DEPARTMENT OF ECOLOGY
State of Washington

Washington State Implementation Plan Revision

Interstate Transport of $PM_{2.5}$

Addressing requirements for the 2012 Primary Annual $PM_{2.5}$ National Ambient Air Quality Standard

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For more information contact:

Air Quality Program
P.O. Box 47600
Olympia, WA 98504-7600
Phone: 360-407-6800

Washington State Department of Ecology — www.ecology.wa.gov

- Headquarters, Olympia 360-407-6000
- Northwest Regional Office, Bellevue 425-649-7000
- Southwest Regional Office, Olympia 360-407-6300
- Central Regional Office, Union Gap 509-575-2490
- Eastern Regional Office, Spokane 509-329-3400

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Washington State Implementation Plan Revision
Interstate Transport of PM2.5

Addressing requirements for the 2012 Primary Annual National Ambient Air Quality Standards

Air Quality Program
Washington State Department of Ecology
Olympia, Washington

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Executive Summary

The federal Clean Air Act requires Washington to ensure that neither its sources nor any other type of emissions activity contribute significantly to areas with high levels of air pollution in other states. These requirements are often referred as the "good neighbor" provisions of the Clean Air Act. Their objective is to ensure that downwind states are protected from harmful emissions originating in upwind states.

In 2012, EPA strengthened the National Ambient Air Quality Standards (NAAQS) for PM2.5. The revised 2012 standard triggered the requirement for Washington to assess contributions to areas with PM2.5 concerns in neighboring states. In this submittal, Ecology demonstrates that Washington sources do not contribute significantly to nonattainment, or interfere with maintenance, of the 2012 Annual PM2.5 NAAQS in any other state.

Fine particles (PM2.5) are particulate matter that are 2.5 micrometers in diameter or smaller. PM2.5 comes from combustion processes (e.g., wood stoves, fireplaces, exhaust from vehicles, ships and trains, and industrial processes) or forms in the atmosphere from precursors such as NOx and SO2[1]. Exposure to fine particles is associated with respiratory diseases, decreased heart and lung function, asthma attacks, heart attacks, strokes and premature death.

Ecology reviewed existing ambient monitoring data, emissions inventories, topography and meteorology features, technical support documents, and the latest design values to establish potential "red flags" indicative of a significant PM2.5 transport to neighboring states. Because EPA did not issue specific guidance for this document, Ecology referenced methodologies from previous PM2.5 interstate transport SIP documents and consulted EPA staff throughout the project.

Ecology concludes that Washington sources do not contribute significantly to nonattainment, or interfere with maintenance, of the 2012 Annual PM2.5 NAAQS in any other state.

[1] See the Interstate Transport SIP revision for the 2010 1-hour SO2 NAAQS

Introduction

Ecology submits this State Implementation Plan (SIP) revision to address the requirements of the Clean Air Act (CAA) with regard to the 2012 PM2.5 NAAQS. The bulk of this revision addresses Section 110(a)(2)(D)(i) - I, commonly referred to as "Prongs I and II," which requires states to have adequate provisions to prohibit any source or other type of anthropogenic air emissions activity within the state from contributing significantly to nonattainment or interfering with maintenance in any other state.

The requirements to control interstate transport of pollutants are often referred to as "good neighbor" provisions of the CAA. The intent of the provisions is to ensure that residents and the welfare of downwind states are protected from harmful emissions originating in upwind states. The Washington SIP, codified in 40 CFR 52 Subpart WW, prohibits any source or type of emissions within the state from significantly contributing to nonattainment or interfering with maintenance in another state.

This document describes the analysis developed by Ecology in support of this SIP revision. Ecology did not find an indication that Washington sources contribute to nonattainment, or interfere with maintenance, in any other state with respect to the 2012 PM2.5 NAAQS

Difference between Public Comment Draft and Final Draft

Ecology made the following changes to the public comment draft version of this document:

- Added this section
- Completed Appendix B after the conclusion of the public comment period
- Added Appendix C: SIP Adoption Order
- Corrected non-substantive errors (formatting, grammar, spelling, etc.).

Background

Particulate matter is one of the "criteria pollutants" under the federal Clean Air Act (CAA). Fine particulate matter, or PM2.5, describes particulate matter that is 2.5 micrometers in diameter and smaller. Sources directly emit primary fine particles, while secondary fine particles form in the atmosphere from gases emitted by sources. Sulfur dioxide (SO2), ammonia (NH4) and nitrogen oxides (NOx) are the precursors for ammonium bisulfate ((NH4)HSO4), ammonium sulfate ((NH4)2SO4) and ammonium nitrate (NH4NO3) – particles that often constitute major fractions of PM2.5. Volatile organic compounds (VOCs) may also contribute to secondary organic aerosol (SOA)

EPA established the nation's first air quality standards for particulates in 1971 and significantly revised the standards in 1987, when EPA established the particulate matter (ten microns or less or PM10) NAAQS. In 1997, EPA separated particulate air quality regulations into PM2.5 and PM10 because of the differing health impacts. EPA set the primary and secondary NAAQS for PM2.5 at 65 µg/m3 averaged over a 24-hour period and an annual concentration of 15 µg/m3

based on a three-year average of the annual arithmetic mean PM2.5 concentration from one or more community-oriented receptors. In 2006, EPA revised the 24-hour standard for PM2.5 from 65 µg/m3 to 35 µg/m3. In January 2013, EPA created a new primary annual PM2.5 standard at a threshold of 12 µg/m3. EPA retained the secondary annual PM2.5 standard of 15 µg/m3 and the 24-hour standard for PM2.5 at 35 µg/m3

Sections 110(a)(1) and (2) of the CAA require states to submit a SIP revision within three years of the promulgation of the new standards for the implementation, maintenance, and enforcement of the new standards. Given this requirement, this revision for the 2012 Annual PM2.5 standard was due no later than December 14, 2015.

Ecology referred to several EPA publications and memos for guidance while developing this SIP revision.[2] In EPA's most recent complete guidance publication, 2009's "Guidance on SIP Elements Required Under Section 110(a)(1) and (2) for the 8-hour Ozone and PM2.5 NAAQS" (Harnett Guidance), EPA directed states to develop an adequate technical analysis to support state's findings and conclusions. In regards to the contribution to nonattainment requirement, the guidance stated:

> Information to support state's determination with respect to significant contribution to nonattainment might include, but is not limited to, information concerning emissions in the state, meteorological conditions in the state and the potentially impacted states, the distance to the nearest area that is not attaining the NAAQS in another state, and air quality modeling.

With respect to the interference with maintenance requirement, the guidance stated:

> A state's submission for the requirement should provide the technical information with the state deems appropriate to support its conclusions. Suitable information might include, but is not limited to, information concerning emissions in the state and the potentially impacted states, monitored ambient concentrations in the state and the potentially impacted states, and air quality modeling.

Many complex factors influence the transport and dispersion of air pollutants in the ambient air. Among the most relevant are:

- Global and regional weather and climate patterns
- Topography
- Location of emission sources

In general, the concentration of the pollutant decreases as it travels from the point of release, dispersing by wind and other natural phenomena. Air quality modeling is the best tool to

[2] EPA released a memo in March 2016 related to interstate transport SIP development that described the basic framework and reviewed relevant modeling data. EPA suggested that the document was not a complete guidance publication specific to this SIP revision, but rather to initiate discussion that would facilitate state development and EPA review of interstate transport SIPs.

estimate the amount of pollutants transported regionally. Such modeling requires significant technical resources that are not currently available at the state level.

The regional modeling performed originally for the Clean Air Interstate Rule (CAIR) assists the eastern states in understanding interstate transport of PM2.5.[3] No such modeling is available for the western states, which are responsible for developing each their own technical analysis and methodology to support their findings.

Washington's approach

In the absence of updated EPA guidance and regional-scale modeling specific to PM2.5 transport in western states, Washington's approach was to assess existing data and relevant factors for potential "red flags" indicative of a significant PM2.5 transport. Ecology thinks the following factors warrant this approach:

- Washington did not receive notice from any other state or EPA indicating that Washington sources significantly contribute to nonattainment or interfere with maintenance of the PM2.5 NAAQS in those states. On the contrary, all interjurisdictional conversations affirmed that Washington sources are not significantly affecting nonattainment in other states.
- Local PM2.5¬ emissions are the principal contributors to the PM2.5 nonattainment areas in the western U.S.
- The western part of the U.S. does not have PM2.5 transport problems to an extent comparable to the eastern states.

As part of this analysis, Ecology reviewed:

- Washington's topography, meteorology, and common PM2.5 sources in each climatic region
- Current and projected PM2.5 precursors emission inventory for the state
- Technical Support Documentation (TSD) prepared by EPA for PM2.5 nonattainment areas involved in this analysis
- TSD prepared by EPA to complement interstate transport submission documents prepared by neighboring states
- Latest design values for Oregon and Idaho counties neighboring Washington

The next section describes factors that affect transport of PM2.5 such as topography and meteorology as well as current and projected Washington's emission inventories of PM2.5 and its precursors (NOx and SO2). The technical assessment section includes a description of the selection methodology and factors considered in the analysis. The transport assessment section details findings for each receptor, supported by ambient data, data from the individual receptors, and technical documentation reviewed.

[3] 70 FR 25172, May 12, 2005 (https://www.gpo.gov/fdsys/pkg/FR-2005-05-12/pdf/05-5723.pdf)

Factors impacting transport of $PM_{2.5}$

Topography, meteorology, and common $PM_{2.5}$ sources[4]

The climatic elements of Washington State combine to produce a predominantly marine-type climate west of the Cascade Mountains and a mixed continental and marine climate east of the Cascades. Considering its northerly latitude, 46° N to 49° N, Washington's climate is mild.

There are several climatic controls that have a definite influence on the climate: terrain, the Pacific Ocean, and semi-permanent high and low pressure regions located over the North Pacific Ocean. The effects of these controls combine to produce entirely different conditions within short distances.

The Cascade Mountains, 90 to 125 miles inland and 4,000 to 10,000 feet in elevation, are a topographic and climatic barrier separating the state into eastern and western Washington. The wet season begins in October, reaches a peak in winter, and then gradually decreases in the spring. High peaks in the Cascades are snowcapped throughout the year. The Columbia River originates at Columbia Lake, British Columbia in the Canadian Cascades before entering near the northeastern corner of Washington and flows in a semi-circular pattern on the eastern slope of the Washington Cascades. Before reaching the Pacific Ocean near Astoria, the Columbia drains all of eastern Washington and much of the western slope of the Cascade Mountains with significant tributaries including the Snake, Willamette, Deschutes (Oregon), Spokane, Kootenay, Okanogan, and Pend Oreille Rivers. All told, the Columbia drains approximately 259,000 square miles of the Pacific Northwest.

Reservoirs on the slopes of the Cascades provide an abundance of water for metropolitan areas and hydroelectric projects exist along many of the state's rivers. Hydroelectricity supplies the majority of Washington's electricity requirements on average and the state's hydroelectric production accounts for over 30 percent of the nation's utility-scale hydroelectric generation.[5] Timber covers much of the mountainous areas over the entire state and a major portion of the lowlands west of the Cascades. Species include both conifers (Douglas fir, spruce, hemlock, cedar) and deciduous (big leaf maple, alder, black cottonwood). A dense undergrowth of fern and moss inhabit the rainforests of the Olympic Peninsula. The lower elevations in eastern Washington consist of open stands of Ponderosa pine, rolling grasslands, and volcanic plains. Dryland farming, orchard cultivation, logging, and other forest and agriculture management practices are major activities in these areas.

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[4] Adapted from *2010 Washington State Ambient Air Monitoring Network Assessment*, publication no. 10-02-016 and *Climate of Washington*, Western Regional Climate Center (https://wrcc.dri.edu/Climate/narrative_wa.php)

[5] The US Energy Information Administration's April 2017 Report estimated that hydroelectricity makes up just over 80 percent of the state's electricity inventory. This changes annually based largely on melted flow from winter snow pack. Report available here (https://www.eia.gov/state/?sid=WA#tabs-4)

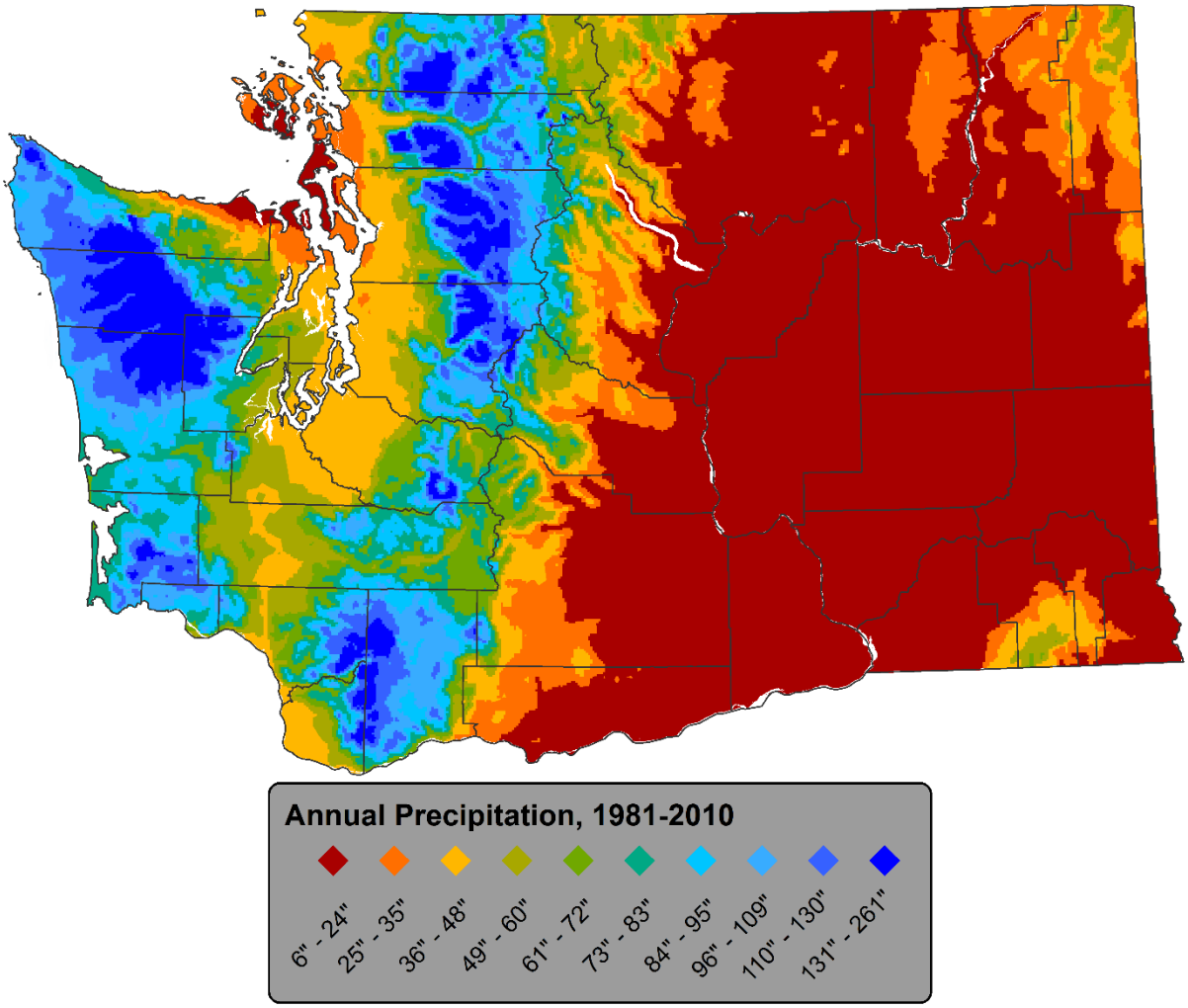

Figure 1: Average annual precipitation in Washington, 1981-2010[6]

Western Washington

West of the Cascade Mountains, summers are cool and comparatively dry while winters are mild, wet, and cloudy. Snowfall is light in the lower elevations and heavy in the mountains. Rain is common in Western Washington with measurable precipitation recorded on about 150 days each year in the interior valleys and 190 days in the mountains and along the coast. During July and August, the driest months, it is common for two to four weeks to pass with little or no precipitation. However, during the wettest months, November and December, precipitation occurs on over 20 days each month. Although Western Washington is well-known for rain, average annual precipitation in the populated lowland areas is significantly less than that of places like Houston, New Orleans, and Mobile.[7]

The highest summer and lowest winter temperatures typically occur during periods of easterly winds. Western Washington's agriculture is confined mostly to the river valleys and well-

[6] Prism Climate Group (www.prism.oregonstate.edu)
[7] National Weather Service Precipitation data (https://water.weather.gov/precip/)

drained areas in the lowlands. Although the Cascade Range divides the state into two major climatic regions, there are several climatic areas within each of these regions:.

- The West Olympic coastal area includes the coastal plains and the western slope of the coastal range from the Columbia River to the Strait of Juan de Fuca. This area receives the full force of storms moving inland from over the ocean, thus heavy precipitation and gale force winds occur frequently during the winter season. The "rainforest" area along the southwestern and western slopes of the Olympic Mountains receives the heaviest precipitation in the continental United States, with annual precipitation exceeding 150 inches along the windward slopes. Air pollution sources in this sparsely populated area include a few industries, outdoor/silvicultural burning, and smoke from wood stoves and other home heating devices.
- The Northeast Olympic-San Juan Islands area includes the lower elevation along the northeastern slope of the Olympic Mountains extending eastward along the Strait of Juan de Fuca from near Port Angeles to Whidbey Island and then northward into the San Juan islands. The area is shielded from winter storms moving inland from the ocean by the Olympic Mountains and the extension of the Coastal Range on Vancouver Island. This belt in the "rain shadow" of the Olympic Mountains is the driest area in western Washington. The coldest weather is usually associated with outflows of cold air from the interior of Canada. The few air quality concerns in the area are mostly caused by smoke from wood stoves and other home heating devices in larger communities, outdoor burning, and by certain industrial facilities.
- The Puget Sound Lowlands area includes a narrow strip of land along the west side of Puget Sound southward from the Strait of Juan de Fuca to the vicinity of Centralia and Chehalis and a somewhat wider strip along the east side of the Sound extending northward to the Canadian Border. Variations in the temperature, length of the growing season, fog, rainfall and snowfall are due to such factors as distance from the Sound, the rolling terrain, and influx of air from the ocean through the Strait of Juan de Fuca and the Chehalis River valley. Most of this area is near the eastern edge of the rain shadow of the Olympic Mountains. The prevailing wind direction is south or southwest during the wet season and northwest in summer. This is the most densely populated and industrialized area in the state. Vehicular, industrial, domestic, and marine sources (shipping, ferries) and both vessels and traffic at ports are among the main anthropogenic sources in the area. Summertime PM2.5 concentrations are usually low due to sufficient atmospheric mixing, but conditions of clear skies, light wind, and a sharp temperature inversion during the home heating season (October - March) when homes typically use wood stoves and other heating devices can elevate PM2.5 levels. Some sheltered locations (such as Darrington, Kent, and the Duwamish Valley) can experience a buildup of pollutants even when most other areas are moderately ventilated. Some areas with a high density of wood stove use (South Tacoma, Marysville, Lynnwood,

Darrington, and Bremerton) frequently experience rapid rises of PM2.5 levels in the home heating season, during periods of poor dispersion.

