefit study.
- This study is both irrelevant to the SIP and technically flawed.
 - Individual facility emission control decisions should be based upon the four factors identified in the Clean Air Act and not introduce visibility benefit as a fifth factor.
 - The 2016 modeling study improperly modeled individual controls against a dirty background.
- Adverse Impact Determination by FLMs for a specific facility are not relevant to reasonable progress determinations.

While the degree of visibility improvement as a result of emission controls was considered in BART determinations, the CAA explicitly omits this factor from Reasonable Progress determinations. This explicit omission recognizes the cumulative nature of visibility impairment and the eventual necessity of controlling numerous small sources to achieve the ultimate visibility goal of no human-caused impairment.

Based upon Ecology's 2016 Pulp & Paper RACT Analysis, Ecology has determined that visibility improvements resulting from additional controls at the pulp & paper mills are not enough to warrant their cost.

There are two fundamental flaws in the Ecology rationale:

- Visibility is not a "fifth-factor" "off-ramp" under the Reasonable Progress provisions of the Clean Air Act.
- In that 2016 analysis, Ecology modeled 2007 baseline actual emission rates and the potential RACT emission rates using CMAQ against a "dirty" background. This is contrary to EPA guidance and underestimates the visibility benefits of reducing emissions.

The adverse impact argument is irrelevant. The potential for an adverse impact determination only occurs when new emissions from a major source or major modification rise to the level that the FLM has no other recourse. Instead of these rare instances, the facilities under review here are already in existence and have much greater emissions. Due to such ongoing emissions, the Department of the Interior made a determination in 1985 that all Class I areas it administered were experiencing impaired visibility—that determination has not been changed and is supported by current visibility monitoring data. For example, our monitoring data indicates that visibility in Mount Rainier, North Cascades, and Olympic National Parks is "fair" and unchanging.

Cement

- Ash Grove Cement has approved 30-day NO_x limit of 5.1 lb/ton clinker and an installed SNCR system used on as-needed basis.
 - Other cement plants with SNCR have substantially lower limits (e.g., CEMEX Lyons at 1.85 lb/ton clinker)
- The draft SIP defers evaluation of NO_x reductions from requiring SNCR to next planning period because state's Class 1 areas are making progress
 - 2028 projections below the URP glidepath do not represent a "safe harbor" for avoiding otherwise reasonable emission controls.
- As SNCR is clearly reasonable, its routine use should be required to reduce emissions in this planning period

Ash Grove Cement has an existing SNCR system but is currently using only as needed to meet its current NO_x limit. We note that other cement facilities equipped with SNCR are meeting significantly lower NO_x emissions rates.

The Washington draft SIP states the following:

"Washington is making reasonable progress at all of the state's Class I Areas and additional NO_x emission reductions are not included in the long-term strategy, so Ecology plans to work with PSCAA and Ash Grove to optimize the proposed SNCR system for additional potential NO_x reductions during the next implementation period."

This suggests that Ash Grove will not be required to routinely use its SNCR to reduce NO_x emissions until some time after 2028.

Ecology clarified during consultation that the local air agency is presently updating the air permit, which will require the use of the SNCR system. Ecology further shared that the permit update will occur during the current planning period.

NPS encourages Ecology to seek the maximum achievable NO_x reductions to protect visibility in Class I areas and to clarify the current status of permitting for this facility in the draft SIP.

Glass Manufacturing

- Cardinal FG Company Winlock is installing SCR for NO_x control in 2021
- NO_x annual limits will be reduced by almost 600 tons
- We appreciate the company's voluntary installation of controls and reduction in haze-causing pollutants



Discussion: NPS ARD staff requested to be informed when the facility's permit was updated to reflect new limits using the SCR system. Ecology indicated the permit update was complete and directed NPS to the final permit for Cardinal Flat Glass Manufacturing:

<https://www.swcleanair.gov/docs/permits/Final/20-3409ADP.pdf>

Photo of Panhandle Gap in Mount Rainier NP by Jeff Hollett

Next Steps

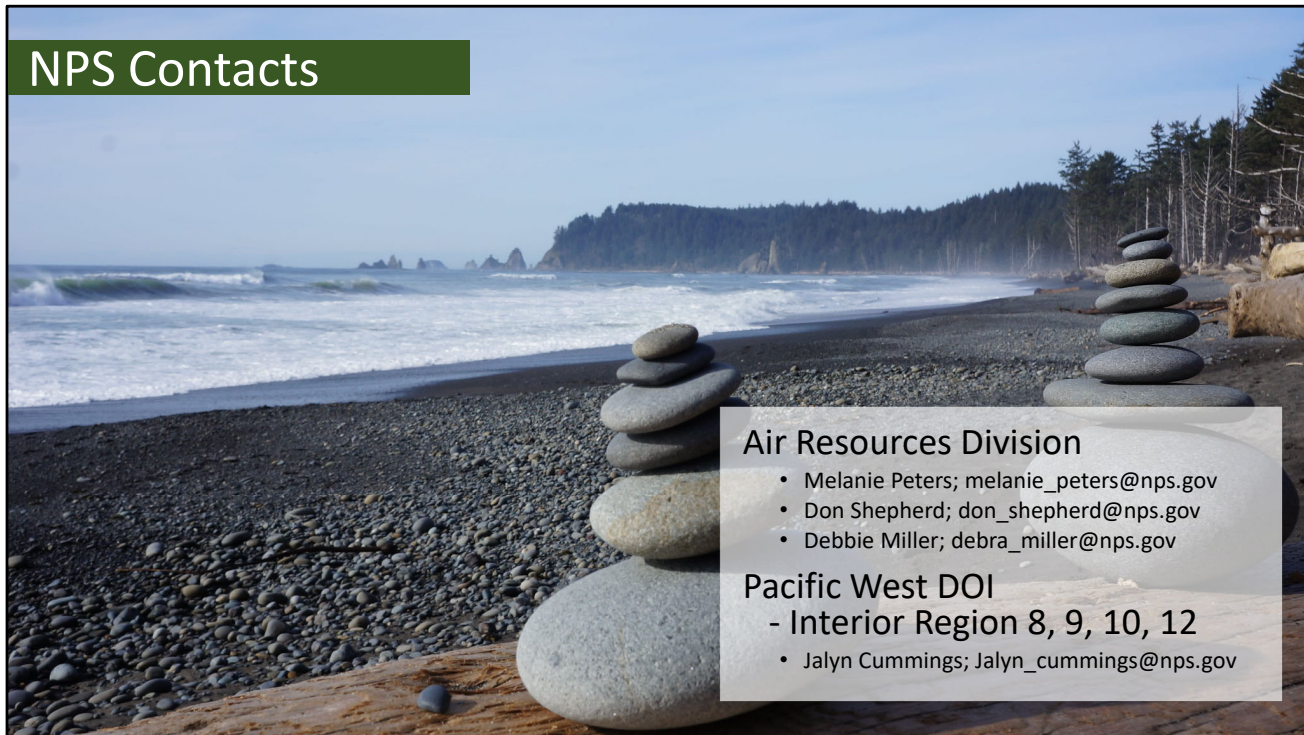


- Thank you for meeting with us!
- Please share:
 - Anticipated SIP schedule
 - How you will respond to NPS comments
- Please let us know:
 - When public comment period opens
 - If/when a public hearing will be held
- The NPS will:
 - Email call summary & supplementary information
 - By **June 29, 2021**
 - Share our comments with EPA Region 10

The NPS will submit an email summary of our June 16, 2021 consultation call along with final review comments by June 29, 2021.

We ask that the state notify us when the draft SIP will be open for public review and comment, and alert us to any public hearing dates.

NPS Contacts



Air Resources Division

- Melanie Peters; melanie_peters@nps.gov
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- Debbie Miller; debra_miller@nps.gov

Pacific West DOI

- Interior Region 8, 9, 10, 12

- Jalyn Cummings; Jalyn_cummings@nps.gov

Please reach out to us with any questions.

For any formal notifications of public documents, please include the above list of NPS staff.

The NPS values clean air and clear views and recognizes these as essential to our visitor experience and the very purpose of our Class I areas in Washington. We recognize opportunities for significant progress to be made in this planning period as we strive toward the goal of unimpaired visibility. We welcome future opportunities to engage with Washington Ecology and work together on efforts to reduce haze causing pollution and address regional haze in our national parks.

NPS photo of Rialto Beach, Olympic NP by R McKenna