Eastern Washington

This section of the state is part of the large inland basin between the Cascade and Rocky Mountains. East of the Cascades, summers are warmer, winters are colder and precipitation is less than in western Washington. The major agricultural areas are in eastern Washington.

During most of the year, the prevailing direction of the wind is from the southwest or west. The frequency of northeasterly winds is greatest in the fall and winter. Melting snow provides irrigation water for orchards and other agricultural areas in the Okanogan, Wenatchee, Methow, Yakima, and Columbia River valleys. Farmers generally use dry land farming practices in the small-grain growing areas.

- The Okanogan-Big Bend area includes fruit-producing valleys along the Okanogan, Methow and Columbia rivers, grazing land along the southern Okanogan highlands, the Waterville Plateau and part of the channeled scablands. Major air pollution sources are:
    - outdoor burning (year round, except during summer fire safety burn bans)
    - agricultural burning (spring and fall burn seasons)
    - orchard heaters
    - smudge pots
    - silvicultural burning
    - wood stove use
- In rare instances, smoke may become entrained in evening downslope flows and settle in sheltered valleys (examples include Wenatchee, Twisp, Winthrop, Omak, and Leavenworth). Smoke from any combination of these sources, if coupled with a strong temperature inversion and calm conditions often result in elevated PM2.5 concentrations.
- The Central Basin area includes the Ellensburg valley, the central plains area in the Columbia Basin south from the Waterville Plateau to the Oregon border and east to near the Palouse River. This is the lowest and driest section in eastern Washington. Wheat and barley are the most widely grown crops in this area, while alfalfa, lentils, and potatoes grow on a smaller scale. Agricultural and outdoor burns are the main PM2.5 sources. Except for the larger populated cities of Spokane, the Tri Cities, Ellensburg, and Walla Walla, smoke from home heating devices and prescribed burning is not a major concern in this sparsely populated area. Tilling operations, windblown dust, and re-suspended road dust sometimes give rise to elevated levels of PM10.

Emissions Inventory

Washington's latest emissions inventory (2014) shows a departure from normal sector distributions and a significant increase in PM2.5 emissions[8], largely due to that year's deadly and widespread wildfire season (Table 1). The Carlton Complex fires, one of the largest complex fires in Washington State history, burned over 250,000 acres between mid-July and late August and cost nearly $73 million.[9] Ecology estimates that wildfires were responsible for just under 105,000 tons, about 54 percent, of total PM2.5 emissions in 2014.[10]

Ecology reviewed data from the National Emissions Inventory (NEI) 2014[11] for the main PM2.5 precursors. Figures 2 and 3 show statewide NOx and SO2 emissions data by sector and spatial density. Mobile emissions were the most significant source of both NOx and SO2 for the 2014 NEI at 188,543 tons and 12,358 tons, respectively.

Ecology also reviewed PM2.5 emissions data for the 2014 NEI and the statewide emission inventory developed by Ecology. Figure 4 shows PM2.5 emissions by sector and spatial density map from the NEI. Table 1 details anthropogenic emissions according to Washington's preliminary 2014 emissions inventory (EI).

Agriculture dust and burning, residential wood burning, and dust from road were responsible for the lion's share of Washington's 2014 PM2.5 EI (69.7 percent). Although outdoor burning is illegal in all urban growth areas (UGAs)[12] and garbage burning is illegal throughout the entire state[13], just under 8 percent of all PM2.5 emissions in the state were from residential outdoor burning.

Burning and agricultural dust are Washington's most significant anthropogenic sources of PM2.5, followed by residential wood combustion. Primary anthropogenic sources of PM2.5 emission vary significantly by county based on urbanization and primary industries. For example, King's County's largest source of PM2.5 is related to transportation fuel combustion, Whatcom County's largest source is related to industrial processes, and Grant County's largest source is related to agriculture.[14],[15]

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[8] Ecology cannot provide specific comparisons as the methodology for our EI inventory has been updated significantly since the previously published EI in 2011. The 2014 data is preliminary.
[9] Northwest Annual Fire Report, 2014 (https://gacc.nifc.gov/nwcc/content/pdfs/archives/2014_Annual_Fire_Report.pdf)
[10] Washington State Department of Ecology, preliminary 2014 emissions inventory
[11] EPA Air Emission Sources, State and County Emission Summaries (https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data)
[12] RCW 70.94.6514 (http://app.leg.wa.gov/RCW/default.aspx?cite=70.94.6514)
[13] RCW 70.94.6512 (http://app.leg.wa.gov/RCW/default.aspx?cite=70.94.6512)
[14] Washington State Department of Ecology, preliminary 2014 emissions inventory
[15] 2014 EPA Emissions Inventory (https://www3.epa.gov/cgi-bin/broker?polchoice=PM&_debug=0&_service=data&_program=dataprog.national_1.sas)

Table 1: Anthropogenic Source Categories of PM2.5 Emissions in WA[16]

Source Category	2014 Emissions (Tons per year)
Agricultural Tilling and Harvesting	**20,317**
Agricultural and Silvicultural Burning	**18,069**
Residential Wood Combustions	**14,924**
Dust from Roads	**10,033**
Residential Outdoor Burning: yard waste, trash	7,043
Large Point Sources	4,021
On-road Mobile	3,588
Non-road Equipment and Vehicles	2,837
Commercial Cooking	2,735
Dust from Construction	2,543
Industrial/Commercial/Institutional Fuel Combustion	1,521
Livestock Waste	1,221
Commercial Marine Vessels	952
Locomotives	366
Miscellaneous	344
Aircraft	260
Residential non-Wood Fuel	47

*Major sources are in **bold**.

[16] Washington State Department of Ecology, preliminary 2014 emissions inventory

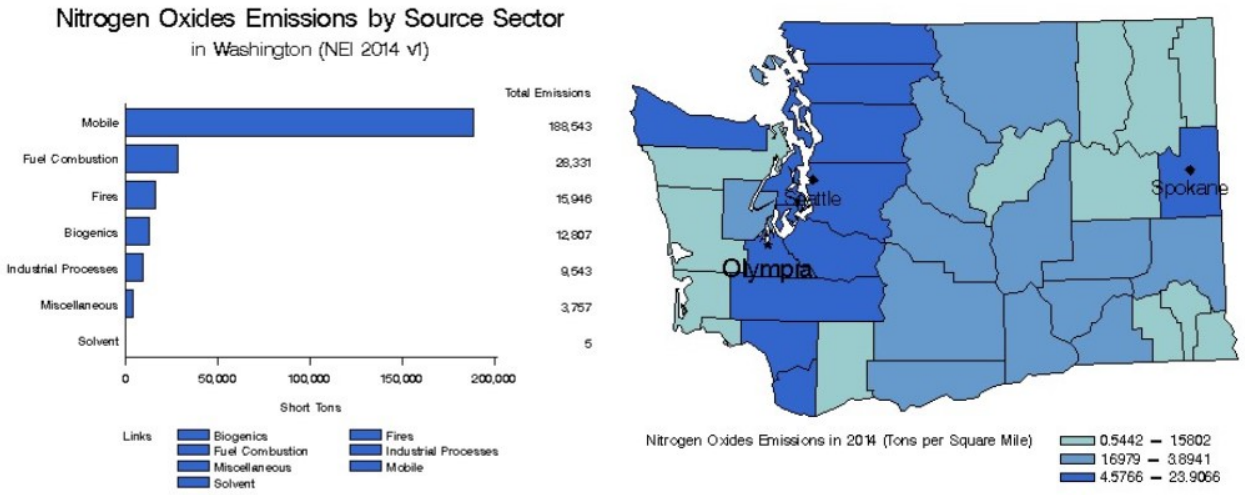

Figure 2: Summary of NO_x emissions in 2014 for Washington[17]

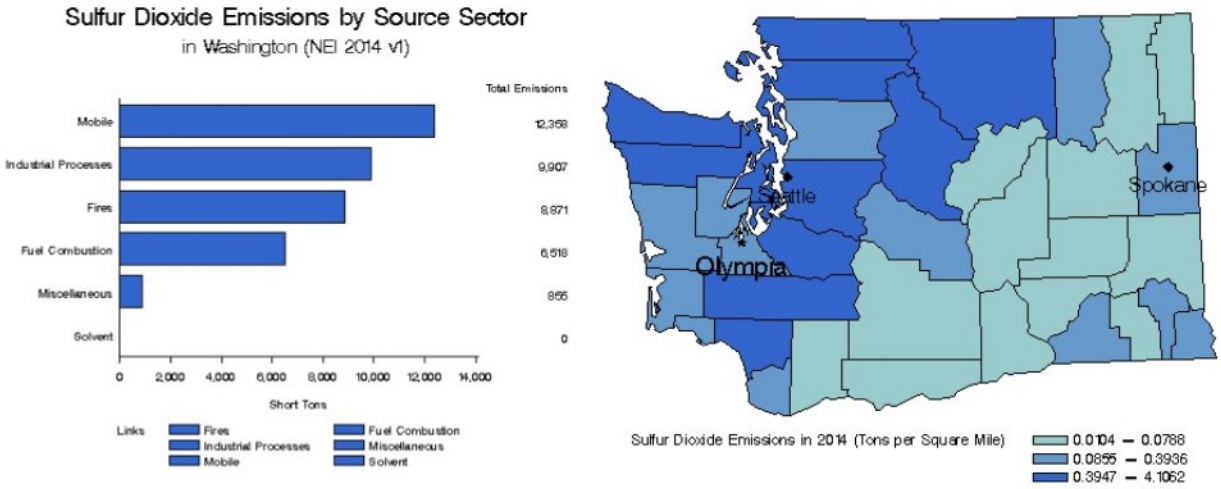

Figure 3: Summary of SO_2 emissions in 2014 for Washington[17]

[17] EPA Air Emissions Inventory (https://www.epa.gov/air-emissions-inventories/where-you-live)

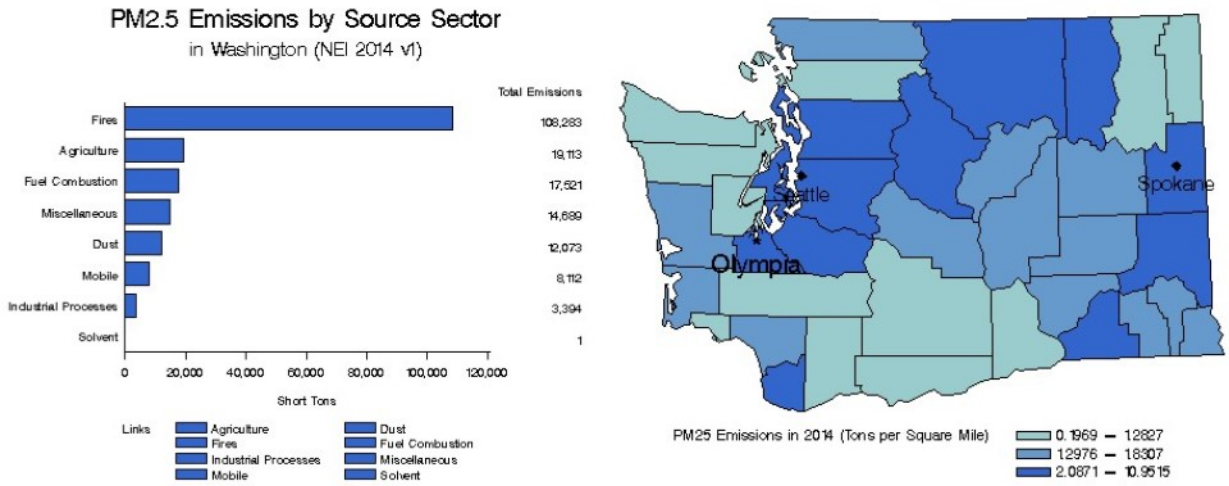

Figure 4: Summary of PM2.5 emissions in 2014 for Washington.[17]

Reducing $PM_{2.5}$ emissions from Washington sources

Some of the programs and regulations that reduce particulate emissions statewide and regionally include:

- Washington's Clean Car Law
- Initiatives to decrease diesel exhaust (e.g. exhaust retrofits, Clean Diesel Grants, Northwest Ports Clean Air Strategy)
- No-Idle Program
- Air Operating Permit Program
- Best Available Retrofit Technology (BART)

Interstate Transport Technical Assessment

Consistent with EPA's approach, the following analysis evaluates the impact of Washington sources on nonattainment or maintenance areas in neighboring states.[18] Ecology identified air quality monitors (referred to as "receptors") in nonattainment with respect to the 2012 Primary Annual PM2.5 NAAQS, according to the selection criteria described in the following section.

Nonattainment and Maintenance Receptor Selection Methodology

For this analysis, Ecology examined receptors currently violating the 2012 Annual PM2.5 NAAQS based on their location and most recent design values.

[18] See NO_x SIP Call, 63 FR 57371 (October 27, 1998); CAIR, 70 FR 25172 (May 12, 2005); and Transport Rule or Cross-State Air Pollution Rule, 76 FR 48208 (August 8, 2011)

Ecology identified five nonattainment receptors most relevant to this analysis (Table 2). There are currently nine nonattainment areas and no maintenance areas for the 2012 PM2.5 NAAQS. One of the nine nonattainment areas is located in Idaho and four are in California. The remaining four nonattainment areas are located in Pennsylvania and Ohio. Given the significant distance between the Pennsylvania and Ohio nonattainment receptors and Washington (> 1,500 miles), Ecology excluded these from further analysis. While there is only one nonattainment receptor in Idaho (West Silver Valley), Ecology identified 36 PM2.5 receptors within California's four nonattainment areas. Ecology narrowed the scope of California receptors in this analysis by focusing only on those identified by California as "high sites," meaning the receptors with the highest design values and that are most likely driving nonattainment (Figure 5).[19]

Table 2 presents a list of monitoring sites in neighboring states currently designated nonattainment areas or classified as nonattainment receptors. Geographic distance is a relevant factor in pollution transport, in general, pollutant concentrations decreases with distance from the point of release. Ecology anticipates that impacts to California receptors by Washington sources are less than to Idaho receptors.

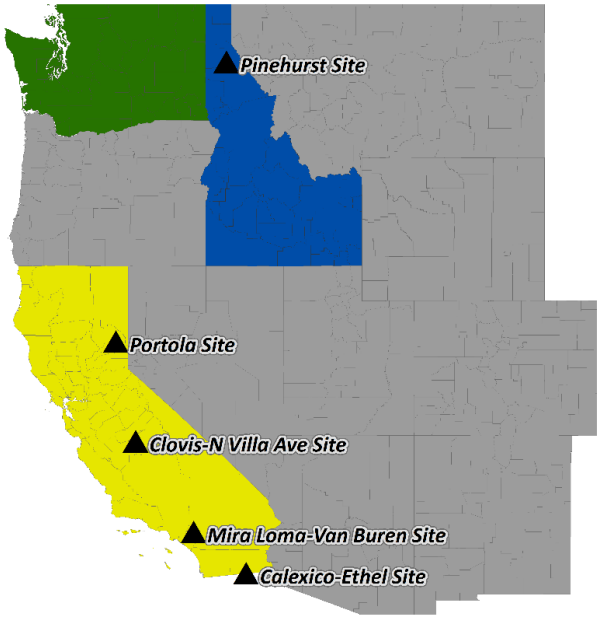

Figure 5: Location of nonattainment receptors in Idaho and California nonattainment "high sites"

[19] See California's 2013 $PM_{2.5}$ Area Designation Recommendations (https://www3.epa.gov/airquality/particlepollution/designations/2012standards/rec/r9carec1.pdf) and the 2014 Plumas County Nonattainment Area Recommendation Letter (https://www3.epa.gov/airquality/particlepollution/designations/2012standards/rec/r9carecrev.pdf)

Table 2: Design values for nonattainment receptors for the 2012 Annual PM2.5 NAAQS

State	Nonattainment Area Name	Site ID	County	Distance to WA (miles)	2012-2014 ($\mu g/m^3$)	2013-2015 ($\mu g/m^3$)	2014-2016 ($\mu g/m^3$)
ID	Pinehurst	160790017	Shoshone	38[a]	13.1	13.7	11.9
CA	Imperial County	60250005	Imperial	923[b]	14.3	13.1	12.9
CA	San Joaquin Valley Air Basin	60195001	Fresno	612[b]	19.7	22.2	22.0
CA	LA-S. Coast Air Basin	60658005	Riverside	823[b]	14.6	14.1	14.5
CA	Plumas County	60631010	Plumas	402[b]	14.4	14.9	15.0

(a) Straight line from eastern border
(b) Measured from receptor to closest point at WA/OR border

Factors considered in the Transport Analysis

A state must evaluate if its emissions contribute significantly to nonattainment or interfere with maintenance in downwind areas to fulfill Clean Air Act requirements.[20] Although EPA has not offered updated guidance to states regarding interstate transport of PM2.5 for the 2012 Annual NAAQS, Ecology consulted related guidance documents and memos as well as previously published SIPs.

For this analysis, Ecology considered a number of factors that may influence Washington sources' impact on downwind nonattainment receptors including:

- distance from Washington sources
- topographic composition of a receptor's immediate surroundings
- influence of local and regional sources on a receptor
- meteorological modeling data

Ecology planners consulted previous related publications and Ecology experts to determine an appropriate distance threshold for receptor selection, which was identified as roughly 125 miles (200 km) from the state border. This threshold effectively removed all but the Idaho receptor from the analysis, but Ecology decided to include the four California nonattainment areas as was done in previous publications and on recommendation from EPA Region 10 staff.

Ecology reviewed EPA's TSDs for each California nonattainment area as well as spatial data using ArcGIS to better understand how land features may affect Washington sources' impact on nonattainment areas. Topography was a major factor influencing nonattainment; mountains and hills can channel dirty air or limit the flow of clean air into an area. Likewise, valleys can often limit mixing, which causes the airshed to build pollutants locally. Several of the nonattainment areas reviewed for this publication were significantly affected by their immediate and regional topography.

[20] Clean Air Act Section 110(a)(2)(D)(i)(I)

Meteorology is closely related to topography, as wind speed and direction can be influenced by topography. Wind speed, frequency, and trajectories all impact air quality. Ecology analyzed metorological patterns using HYSPLIT models through Airtechnow.org and created wind roses using meteorological data obtained from EPA's AQS website.[21,22]

Ecology also analyzed data regarding sources of emissions in and around the relevant nonattainment areas. Direction for this analysis was largely provided by EPA publications for each nonattainment area as it is a key piece of an area's designation. In addition to EPA data and publications, Ecology examined economic publications from both public and private sources to better understand the makeup of an area's economy and, therefore, the impact of local point source emissions and transportation.

Transport Assessment for Nonattainment Receptors

Based on the methodology for selecting nonattainment receptors described earlier, Ecology identified nonattainment receptors in both Idaho and California. At the time of this publication, there were no nonattainment or maintenance areas for the 2012 Annual PM2.5 NAAQS in Oregon. Furthermore, design values at Oregon border county receptors have not exceeded 70 percent of the 12 µg/m3 NAAQS since the 2006-2008 emissions inventory.[23] Ecology also reviewed PM2.5 data from each of the nonattainment receptors to understand when high levels of PM2.5 are most often observed, the primary source of the PM¬2.5, and the location of that source.

Idaho

Idaho currently has one area in nonattainment for the 2012 Annual PM2.5 NAAQS. Technical information indicates that local emissions during winter stagnation events are the main contributor to high levels of PM2.5. Conversations with Idaho Department of Environmental Quality (Idaho DEQ) staff suggest also that Washington sources do not contribute significantly to nonattainment of the 2012 Annual PM2.5 NAAQS in Idaho.[24] A more detailed analysis for each receptor is presented below.

Shoshone County (Pinehurst)

Pinehurst is located in a small, enclosed, bowl-shaped valley of the Coeur d'Alene River, known as the West Silver Valley (WSV) area, roughly 38 miles from the Washington/Idaho state line and the Spokane metro area. Stagnation events during winter season are the primary reasons behind the air quality violations in the area, according to EPA's TSD for the WSV

[21] Airtechnow.org is directed and managed jointly by the EPA's Office of Air Quality Planning and Standards and Sonoma Technology, Inc.
[22] EPA's AQS Website (https://aqs.epa.gov/)
[23] EPA Air Quality Design Values (https://www.epa.gov/air-trends/air-quality-design-values#previous)
[24] Phone conversation among Ecology and IDEQ staff – September 20, 2017

Nonattainment Area.[25] EPA designated the WSV as nonattainment in January 2015 with a 2013-2015 Annual Design Value of 13.7 µg/m3.[26] The 2014-2016 Annual Design Value for the WSV Nonattainment Area is 11.9 $\mu g/m^3$. The area is also in nonattainment for the 2006 24-hour PM2.5 standard.

Ecology reviewed technical publications, air quality data, and modeling and confirmed our assumptions with Idaho DEQ staff. Although EPA's TSD for the WSV Area Designation did not examine wind data due to the complex topography and meteorology of the Silver Valley, Ecology chose to review HYSPLIT wind trajectories as an additional measure of analysis.

Review of AQ data and technical publications

The WSV TSD shows that air stagnation from rough topography and weak winds during winter months is largely responsible for PM2.5 violations in the area, as the mountainous terrain and winding valleys limit wind's ability to disperse local emissions outside of the area. Given this, transport from outside the WSV area is unlikely. The TSD established that the days with the highest fine particle concentrations occur predominantly in winter, with carbonaceous PM2.5 and nitrate being the largest components of the fine particle mass. This further suggests that the pollution is due largely to residential wood burning. During the spring, summer, and fall, Pinehurst's air quality is similar to nearby areas with the exception of wildfire and prescribed fire events.

Smoke from residential wood combustion is responsible for a significant winter PM2.5 increase. EPA estimates that residential wood combustion is, by far, the largest source of PM2.5 pollution in the area (85.1 percent). Furthermore, EPA concludes that 95 percent of observed PM2.5 emissions came from within the WSV Nonattainment Area (page 38). Later in this chapter, we show that the remaining 5 percent is not likely to originate from Washington sources.

In addition to reviewing technical publications from the EPA and Idaho DEQ, Ecology reviewed daily PM2.5 levels at the Pinehurst receptor for the timeframe leading up to the areas nonattainment designation (2012-2014). The data agrees with the assumptions in EPA's TSD that the majority of exceedances occurred during cooler months (Figure 6). Each year shows a similar trend with the most exceedances between October and February. The data also shows a slight uptick in the late summer and early fall, when most wildfires occur.

[25] West Silver Valley TSD for the 2012 PM $_{2.5}$ NAAQS (https://www3.epa.gov/pmdesignations/2012standards/final/ID_FinalNAATSD_Final.pdf)
[26] Idaho DEQ WSV (http://www.deq.idaho.gov/regional-offices-issues/coeur-dalene/west-silver-valley-air-quality-improvement-projects/)

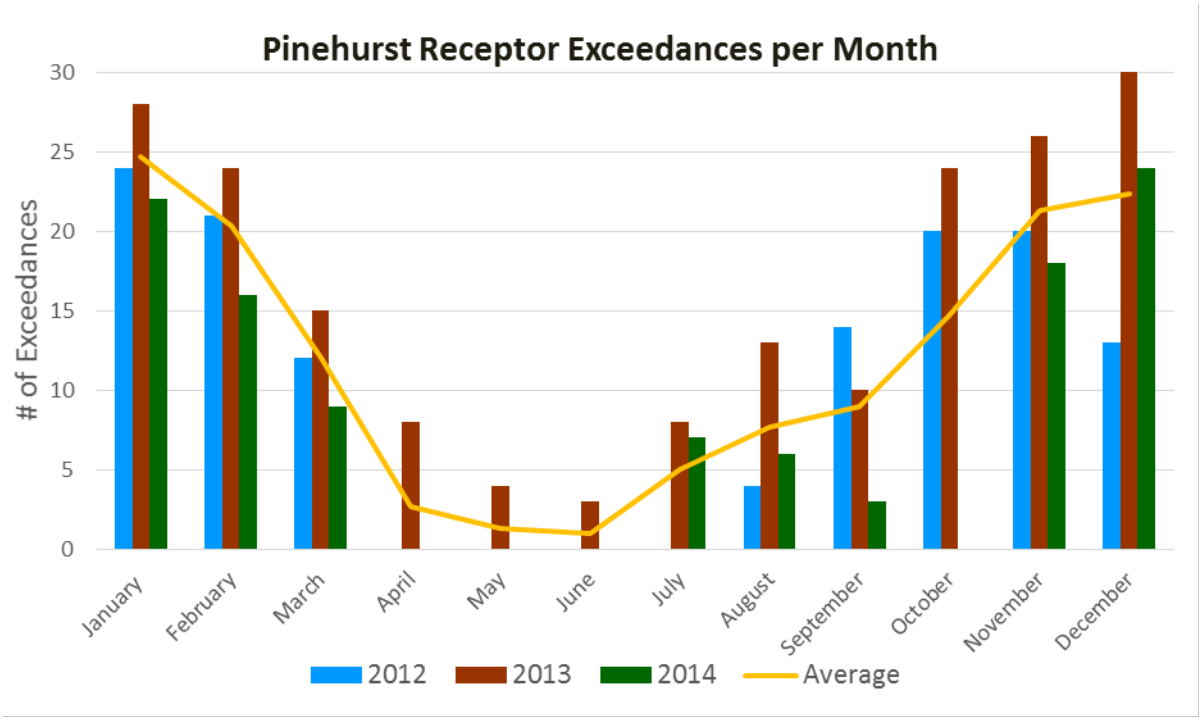

Figure 6: PM2.5 exceedances at Pinehurst occur most often during cooler months[27]

Ecology also reviewed wind speed and direction data at the Pinehurst receptor. The wind rose shows that average wind speeds are relatively calm (typically < 2 mph) and arrives at Pinehurst from the south and southwest most often (Figure 7). Ecology reviewed topography using Google Earth and ArcGIS and, given the prevailing southern winds, Ecology presumes that wind most often travels into the Pinehurst area through a long valley marked by Pine Creek. Although there is an "opening" in the topography to the West of Pinehurst, the wind rose data shows that wind does not commonly enter through the western valleys. Figure 8 shows the topographic isolation of the area. Because of the area's steep topography and the Spokane metro area's northwest position in respect to Pinehurst, our analysis agrees with EPA's conclusion that nonattainment in WSV is a locally driven issue.

[27] EPA's Air Quality Data website (https://www.epa.gov/outdoor-air-quality-data)

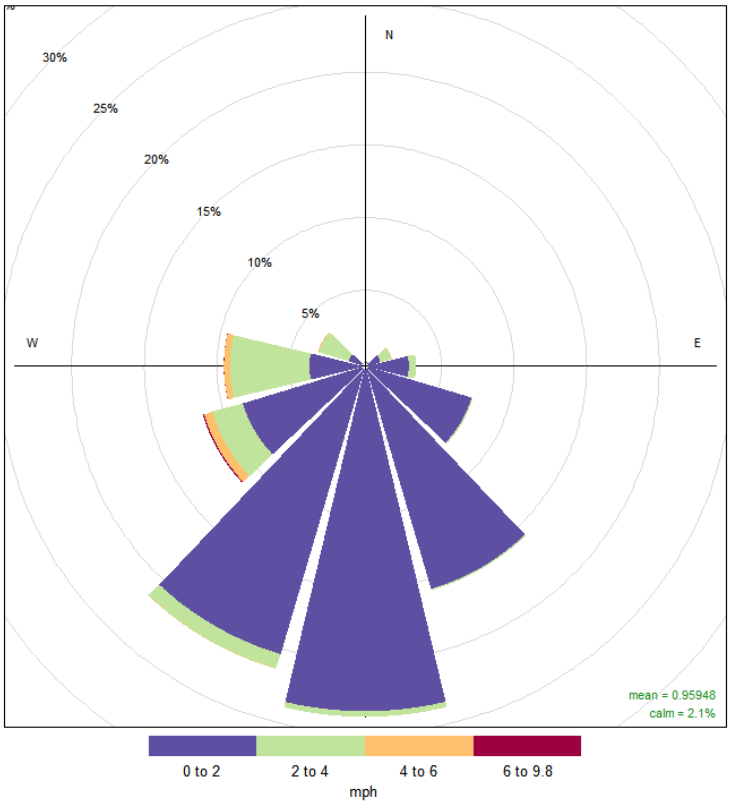

Figure 7: Frequency of wind speed and direction at Pinehurst receptor

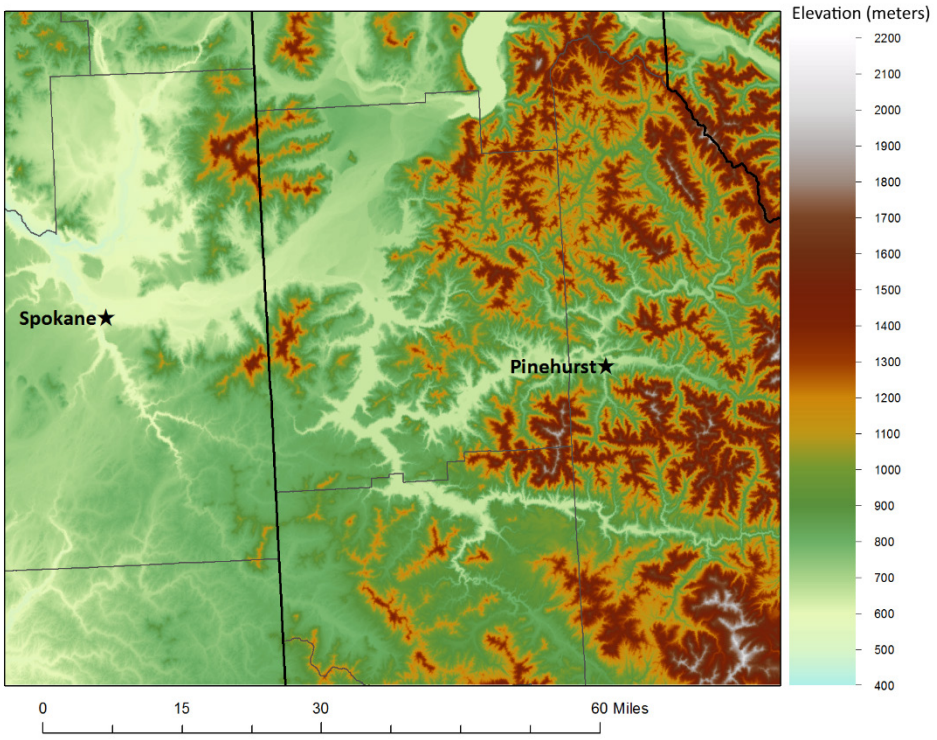

Figure 8: Topographic composition of far-Eastern Washington and Northern Idaho, including the Pinehurst area

HYSPLIT Back Trajectories

Using HYSPLIT back trajectory models, Ecology showed that emissions originate locally or regionally around the Pinehurst receptor on the vast majority of days with daily average PM2.5 of greater than 40 µg/m3. HYSPLIT model output snapshots are shown in Appendix A.

Ecology created HYSPLIT back trajectory models for the Pinehurst receptor to examine where PM2.5 emissions originated on the days with the highest concentration of PM2.5 during the period of time leading up to the areas nonattainment designation (2012-2014). The top ten percent of daily average values for the 2011-2014 emissions inventory served as the sample, which roughly translated to days with average values greater than 40 µg/m3. Of the 26 days meeting the criteria, about 96 percent occurred during winter months.

Ecology ran 12-hour HYSPLIT back trajectory models for days with the highest observed PM2.5 levels at the Pinehurst receptor (Appendix A). The models began at 7:00 am and were at 10, 75, and 300 meters altitude. For each day analyzed, Ecology created wind roses of average wind direction and speed for the month where the day fell. The wind roses helped to characterize how the 12-hour HYSPLIT model fit with the typical air speed and direction. The vast majority (88.46 percent) of the models for the sample days suggested that wind speed was low and traveled from within the state, if it traveled at all, which in turn suggests that local emissions are responsible for these exceedances. Each of the sample days where the exceedance sources were undetermined (11.54 percent) occurred during the winter, which suggests emissions from wildfire smoke transport are not a significant issue in this group.

These HYSPLIT back trajectory models suggest that Washington sources do not contribute significantly to nonattainment of the Primary Annual PM2.5 NAAQS in Pinehurst, ID.

California

California has four nonattainment areas for the 2012 Annual PM2.5 NAAQS (Table 2). These areas span multiple unique ecoregions including the Cascades and Sierra Nevada ranges, the Central California Valley, the Southern California/Northern Baja Coast, and the Sonora Basin and Range.[28] Just as diverse as the areas' ecoregions are their reasons for nonattainment. In some cases, an area's habitat and topography influences nonattainment. Emission sources primarily responsible for nonattainment in California include residential wood smoke, transportation, diesel emissions, and dust from industrial farms.

Within each of the four nonattainment areas, California identified a "high site" receptor that is contributing most insignificantly to nonattainment (Figure 5). Ecology reviewed TSD publications for each of the nonattainment areas and examined each high site receptor for likely sources of the emissions contributing to the high design values. Ecology's analysis and review suggests that PM2.5 from Washington sources is not contributing to nonattainment at the California nonattainment areas.

Imperial County Nonattainment Area

Ecology's review of the Imperial County Nonattainment Area suggests that local and regional emissions from biomass burning and combustion sources as well as non-point fugitive dust sources from agriculture, roads, and windblown dust are the primary culprit of PM2.5 exceedances and resulting nonattainment.

One of the California's two border counties, Imperial County sits in a dry valley between San Diego County and Yuma County, Arizona where it rains less than three inches annually.[29] In the early 1900s, the opening of the Imperial Canal drastically altered the county's landscape, changing the once arid valley into over a thousand acres of arable land. Today, agriculture is a dominant economic power in the county and, according to the Imperial County Farm Bureau, it is the nation's largest producer of lamb and sheep, grows nearly 2 million tons of hay annually, and is one of the largest producers of vegetables consumed in the United States.[30]

The county's growing renewable energy industry has recently become a significant economic driver in the region, boasting over 45 operational projects with a capacity of over 2,250 MW as of March 2017. Over half of the county's renewable energy production comes from solar photovoltaic projects.[31]

The Calexico-Ethel receptor is one of the three receptors in the Imperial County Nonattainment Area is currently in nonattainment of the 2012 Annual PM¬2.5 NAAQS. This site, located

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[28] Ecoregions of California, USGS (https://pubs.er.usgs.gov/publication/ofr20161021)
[29] US Climate Data Website (https://www.usclimatedata.com/climate/imperial/california/united-states/usca0508)
[30] Imperial County Farm Bureau (http://www.co.imperial.ca.us/AirPollution/Forms%20&%20Documents/AGRICULTURE/QuickFactsAboutIVag.pdf)
[31] Desert Renewable Energy Conservation Plan (http://www.drecp.org/counties/factsheets/Imperial_county.pdf)

within the city limits of Calexico, California, is roughly 924 miles from the closest point of the Washington border. Although this is well above the distance threshold set earlier in this document, Ecology continued to examine Washington's potential to have an impact on exceedances at the Calexico-Ethel receptor by reviewing EPA's TSD for the area.

EPA's analysis in the Imperial County Area Designation TSD clearly indicates that biomass burning, combustion sources, and non-point fugitive dust sources from agriculture, roads, and windblown dust are the primary causes of nonattainment in the area. These sources are from within the county itself as well as the neighboring Sand Diego and Yuma, Arizona counties. EPA indicates that several significant point sources within Mexicali municipality in Mexico are responsible for violations at the Calexico-Ethel receptor.[32] Ecology analyzed hourly wind speed and direction data from the site from January 1, 2012 through December 31, 2016 and the resulting wind rose agrees with EPA's assumptions regarding the major contributors to the area's nonattainment (Figure 9).

Given this information, Ecology concludes Washington sources do not contribute significantly to nonattainment of the 2012 Annual PM2.5 NAAQS at Imperial County, California.

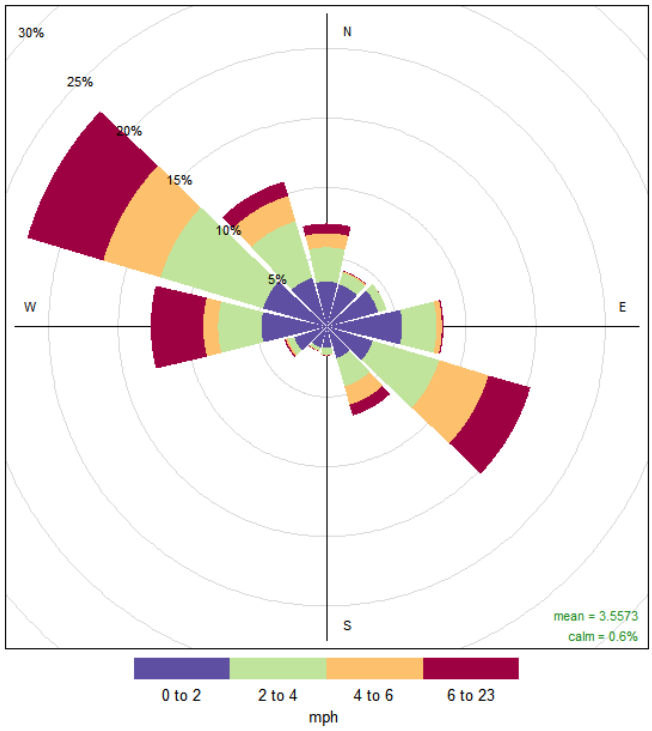

Figure 9: Frequency of wind speed and direction at the Calexico-Ethel receptor

[32] California Nonattainment Area Designation TSD (https://www3.epa.gov/pmdesignations/2012standards/eparesp/09_CA_120TSD_20140818.pdf)

Plumas County Nonattainment Area

Ecology's review of the Plumas County Nonattainment Area suggests that local wintertime wood smoke pollution and air-restricting topography are the primary culprits of PM2.5 exceedances and resulting nonattainment.

The Plumas County Nonattainment Area (PCNA) is located within Plumas County, a heavily forested, mostly rural county in the Sierra Nevada range of northeast California. Only a small part of the south-central part of the county is included in the PCNA, but includes Portola, the only incorporated area in Plumas County. According to the EPA, just under one-third of the county's population lives within the PCNA.[33,34,35]

With National Forest covering over 70 percent of the county's area, Portola began as a logging town in the early 1900s. Today, retail trade, outdoor recreation services, and government are the primary drivers of Portola and Plumas County's economy.[36] The Portola North Substation receptor is located several blocks north of the Middle Fork Feather River in Portola. The receptor is roughly 402 miles away from the closest point of the Washington state border (near Dallesport). Although this is well above the distance threshold set earlier in this document, Ecology continued to examine Washington's potential to have an impact on exceedances at the Portola North Substation receptor by reviewing EPA's TSD for the area.[37]

EPA's TSD for the PCNA showed significant variation in PM2.5 concentrations during the year, with much higher concentrations during cooler months. During the high concentration months, organic mass accounts for over 80 percent of PM2.5 mass, which suggests that local and regional residential wood burning is a primary contributor to exceedances at the Portola receptor. The Northern Sierra Air Quality Management District (NSAQM) supports this conclusion per its June 2015 letter to the EPA, which is included in the appendix of the TSD for the PCNA. The letter also states that, because Portola residents do not have access to natural gas for heating, wood is a primary heat source in the town.

With respect to air circulation and transport, Portola is relatively isolated because of its immediate topography. The area is marked by rugged mountains and extreme valley slopes with the town itself in a small bowl-shaped valley. This reduces airflow into and out of the area, trapping and concentrating air pollution.

Given the overwhelming evidence of local influence and the distance between the PCNA and Washington sources, Ecology concludes that Washington sources do not contribute to exceedances at the Portola receptor.

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[33] American Fact Finder, U.S. Census Bureau (https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk)
[34] EPA Green Book Website for the 2012 Annual $PM_{2.5}$ NAAQS (https://www3.epa.gov/airquality/greenbook/kdtc.html)
[35] Plumas County Demographics webpage (http://www.countyofplumas.com/index.aspx?NID=190)
[36] City of Portola History webpage (http://www.ci.portola.ca.us/portola-history.html)
[37] California Nonattainment Area Designation TSD (https://www3.epa.gov/pmdesignations/2012standards/eparesp/09_CA_120TSD_20140818.pdf)

San Joaquin Valley Air Basin Nonattainment Area

Ecology's review of the San Joaquin Valley Air Basin Nonattainment Area suggests that local and regional emissions from agriculture (including diesel emissions) and point sources combined with low wind speed and restrictive topography were the primary culprit of PM2.5 exceedances and resulting nonattainment

Covering a large area of central California, the San Joaquin Valley Air Basin Nonattainment Area (SJVNA) is the largest nonattainment area in the nation. The area spans eight counties and includes large swaths of rural farmland, urban areas like Fresno, Bakersfield, and Springfield, and National Parks and Forests. Over 3.8 million people live within the boundary of the SJVNA.[38] The San Joaquin Valley has some of the worst air pollution in the county, mostly attributed to diesel and gasoline emissions, residential wood burning, and agricultural emissions from dairies and tilling.

Agriculture and oil production are the two most prominent industries in the San Juaquin Valley. The area is home to over 65 percent of the state's total oil extraction and several major oil refineries are located in the Bakersfield area.[39] All eight counties that make up the SJVNA are among the top ten agricultural counties in California, cultivating a wide variety of crops and animals. According to California's Department of Food and Agriculture, the eight counties' agricultural sectors were worth just shy of $40 billion in 2014 (not including timber). Tulare County alone had over 27 percent of the state's total dairy and 62 percent of orange production that year ($8 billion total).[40]

The "high site" for the SJVNA is located near Clovis, California, roughly 538 miles from the closest point of the Washington border (near Reed Island State Park). Although this is well above the distance threshold set earlier in this document, Ecology continued to examine Washington's potential to have an impact on exceedances at the Clovis-N. Villa Ave receptor by reviewing EPA's TSD for the SJVNA.

EPA's analysis showed a relatively consistent source mix throughout the area and year with higher nitrates during the winter. Organic Mass was the highest contributor to PM2.5 and typically resulted from particulate organic carbon (POC) emissions. Given the areas topographic isolation from neighboring regions with mountain ranges to the south, west, and east of the SJVNA as well as a lack of major point sources, PM2.5 exceedances are likely due to sources within the state.[41]

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[38] EPA Green Book Website for the 2012 Annual $PM_{2.5}$ NAAQS (https://www3.epa.gov/airquality/greenbook/kdtc.html)
[39] California 2015 Oil and Gas Production Report (ftp://ftp.consrv.ca.gov/pub/oil/annual_reports/2015/PR03_2015.pdf)
[40] California Agricultural Statistics Review, 2014-2015 (https://www.cdfa.ca.gov/statistics/PDFs/2015Report.pdf)
[41] California Nonattainment Area Designation TSD (https://www3.epa.gov/pmdesignations/2012standards/eparesp/09_CA_120TSD_20140818.pdf)

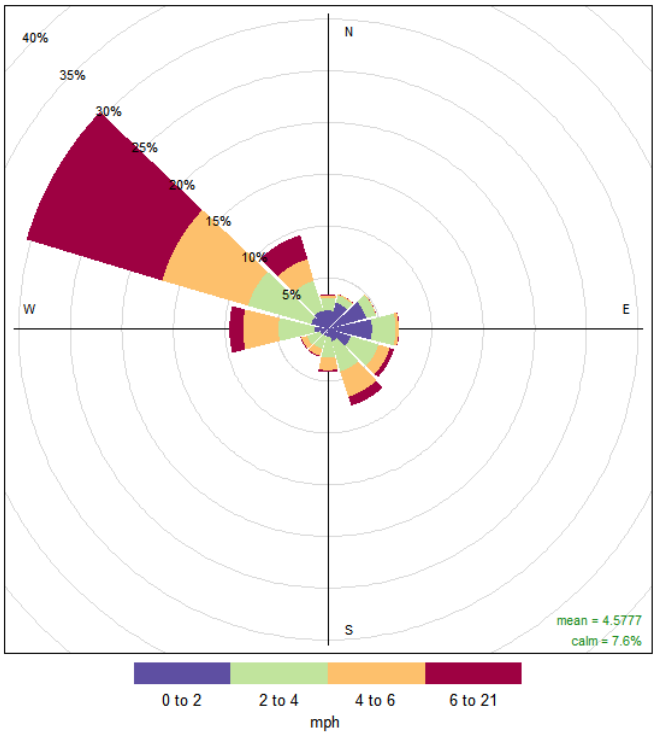


Figure 10: Frequency of wind speed and direction at the Clovis Receptor

Los Angeles South Coast Air Basin Nonattainment Area

Ecology's review of the Los Angeles-South Coast Air Basin Nonattainment Area suggests that local sources are the primary culprit of PM2.5 exceedances and resulting nonattainment.

With over twice the population of Washington State, the Los Angeles-South Coast Air Basin Nonattainment Area (LA-SC NA) is nation's most populated nonattainment area for the 2012 Annual PM2.5 NAAQS.[42] Although the area is largely urbanized, it includes several National Forests, National Recreation Areas, State Parks, and other natural and wild areas. The topography of the area includes both beach and mountainous terrain that circles the most urbanized areas, which creates a basin and confines airflow.

The LA-SC NA includes seven receptors in violation in Los Angeles, Orange, Riverside, or San Bernardino Counties. The high site receptor for LA-SC is the Mira Loma-Van Buren receptor at Mira Loma, California. The site is roughly 823 miles away from the closest point to the Washington border (near Roosevelt). Ecology analyzed hourly wind speed and direction data from the site from January 1, 2012 through December 31, 2016, which shows that wind most often comes from the west or southwest (Figure 11). Because the receptor is down wind of the most urbanized areas of Los Angeles, Ecology assumes that local influences caused nonattainment.

[42] EPA Greenbook Website, June 20, 2017 (https://www3.epa.gov/airquality/greenbook/kdtc.html)

Despite our initial assumptions and the receptor being far past the distance threshold set earlier in this document, Ecology continued to examine the source's most likely responsible source for nonattainment by reviewing EPA's TSD for the area.[43]

EPA's Urban Increment analysis in the TSD suggests that, in general, emissions contributing to nonattainment in the area were most likely from direct PM2.5 or regional emissions. According to California ARB and the South Coast Air Quality Management District, the primary sources of PM2.5 pollution in the region are Secondary Nitrates and Sulfates from mobile, stationary, and area source emissions of precursor gases.[44,45] Low PM2.5 levels at receptors in and emissions from counties adjacent to the LA-SC NA suggests that transported PM2.5 does not significantly influence exceedances at in the LA-SC NA.

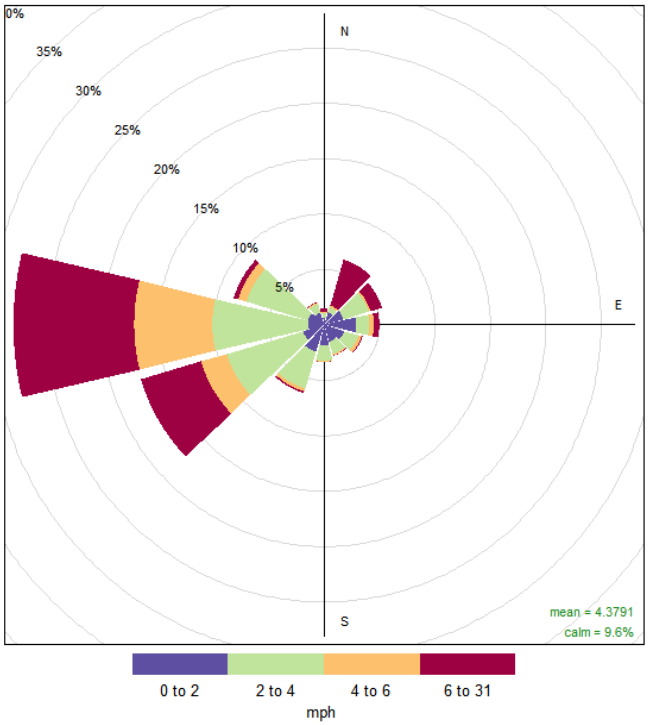


Figure 11: Frequency of wind speed and direction at the Mira Loma-Van Buren Receptor

[43] California Nonattainment Area Designation TSD (https://www3.epa.gov/pmdesignations/2012standards/eparesp/09_CA_120TSD_20140818.pdf)
[44] South Coast Air Board $PM_{2.5}$ SIP Appendix D, Weight of Evidence (https://www.arb.ca.gov/planning/sip/planarea/scabsip/AppD_SCPM25WOE.pdf)
[45] South Coast AQMD Air Quality Management Plan, 2012 (http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2012-air-quality-management-plan/final-2012-aqmp-(february-2013)/chapter-2-final-2012.pdf)

Appendices

Appendix A. HYSPLIT Models

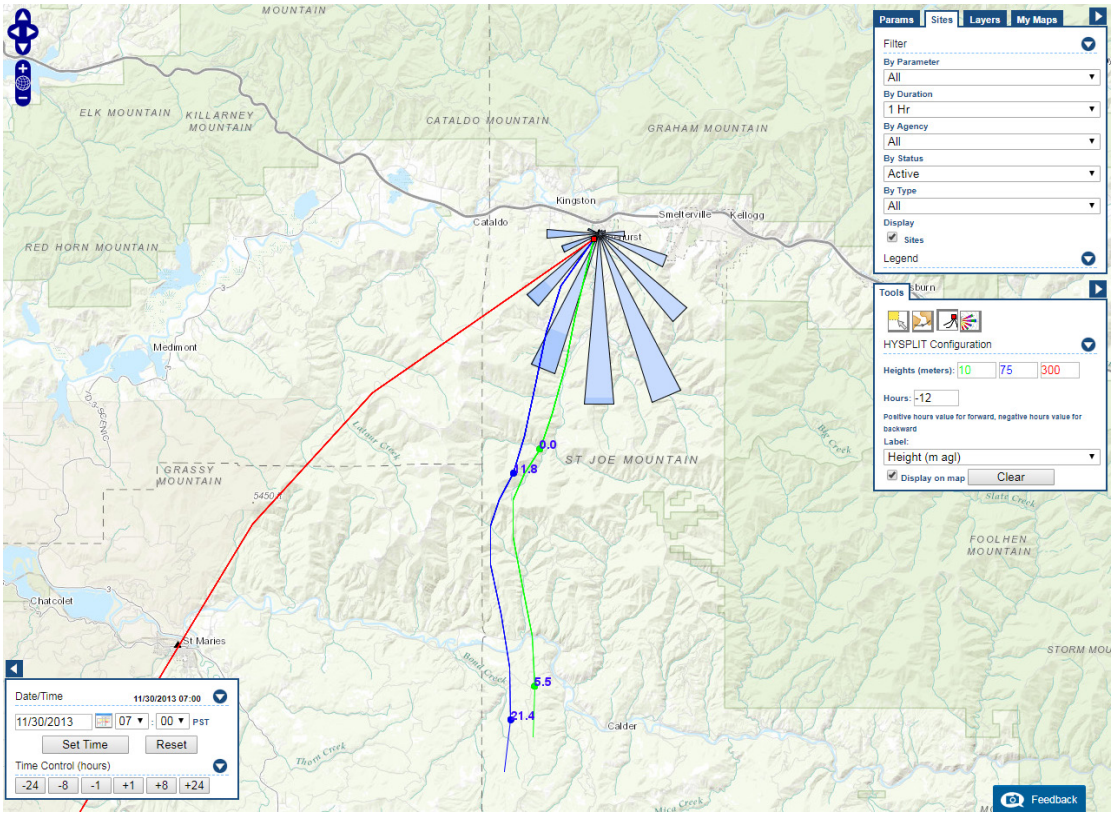


Figure A: HYSPLIT model and wind rose at Pinehurst, ID-11/30/2013

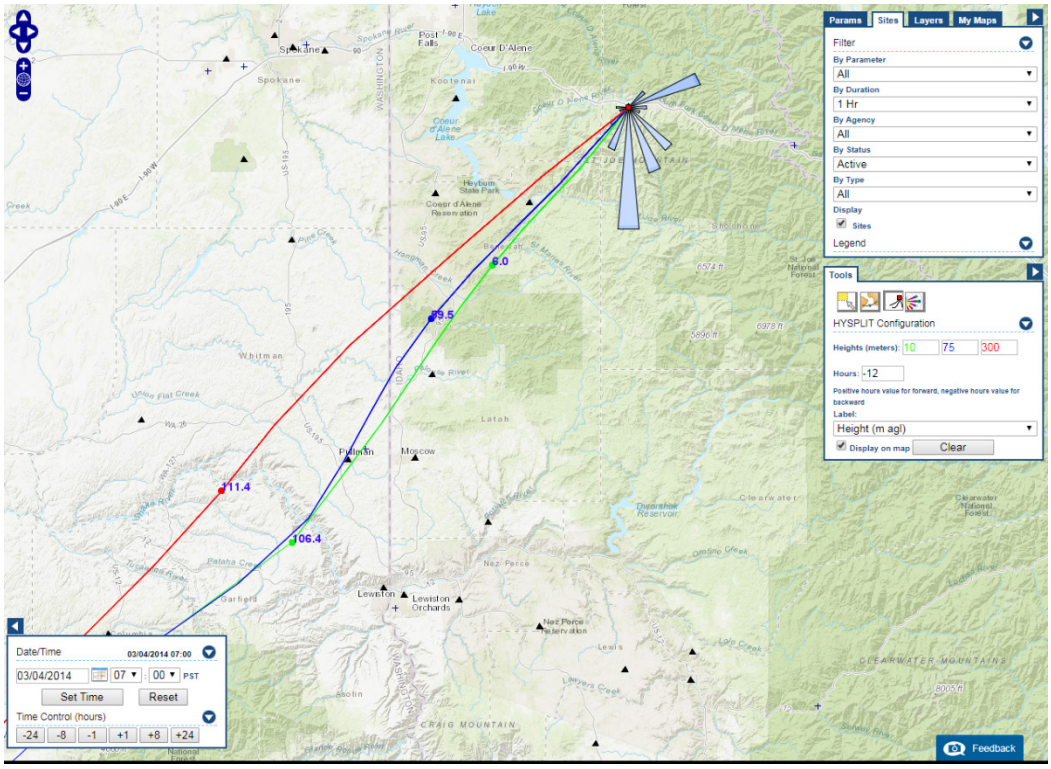


Figure B. HYSPLIT model and wind rose at Pinehurst, ID – 3/4/2014

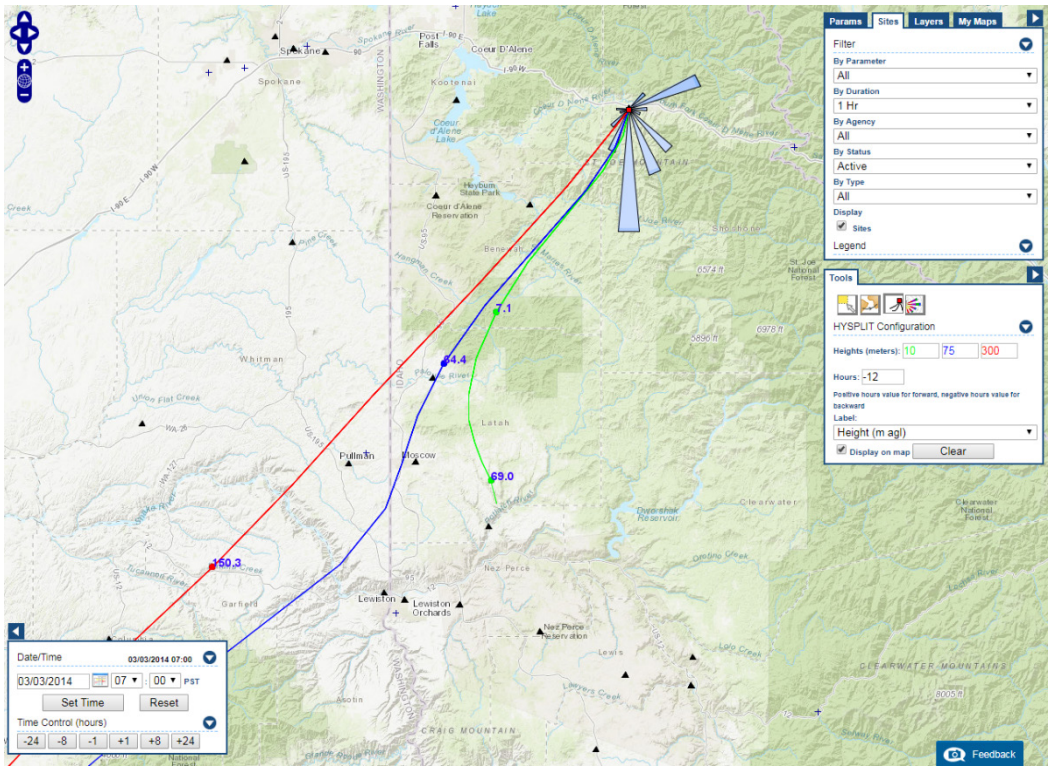


Figure C. HYSPLIT model and wind rose at Pinehurst, ID – 3/3/2014

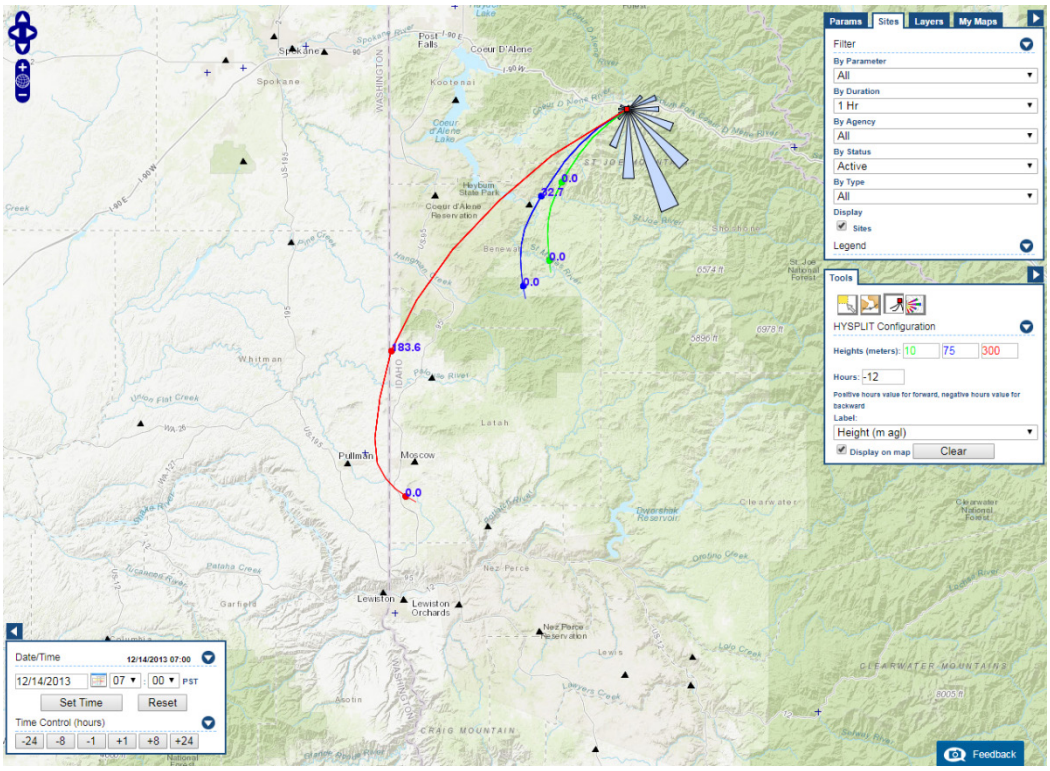


Figure D. HYSPLIT model and wind rose at Pinehurst, ID – 12/14/2013

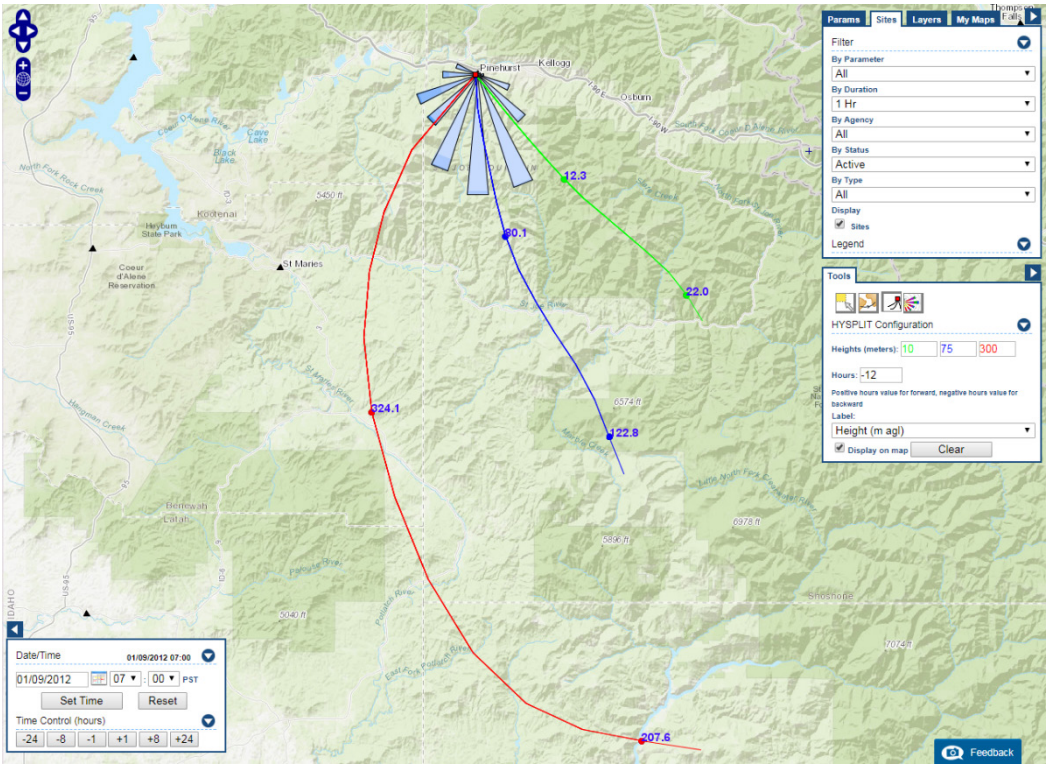


Figure E. HYSPLIT model and wind rose at Pinehurst, ID – 1/9/2012

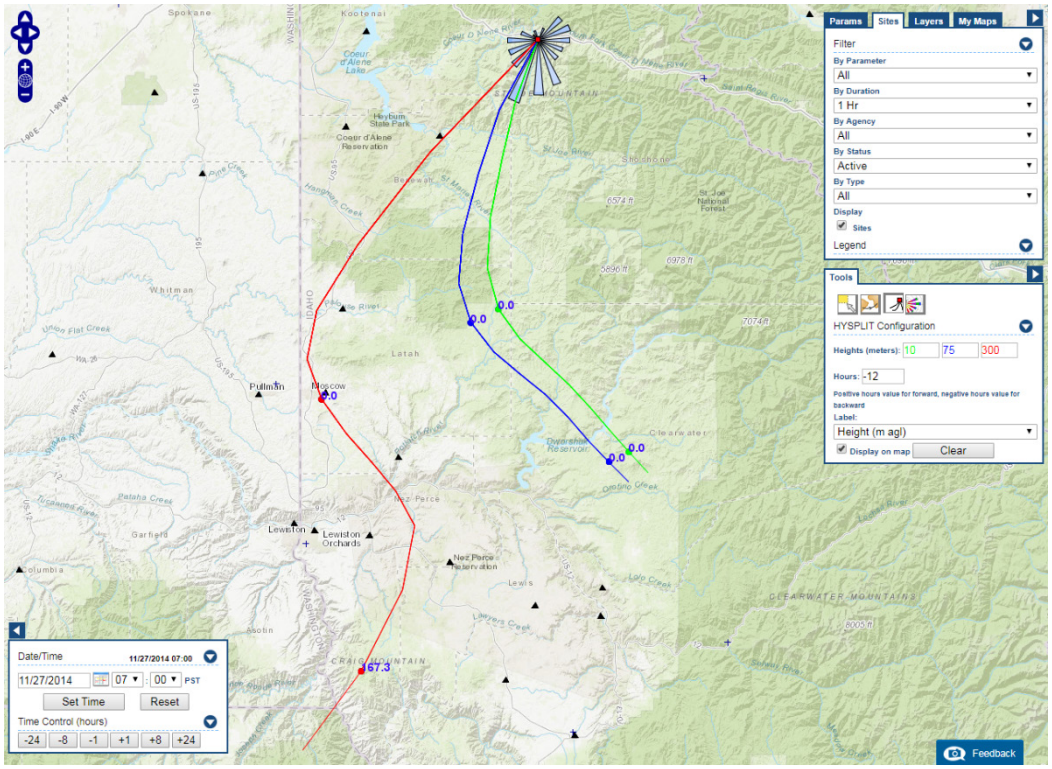


Figure F. HYSPLIT model and wind rose at Pinehurst, ID – 11/27/2014

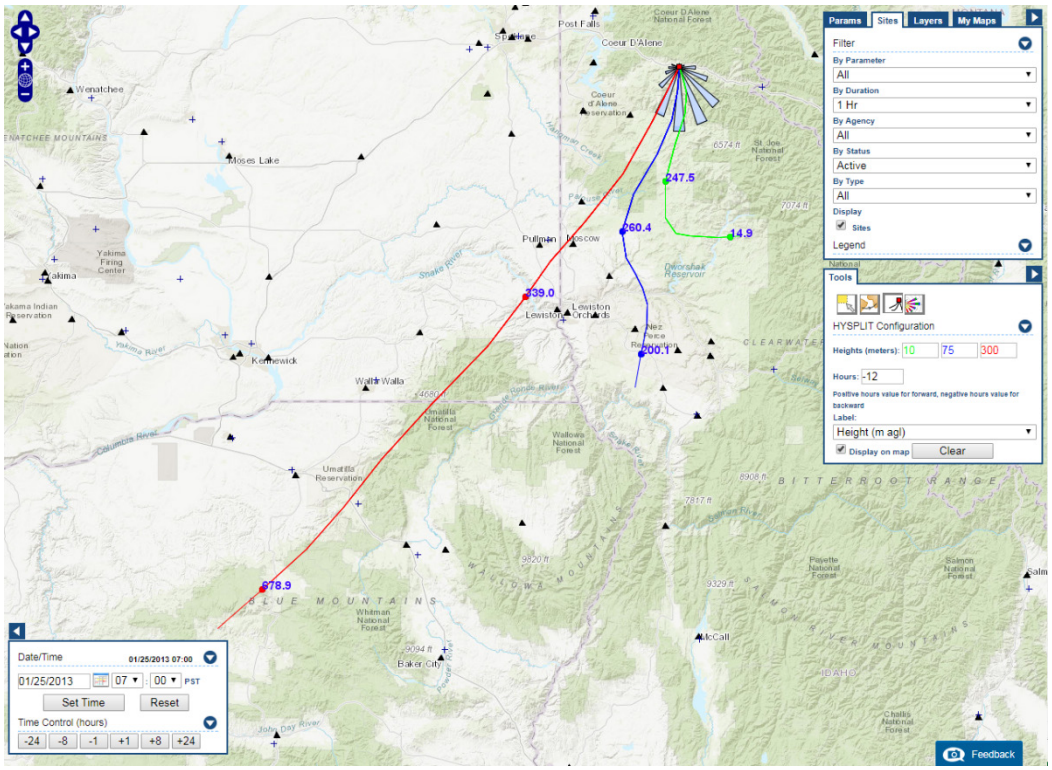


Figure G. HYSPLIT model and wind rose at Pinehurst, ID – 1/25/2013

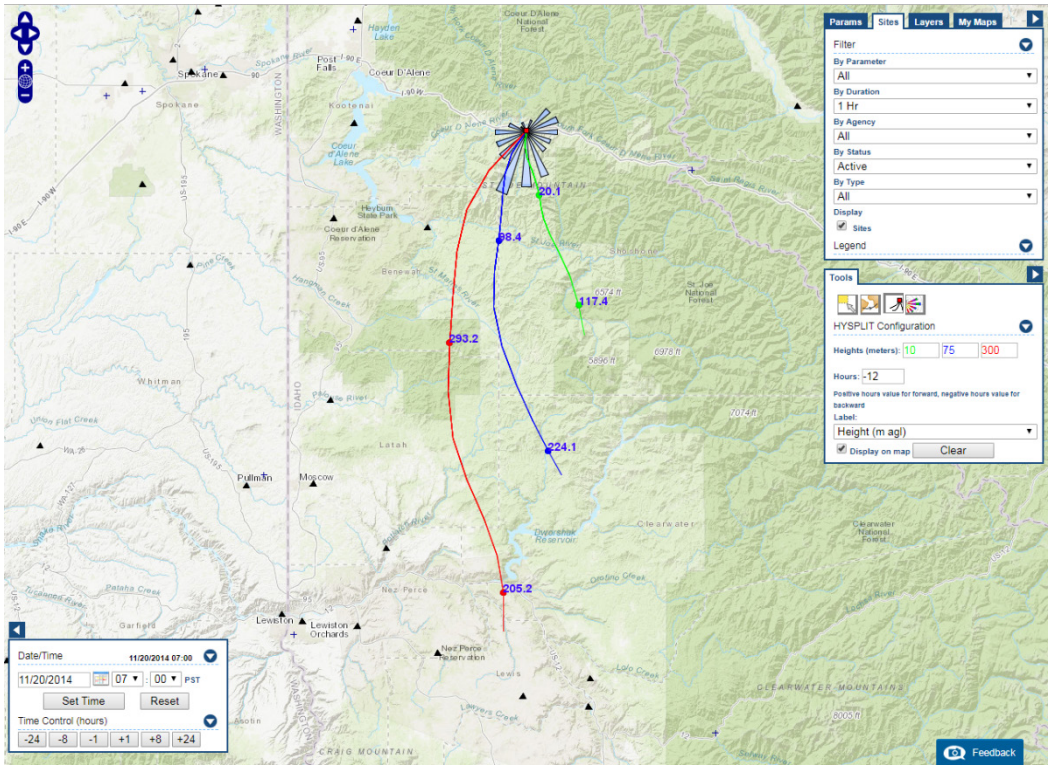


Figure H. HYSPLIT model and wind rose at Pinehurst, ID – 11/20/2014

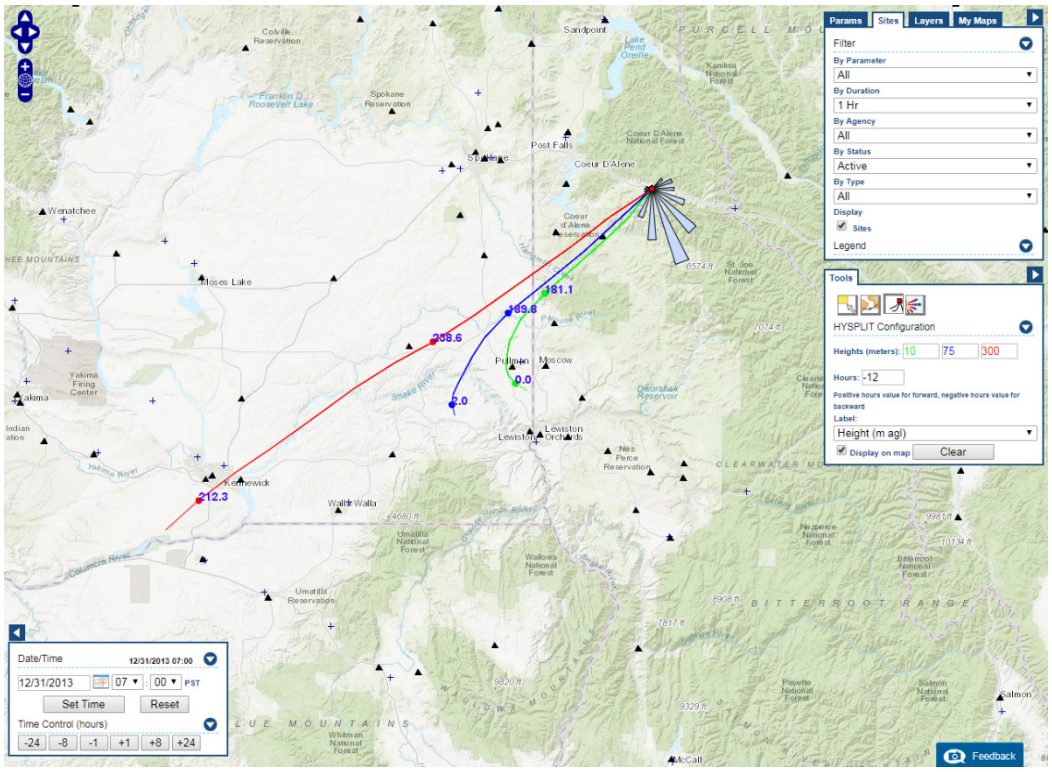


Figure I. HYSPLIT model and wind rose at Pinehurst, ID – 12/31/2013

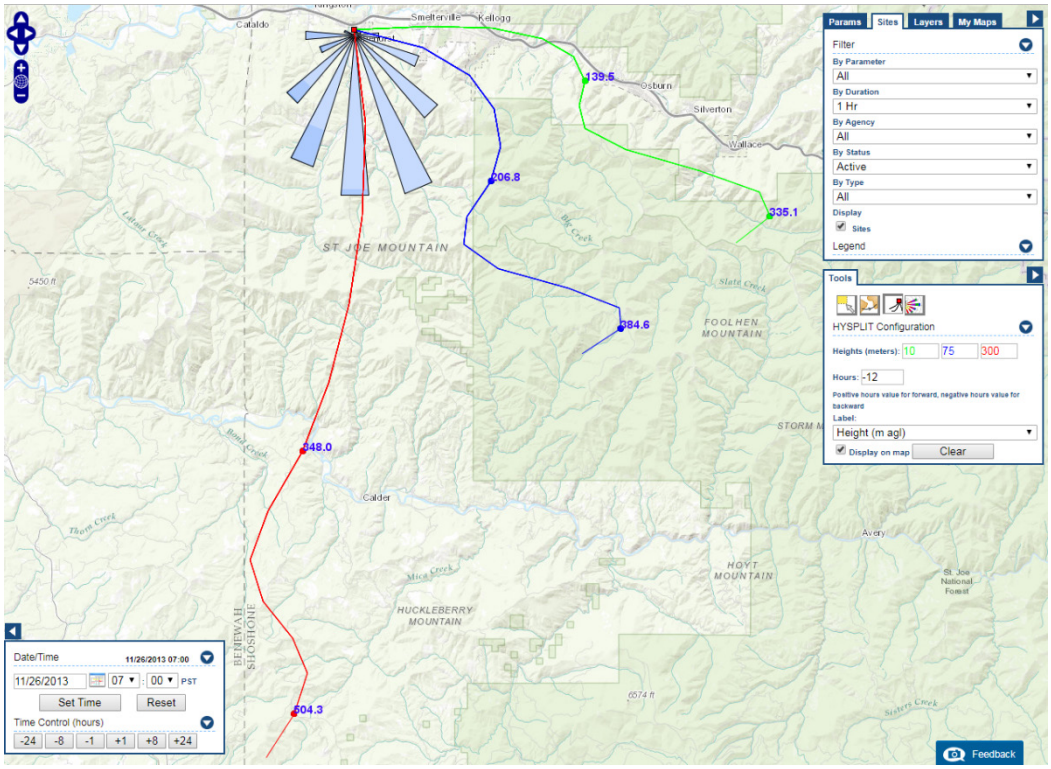


Figure J. HYSPLIT model and wind rose at Pinehurst, ID – 11/26/2013

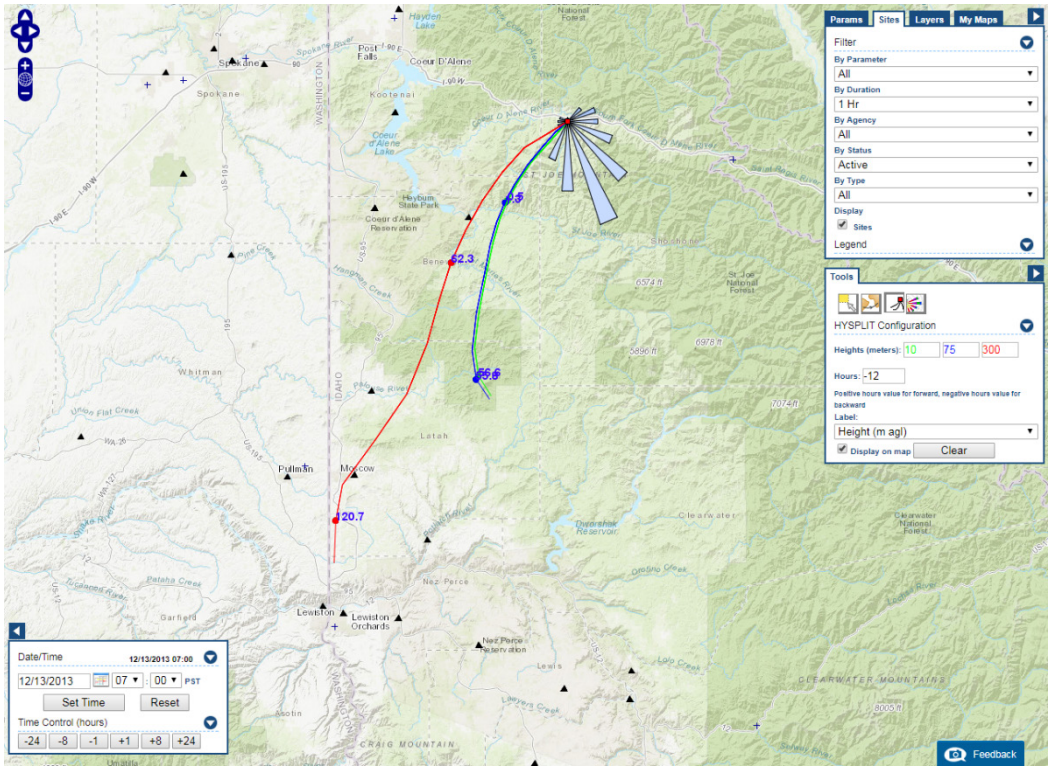


Figure K. HYSPLIT model and wind rose at Pinehurst, ID – 12/13/2013

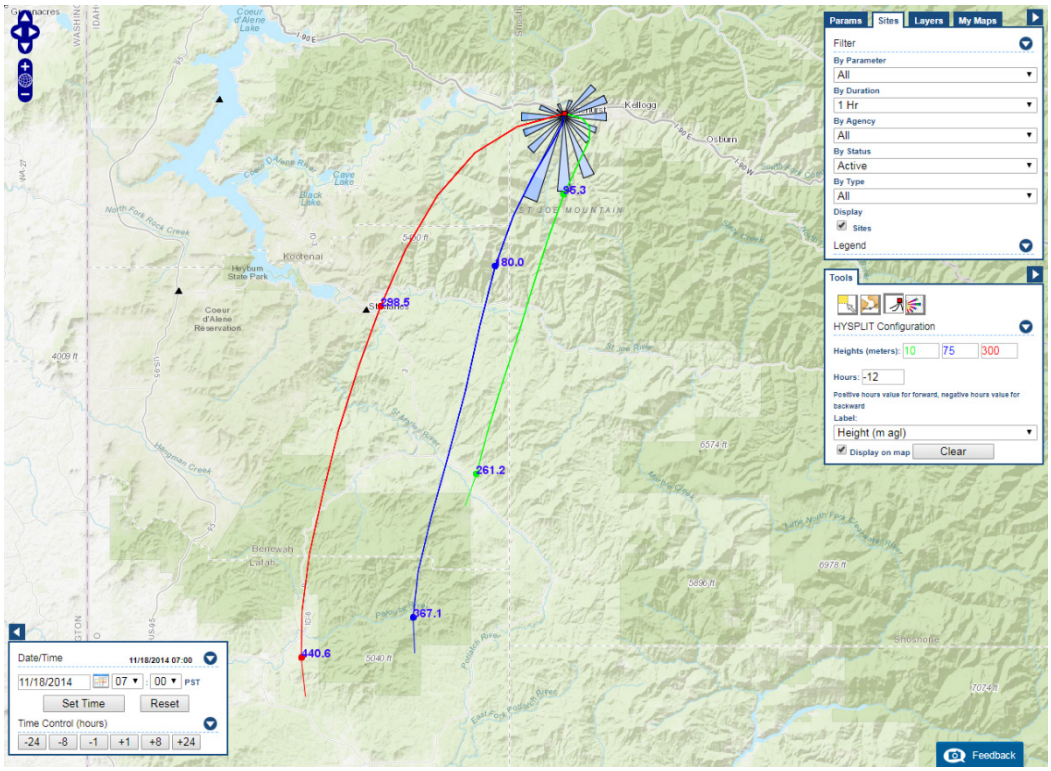


Figure L. HYSPLIT model and wind rose at Pinehurst, ID – 11/18/2014

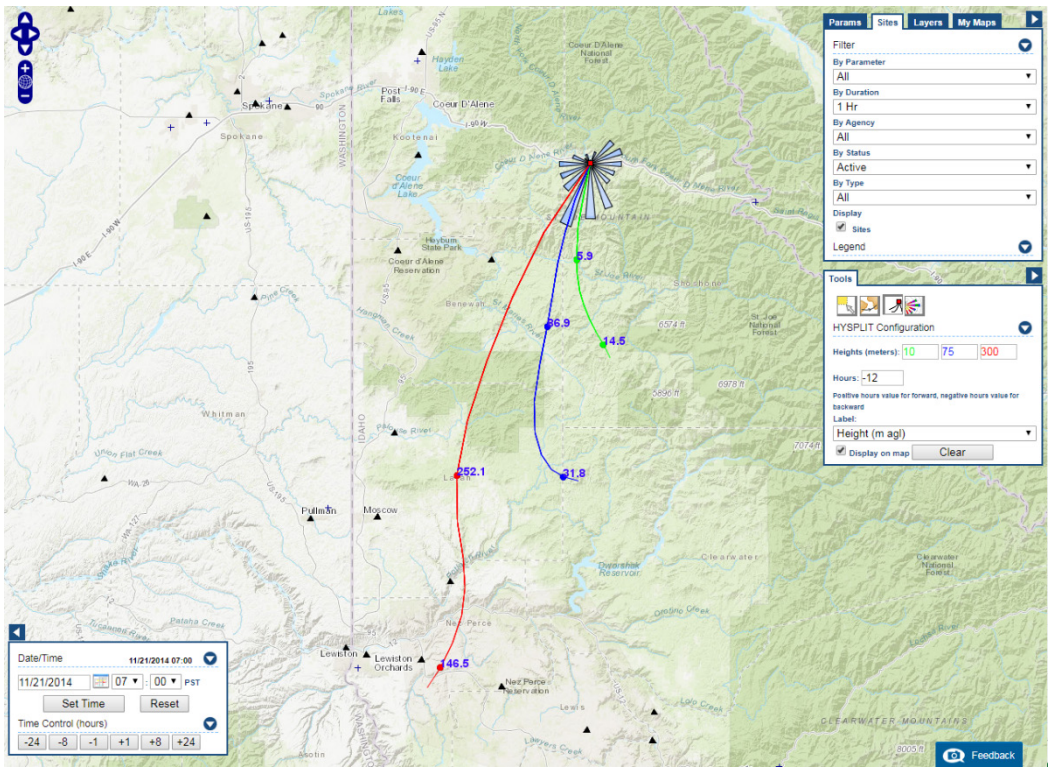


Figure M. HYSPLIT model and wind rose at Pinehurst, ID – 11/21/2014

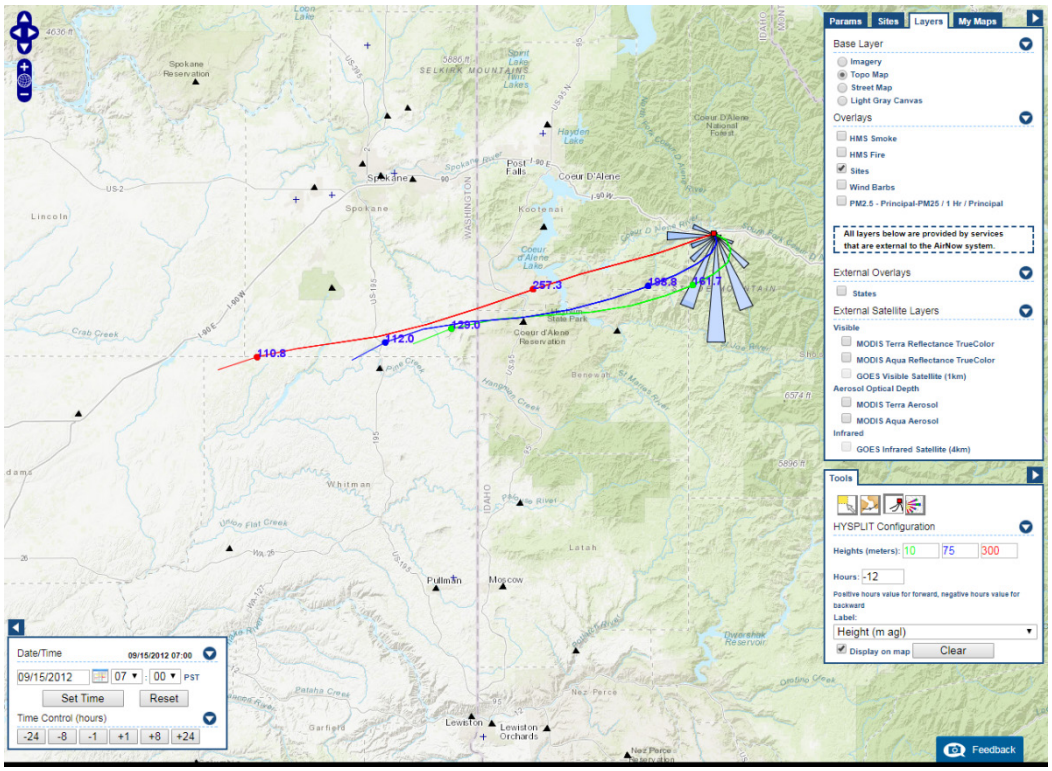


Figure N. HYSPLIT model and wind rose at Pinehurst, ID – 9/15/2012

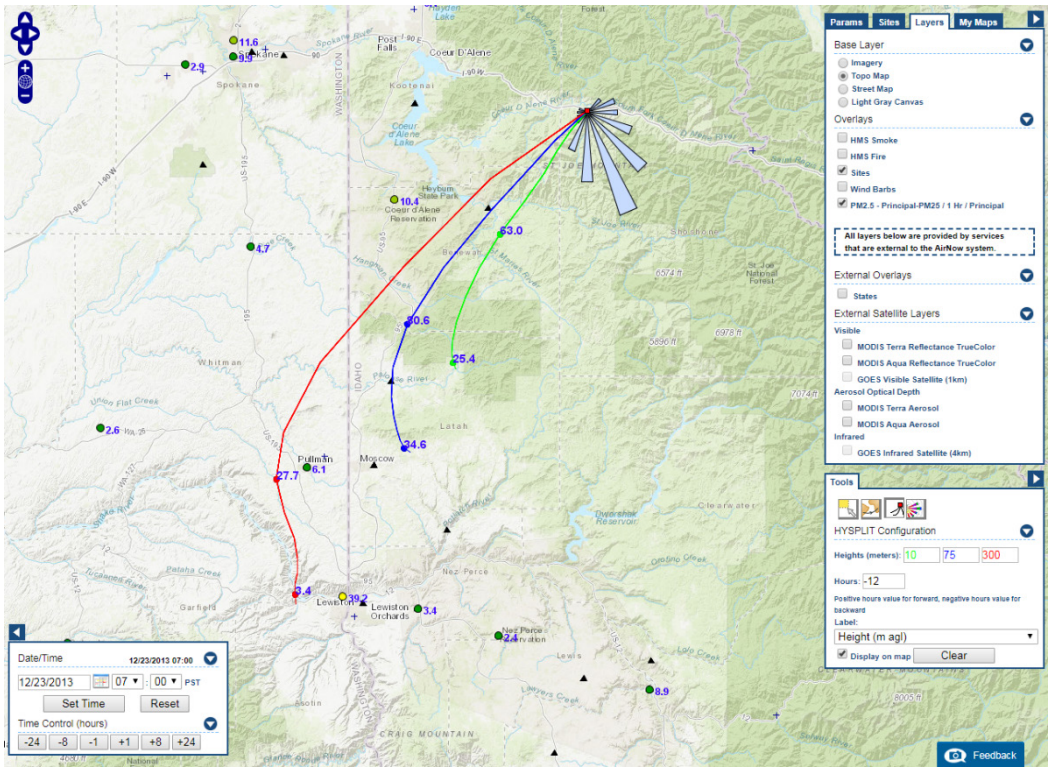


Figure O. HYSPLIT model and wind rose at Pinehurst, ID – 12/23/2013

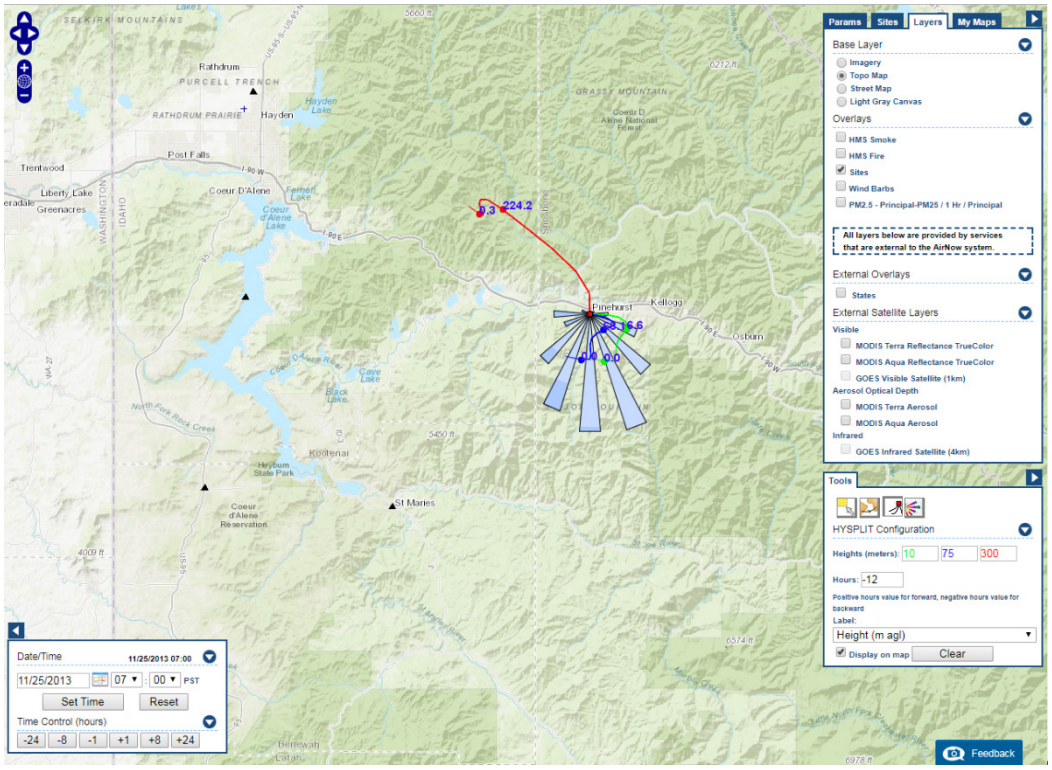


Figure P. HYSPLIT model and wind rose at Pinehurst, ID – 11/25/2013

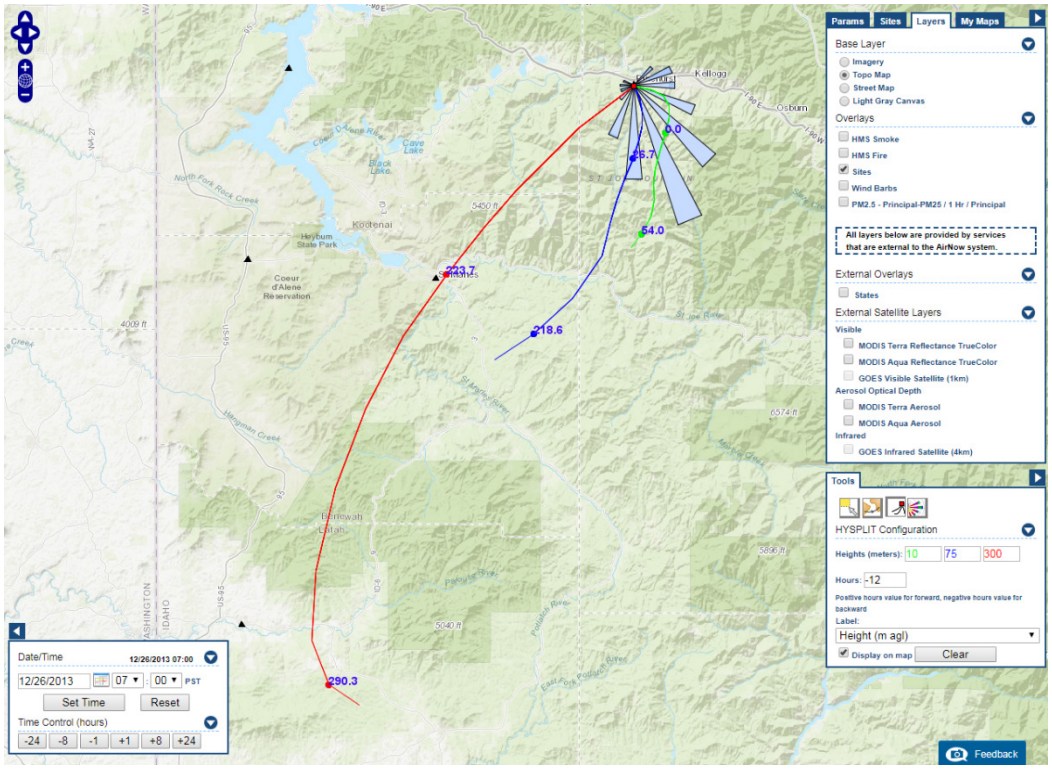


Figure Q. HYSPLIT model and wind rose at Pinehurst, ID – 12/26/2013

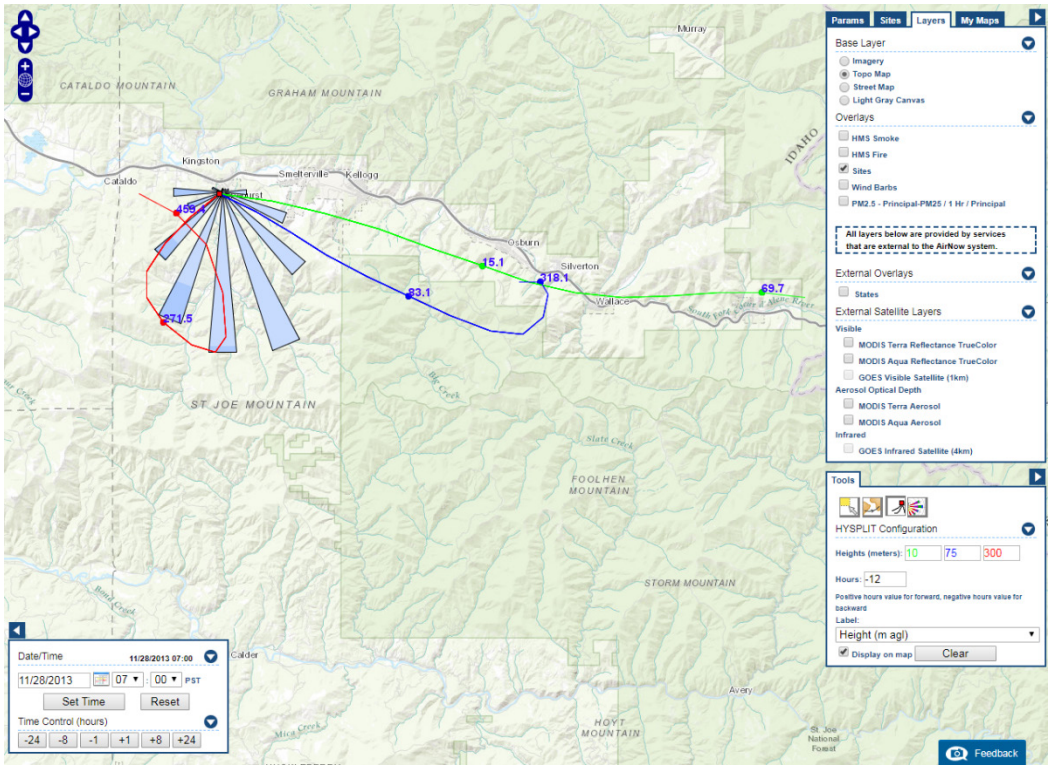


Figure R. HYSPLIT model and wind rose at Pinehurst, ID – 11/28/2013

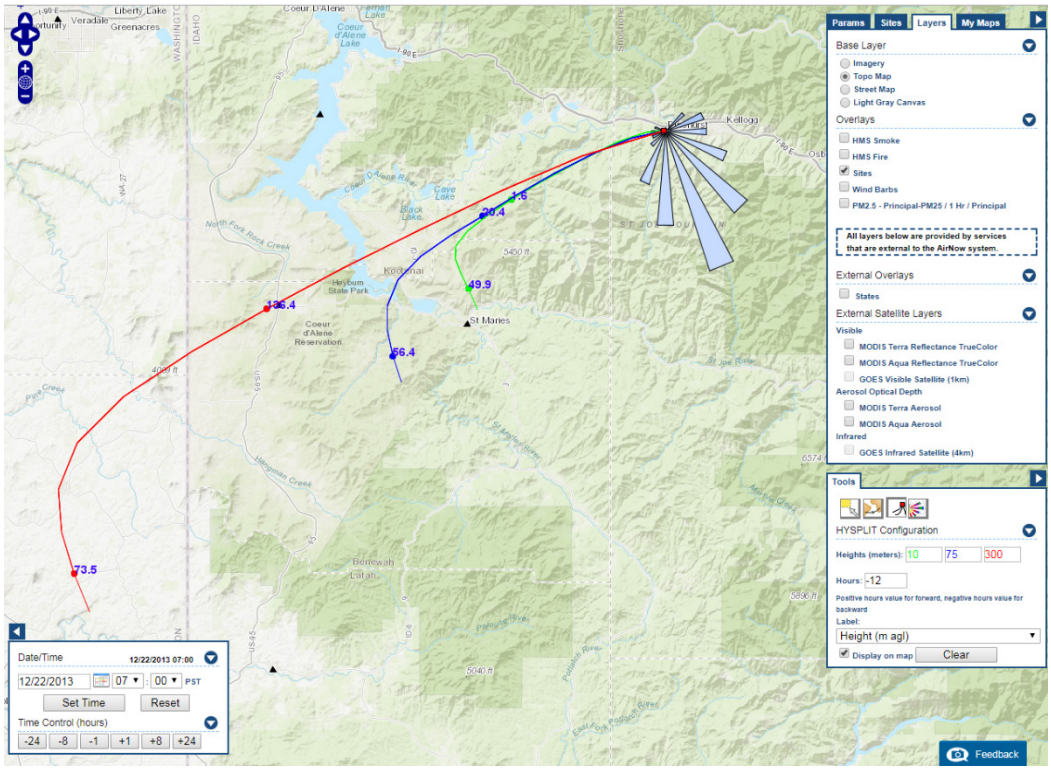


Figure S. HYSPLIT model and wind rose at Pinehurst, ID – 12/22/2013

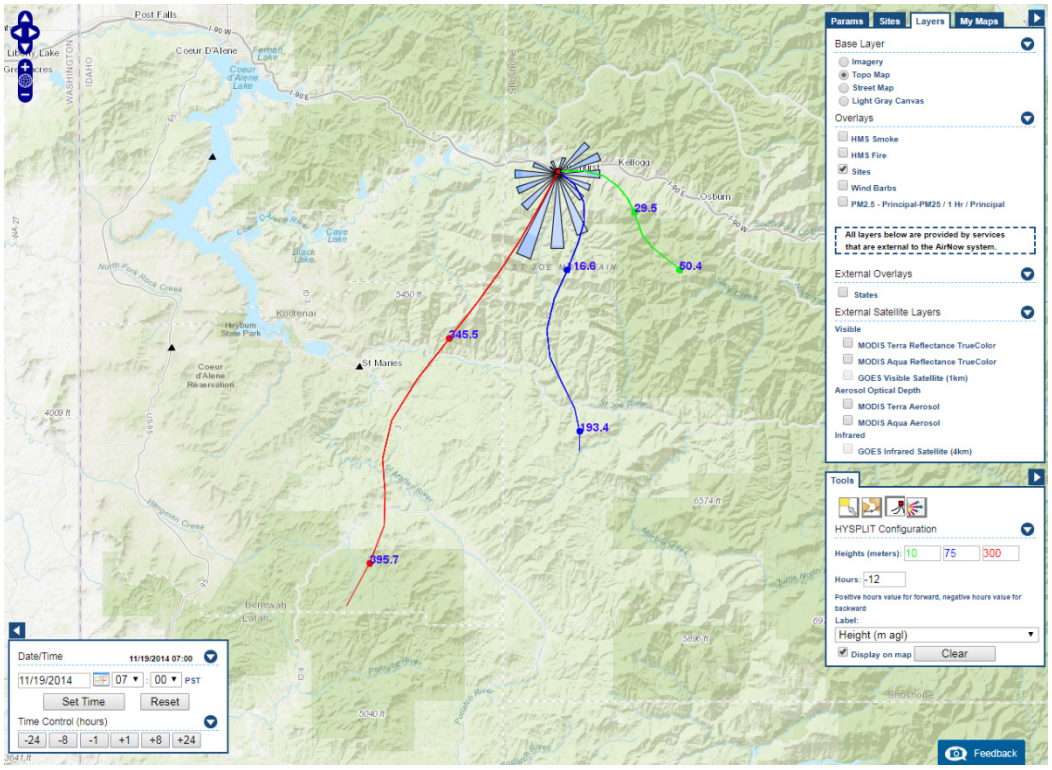


Figure T. HYSPLIT model and wind rose at Pinehurst, ID – 11/19/2014

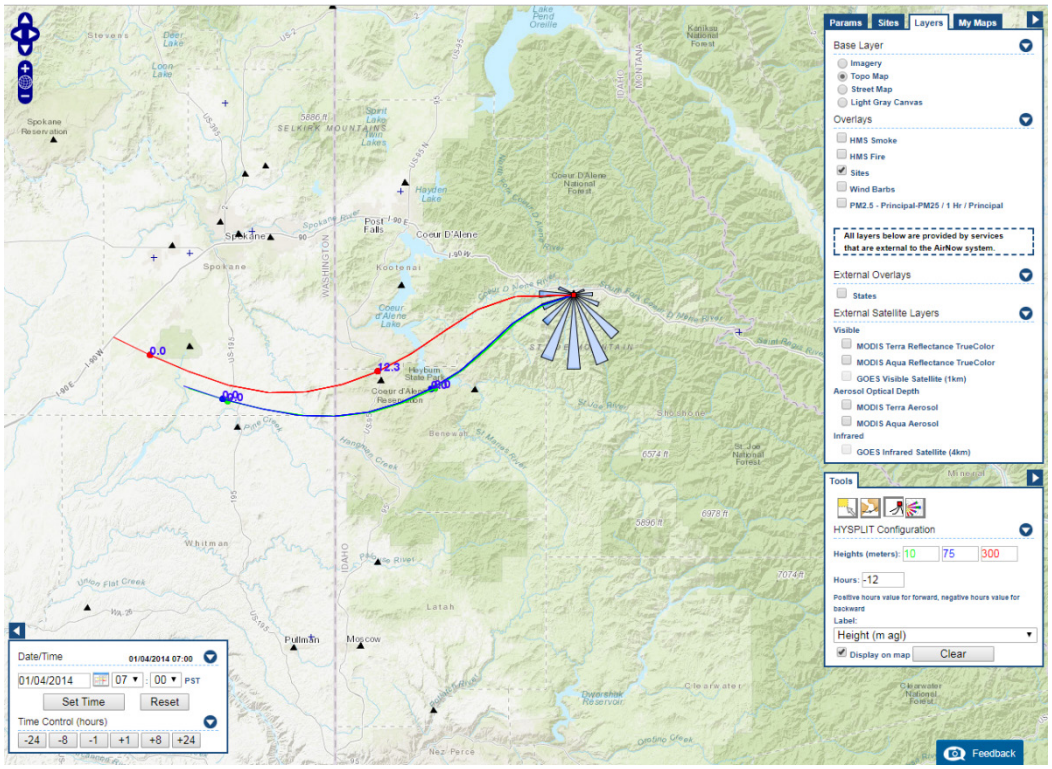


Figure U. HYSPLIT model and wind rose at Pinehurst, ID – 1/4/2014

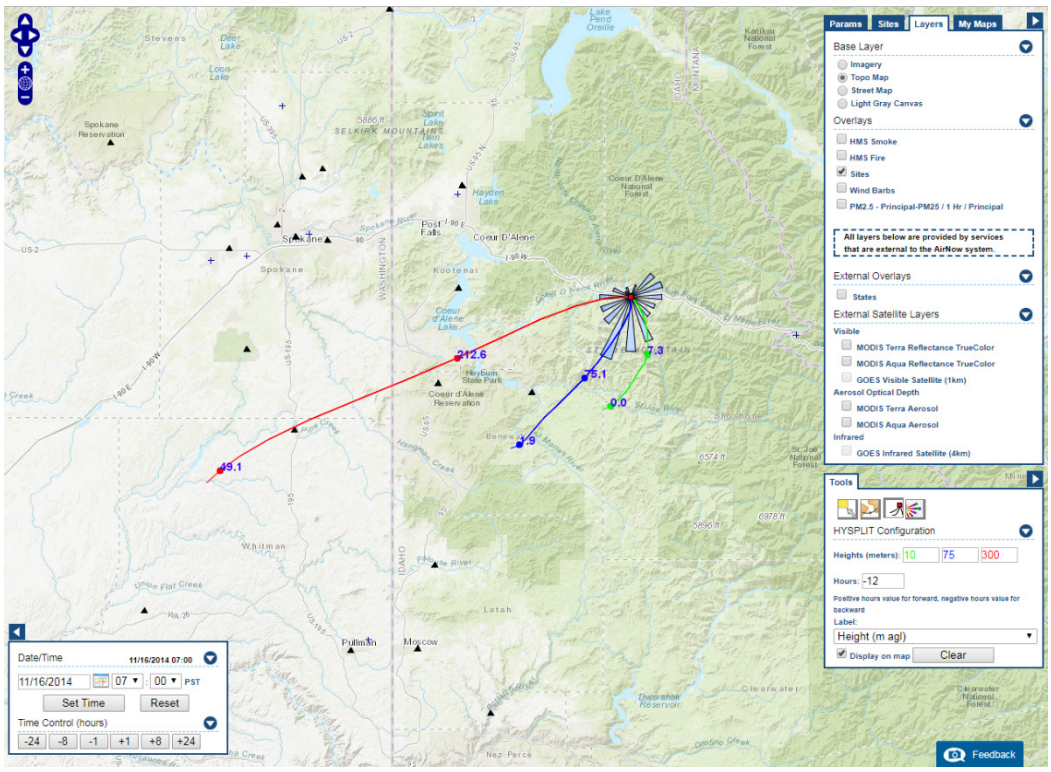


Figure V. HYSPLIT model and wind rose at Pinehurst, ID – 11/16/2014

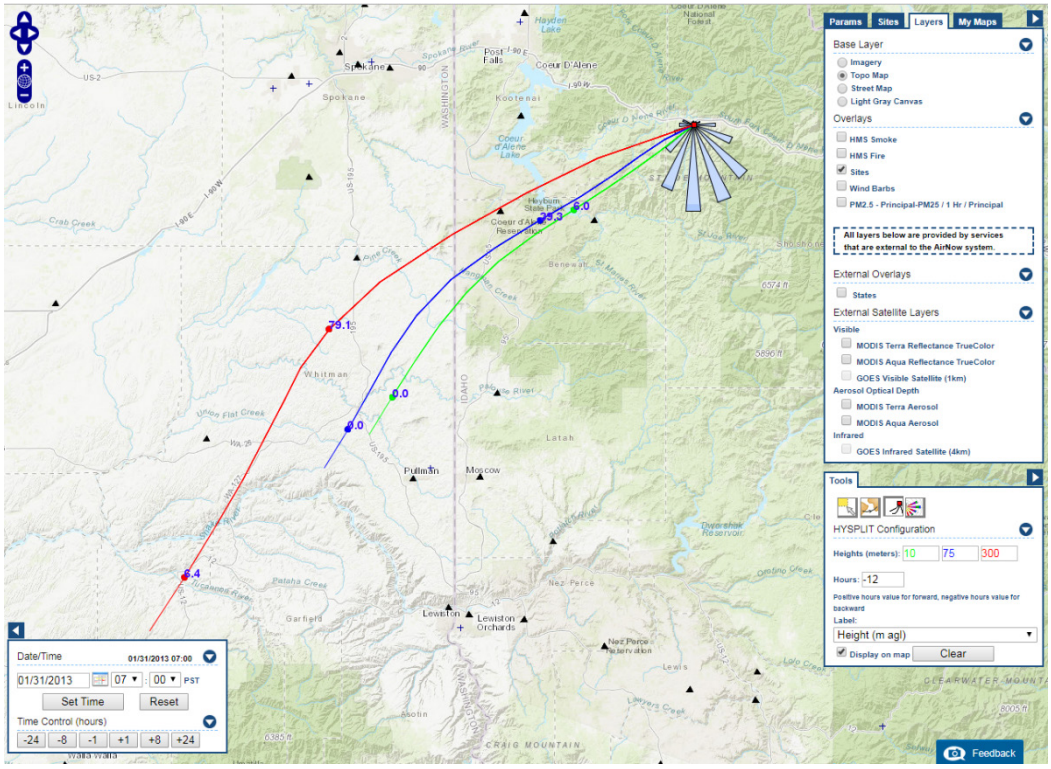


Figure W. HYSPLIT model and wind rose at Pinehurst, ID – 1/31/2013

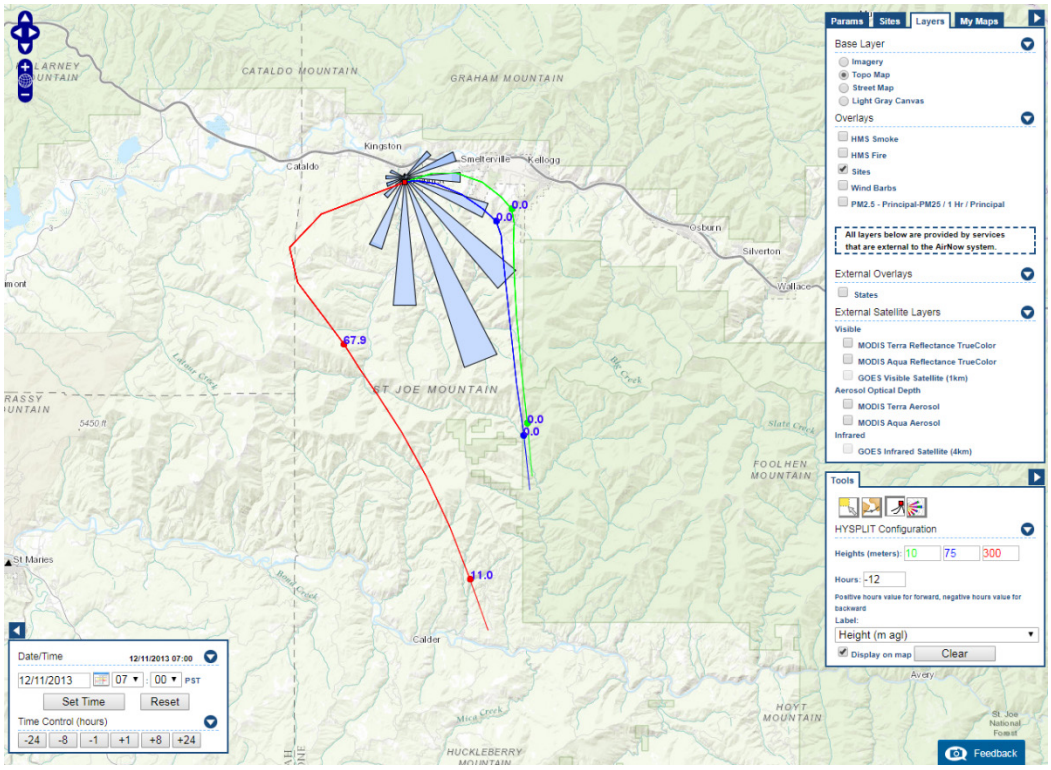


Figure X. HYSPLIT model and wind rose at Pinehurst, ID – 12/11/2013

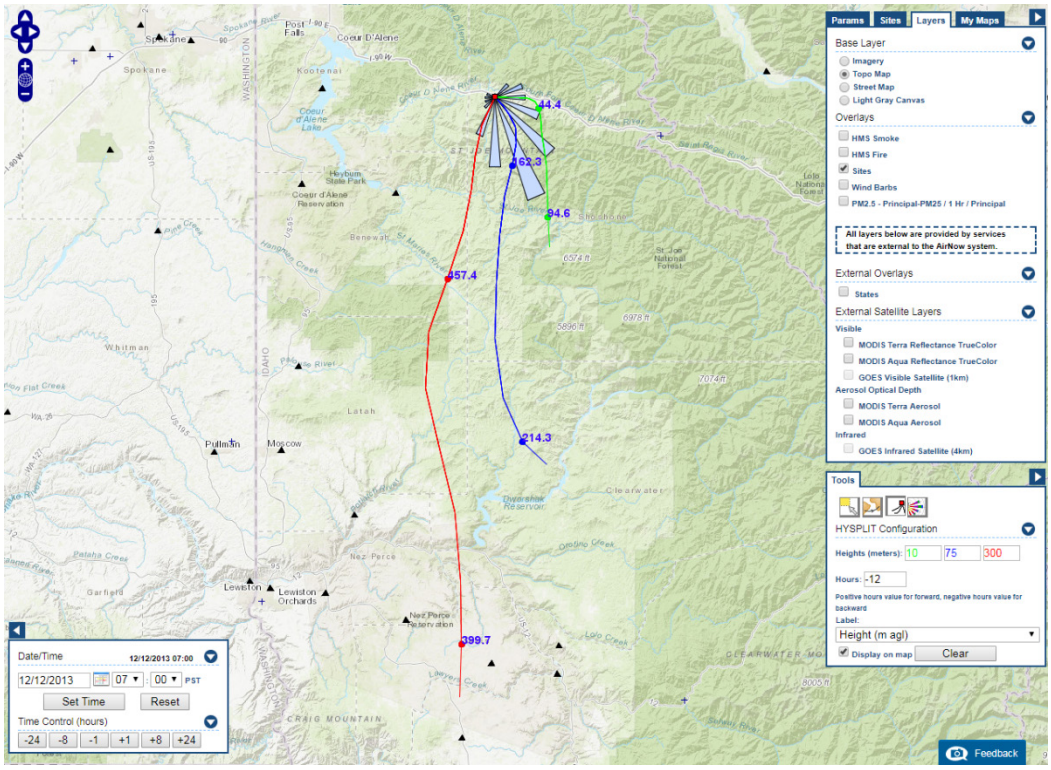


Figure Y. HYSPLIT model and wind rose at Pinehurst, ID – 12/12/2013

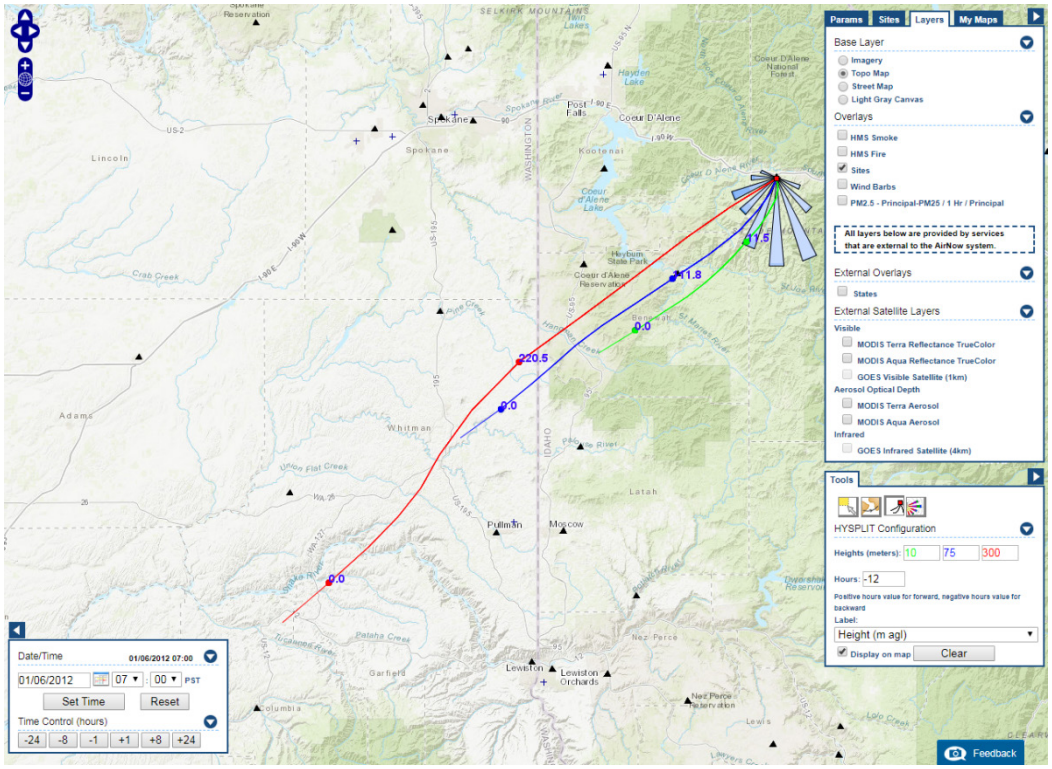


Figure Z. HYSPLIT model and wind rose at Pinehurst, ID – 1/6/2012

Appendix B. Public Involvement

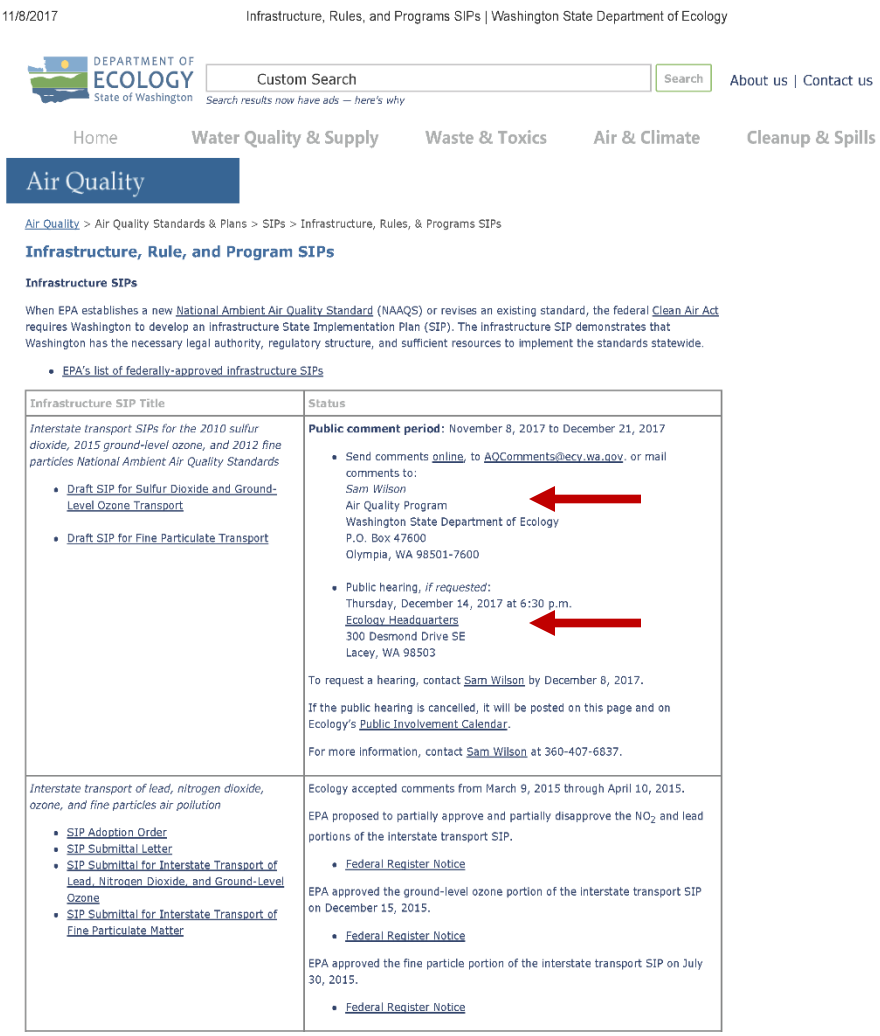
Public Comments, Outreach, and Outreach Material

This appendix documents Ecology's efforts to meet and exceed both federal and state requirements for public involvement during the development of this SIP revision. Ecology conducted public outreach for this SIP in conjunction with the interstate transport SIP revision related to the 2008 Primary SO2 and 2015 8-hour O3 NAAQS.

Ecology held a public comment period from November 8, 2017 through December 21, 2017 and offered to hold a public hearing on December 14, 2017, if requested. Ecology notified the public of the public comment period and hearing on Ecology's website and public involvement calendar, via email, and through a November 7, 2017 public notice in the Seattle Journal of Commerce. The public did not submit comment or request that Ecology hold a public hearing.

Notices of Proposed SIP revision

Notice on Ecology's website



11/8/2017 Infrastructure, Rules, and Programs SIPs | Washington State Department of Ecology

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Infrastructure, Rule, and Program SIPs

Infrastructure SIPs

When EPA establishes a new National Ambient Air Quality Standard (NAAQS) or revises an existing standard, the federal Clean Air Act requires Washington to develop an infrastructure State Implementation Plan (SIP). The infrastructure SIP demonstrates that Washington has the necessary legal authority, regulatory structure, and sufficient resources to implement the standards statewide.

- EPA's list of federally-approved infrastructure SIPs

Infrastructure SIP Title	Status
Interstate transport SIPs for the 2010 sulfur dioxide, 2015 ground-level ozone, and 2012 fine particles National Ambient Air Quality Standards • Draft SIP for Sulfur Dioxide and Ground-Level Ozone Transport • Draft SIP for Fine Particulate Transport	**Public comment period:** November 8, 2017 to December 21, 2017 • Send comments online, to AQComments@ecy.wa.gov. or mail comments to: *Sam Wilson* Air Quality Program Washington State Department of Ecology P.O. Box 47600 Olympia, WA 98501-7600 • Public hearing, *if requested*: Thursday, December 14, 2017 at 6:30 p.m. Ecology Headquarters 300 Desmond Drive SE Lacey, WA 98503 To request a hearing, contact Sam Wilson by December 8, 2017. If the public hearing is cancelled, it will be posted on this page and on Ecology's Public Involvement Calendar. For more information, contact Sam Wilson at 360-407-6837.
Interstate transport of lead, nitrogen dioxide, ozone, and fine particles air pollution • SIP Adoption Order • SIP Submittal Letter • SIP Submittal for Interstate Transport of Lead, Nitrogen Dioxide, and Ground-Level Ozone • SIP Submittal for Interstate Transport of Fine Particulate Matter	Ecology accepted comments from March 9, 2015 through April 10, 2015. EPA proposed to partially approve and partially disapprove the NO_2 and lead portions of the interstate transport SIP. • Federal Register Notice EPA approved the ground-level ozone portion of the interstate transport SIP on December 15, 2015. • Federal Register Notice EPA approved the fine particle portion of the interstate transport SIP on July 30, 2015. • Federal Register Notice

Notice sent through Ecology Listserv

Wilson, Sam (ECY)

From: Ecology's Air Quality Rule and State Implementation Plan Updates <ECY-AQ-RULE-AND-SIP-UPDATES@LISTSERV.WA.GOV> on behalf of ECY RE AQComments <AQComments@ECY.WA.GOV>
Sent: Tuesday, November 07, 2017 10:03 AM
To: ECY-AQ-RULE-AND-SIP-UPDATES@LISTSERV.WA.GOV
Subject: Washington SIP Notice: Comment on Proposed SO2, O3, and PM2.5 Interstate Transport SIPs

Greetings,

The Washington State Department of Ecology is accepting comments on a proposed State Implementation Plan (SIP) related to the transport of air pollutants generated by Washington sources to other states. The SIP addresses transport of sulfur dioxide (SO_2), ozone (O_3), and fine particulate matter ($PM_{2.5}$).

Ecology must submit documentation of how Washington sources affect nonattainment or hinder progress in maintenance areas in neighboring states. Based on our review of the most recent air monitoring data, air modeling data, recent publications, and conversations with neighboring states, Ecology proposes that Washington sources do not significantly contribute to nonattainment or maintenance areas in other states for the 2010 SO_2, 2015 O_3, and 2012 $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS).

Review Proposed SIP Revision:
You may review and comment on the proposed SIP from November 8, 2017 through December 21, 2017. The draft documents are available for review at Ecology's website.

Public Hearing (if requested):

- The public can request a public hearing by contacting Sam Wilson by email at sam.wilson@ecy.wa.gov or by phone at 360-407-6837.
- Requests for public hearing must be received no later than December 8, 2017 at 5 pm PST.
- If requested, a hearing will be held at 6:30 pm PST on December 14, 2017 at Ecology Headquarters, 300 Desmond Drive SE, Lacey, WA 98503.
- If a hearing request is not received, Ecology will announce a cancellation of the December 14 public hearing on its public involvement calendar.

How to comment:

- Visit Ecology's eComment website
- Mail Washington Dept. of Ecology, Sam Wilson, PO Box 47600, Olympia, WA 98504-7600
- Testify or submit written comments at the public hearing (if one is requested).
- If you have questions regarding comment submission, please email Sam Wilson at sam.wilson@ecy.wa.gov.

Contact Us:

- Sam Wilson at (360) 407-6837 or sam.wilson@ecy.wa.gov

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Legal Notices

Seattle Daily Journal of Commerce, November 7, 2017

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Department of Ecology

NOTICE OF PUBLIC COMMENT PERIOD AND PUBLIC HEARING ON Interstate Transport of SO2, O3, and PM2.5

Ecology is accepting comments on our analysis determining that Washington's air emissions of sulfur dioxide (SO2), ozone (O3), and fine particulate matter (PM2.5) do not affect nonattainment or impair maintenance areas in other states. This analysis is known as an Interstate Transport State Implementation Plan (IT SIP).

You may review and comment on the proposed IT SIPs from November 8, 2017 through December 21, 2017. The public review documents are available for review at: http://www.ecy.wa.gov/programs/air/sips/plans/infrastructure.htm.

The public can request a public hearing by contacting Sam Wilson by email at sam.wilson@ecy.wa.gov or by phone at 360-407-6837. The deadline to request a hearing is December 8, 2017 at 5 pm PST. If Ecology receives a hearing request by the deadline, we will hold it at 6:30 pm on December 14, 2017 at Ecology Headquarters, 300 Desmond Drive SE, Lacey, WA 98503.

If Ecology does not receive a request for public hearing, we will post a cancellation of the December 14 hearing on our public involvement calendar: https://fortress.wa.gov/ecy/publiccalendar/.

To comment on the plan:

- visit http://ac.ecology.commentinput.com/?id=aFsx2
- email AQComments@ecy.wa.gov
- mail:

Sam Wilson
Air Quality Program
Washington State Dept. of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

- testify or submit written comments at the public hearing.

For more information, contact Sam Wilson at (360) 407-6837 or sam.wilson@ecy.wa.gov.

For special accommodations or documents in alternate format or languages, call (360) 407-6800, 711 (relay service), or 877-833-6341 (TTY)

Date of publication in the Seattle Daily Journal of Commerce, November 7, 2017

11/7(355495)

Phone (206) 622-8272 • Fax (206)-622-8416 • legals@djc.com

Public Involvement Calendar

Notice of Public Comment Period and Public Hearing

Dec 14 2017 6:30PM **Public Hearing/Webinar - Lacey**
---------- **Revised Interstate Transport State Implementation Plan**

Ecology is accepting comments on our analysis determining that Washington's air emissions of sulfur dioxide, ozone, and fine particles do not affect areas in neighboring states that do not meet or are maintaining to meet a national air quality standard. This analysis is known as an Interstate Transport State Implementation Plan. We will hold a public hearing if one is requested by Dec. 8, 2017. If a public hearing is not requested by then, we will post a cancellation on this calendar and on the web page.

More Information: More Information
Location: Dept of Ecology HQ/Southwest Regional Office
300 Desmond Drive SE
Lacey , WA
Sponsor: Ecology
ECY HQ
Contact: Sam Wilson
(360) 407-6837 / sam.wilson@ecy.wa.gov

Public Comment Period - Nov 8 2017 - Dec 21 2017

Nov 08 2017 **Public Comment Period - Statewide**
Dec 21 2017 **Revised Interstate Transport State Implementation Plan**

Ecology is accepting comments on our analysis determining that Washington's air emissions of sulfur dioxide, ozone, and fine particles do not affect areas in neighboring states that do not meet or are maintaining to meet a national air quality standard. This analysis is known as an Interstate Transport State Implementation Plan. We will hold a public hearing if one is requested by Dec. 8, 2017. If a public hearing is not requested by then, we will post a cancellation on this calendar and on the web page.

More Information: More Information
Location:
Statewide , WA
Sponsor: Ecology
ECY HQ
Contact: Sam Wilson
(360) 407-6837 / sam.wilson@ecy.wa.gov

Public Hearing/Webinar - Dec 14 2017 6:30PM

Notices of Cancellation of Public Hearing

Public Involvement Calendar

Nov 08 2017 Public Comment Period - Statewide
Dec 21 2017 HEARING CANCELLED: Revised Interstate Transport State Implementation Plan

Ecology is accepting comments on our analysis determining that Washington's air emissions of sulfur dioxide, ozone, and fine particles do not affect areas in neighboring states that do not meet or are maintaining to meet a national air quality standard. This analysis is known as an Interstate Transport State Implementation Plan. We will hold a public hearing if one is requested by Dec. 8, 2017. If a public hearing is not requested by then, we will post a cancellation on this calendar and on the web page.

More Information: More Information
Location:

Statewide , WA
Sponsor: Ecology
ECY HQ
Contact: Sam Wilson
(360) 407-6837 / sam.wilson@ecy.wa.gov

Public Hearing/Webinar - Dec 14 2017 6:30PM

Dec 14 2017 6:30PM Public Hearing/Webinar - Lacey

HEARING CANCELLED: Revised Interstate Transport State Implementation Plan

Ecology is accepting comments on our analysis determining that Washington's air emissions of sulfur dioxide, ozone, and fine particles do not affect areas in neighboring states that do not meet or are maintaining to meet a national air quality standard. This analysis is known as an Interstate Transport State Implementation Plan. We will hold a public hearing if one is requested by Dec. 8, 2017. If a public hearing is not requested by then, we will post a cancellation on this calendar and on the web page.

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Location: Dept of Ecology HQ/Southwest Regional Office

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Lacey , WA
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ECY HQ
Contact: Sam Wilson
(360) 407-6837 / sam.wilson@ecy.wa.gov

Public Comment Period - Nov 8 2017 - Dec 21 2017

Notice on Ecology's Website

DEPARTMENT OF ECOLOGY State of Washington

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Infrastructure, Rule, and Program SIPs

Infrastructure SIPs

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Infrastructure SIP for the 2010 Nitrogen Dioxide, 2008 Ozone, and 1997, 2006, and 2012 Fine Particulate Matter National Ambient Air Quality Standards • SIP Submittal • News Release - 07/25/2014	EPA partially approved part of the SIP submittal on 1/14/15. • Federal Register Notice EPA proposed to partially approve another part of the SIP submittal on 10/17/14 in a separate action. • Federal Register Notice
Infrastructure SIP Certification for the 2008 Lead National Ambient Air Quality Standards • SIP Submittal • FAQ • 2012 Airport Lead Study: Auburn Municipal Airport and Harvey Field	EPA partially approved this SIP on 7/23/14. • Federal Register Notice
Infrastructure SIP Certification for the 1997 8-Hour Ozone National Ambient Air Quality Standards • SIP submittal	EPA partially approved this SIP on 5/24/12. • Federal Register Notice
Interstate Transport SIP State Implementation Plan for 1997 8-Hour Ozone and PM2.5 National Ambient Air Quality Standards	EPA approved this SIP on 8/27/07. • Federal Register Notice