



Jessica Spiegel

Vice President, Northwest Region

February 14, 2026

Sent via email to: anthony.bruma@ecy.wa.gov

Anthony Bruma
Rulemaking Lead
Washington State Department of Ecology
Air Quality Program
P.O. Box 47696
Olympia, WA 98504-7696

Re: Comments on Preliminary Draft Rule Language - WAC 173-448 – Air Quality in Overburdened Communities

Dear Mr. Bruma:

The Western States Petroleum Association (WSPA) appreciates the opportunity to provide the Washington State Department of Ecology (Ecology) with comments on the agency's preliminary draft rule language in Chapter 173-448 WAC, "Air Quality in Overburdened Communities." WSPA is a non-profit trade association that represents companies that safely explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California, Washington, Oregon, Nevada, and Arizona.

WSPA supports efforts to improve air quality in overburdened communities. However, the draft regulation is not well designed to achieve that objective. WSPA members have two major areas of concern.

First, the rulemaking focuses exclusively on regulatory controls and compliance orders for permitted and registered stationary sources, regardless of whether those sources meaningfully contribute to the air quality concerns in those areas. This exclusive focus is contrary to the statute and will not result in measurable air quality improvements in the identified overburdened communities.

Second, the area being defined as a "neighboring community" is so expansive that it encompasses distant geographic areas, airsheds, and population centers that are not comparable to the overburdened community. This is inconsistent with the legislature's intent.

Focus on Identification and Reduction of Greatest Contributors

WSPA recommend that the rule be reconfigured to follow the process outlined in RCW 70A.65.020. After identifying overburdened communities, the statute directs Ecology to establish air quality targets, identify the stationary and mobile sources that are the greatest contributors to the air quality concerns in these communities, and then adopt emission control strategies or other methods to improve air quality. The proposed regulations skip the critical step of determining what sources are the primary causes of the area quality problems. Instead, the rule focuses exclusively on permitted and registered sources, despite existing data showing that they are not the primary contributors to the air quality concerns.

Well before the step of issuing compliance orders, the law expects Ecology to set (by rule per RCW 70A.15.3000(2)(a)(and (3)) area specific ambient air quality standards or emission standards or limitations as the basis for establishing the emission reductions to be required by the various

sources. The draft language omits steps to set emission standards or limits and makes no connection between standards/limits and required emission reduction plans.

This refocus will require Ecology to evaluate what regulatory and non-regulatory programs can be implemented to reduce emissions from the greatest contributors. We understand that the effort to develop and implement programs for reductions of criteria pollutants from non-regulated sources (wood stoves, open burning, agricultural tilling, etc.) can be challenging, but these types of programs have been developed and successfully implemented in Washington in the past (e.g., to address the Tacoma non-attainment area for PM_{2.5}).

The 2023 Ecology report characterizing the first 16 overburdened communities (OBC) identified PM_{2.5} as the primary criteria pollutant of concern for nearly all areas.¹ Ecology determined that the primary sources of this PM_{2.5} were wildfires, wood stoves, various forms of open burning, and mobile sources. Ozone is listed as a pollutant of concern for only one overburdened community (Tri-cities to Wallula), and Ecology determined that “NOx and VOCs come from many sources, but cars and trucks are the largest contributors.” Permitted and registered sources are not identified as significant or predominant sources for any of the 16 overburdened communities.² As such, reducing emissions from these sources as currently planned in this draft rule will not address the greatest contributors of air pollution.

If kept in its current form, the rule needs several improvements to achieve meaningful reductions and effective implementation:

1. The law requires proportionate reductions based on a permitted source’s contribution to air quality in the OBC compared to both other permitted sources and to all other sources of criteria pollutants in the OBC.³ This proportionate requirement is not evaluated in Ecology’s 2023 report, not addressed in Ecology’s other reports, nor is it reflected in the draft rule language. To adhere to the statute, the rule requires Ecology to evaluate proportionality in each community and to outline the methods for this evaluation.

As described in the previous section, permitted/registered sources have not been identified as contributing sources in the overburdened communities, so it is fundamentally unreasonable and unproductive to focus the rule on reducing emissions at these sources. The rule should not prescribe emissions reductions of high priority emitters. Reductions should be established on a case-by-case basis based on that source’s proportional contribution to air quality concentrations in the overburdened community.

2. The rule language should include a requirement that Ecology review all sources of emissions when determining what sources are the “Greatest Contributors” in each overburdened community. Next, this “greatest contributors” list should be used as the basis for identifying whether a given stationary source is a “High Priority Significant Emitter.” If the evaluation for a

¹ “Cumulative criteria air pollution” is listed for Northeast Puyallup identifies, while PM_{2.5} specifically is listed for all other OBC’s list. No other specific criteria pollutants are listed other than ozone, which is listed only for Tri-Cities to Wallula. <https://apps.ecology.wa.gov/publications/UIPages/documents/2302115.pdf>

² While many OBC descriptions include a statement such as “particulate matter comes predominantly from woodburning related to home heating in the wintertime,” “industrial sources” or any other descriptor that could describe a permitted/registered source is listed only once, as the last among eight possible sources of particulate matter in the Tri-cities to Wallula area.

³ Actions imposed under this section may not impose requirements on a permitted stationary source that are disproportionate to the permitted stationary source’s contribution to air pollution compared to other permitted stationary sources and other sources of criteria pollutants in the overburdened community.

[RCW [70A.65.020](#)(2)(c).

community does not identify permitted/registered sources as greatest contributors, Ecology should make a determination that no emissions reductions are required from permitted/registered sources in that community, and they should not be listed as “High Priority Significant Emitters.”

The current language uses major modification emission thresholds established for Prevention of Significant Deterioration (PSD) permitting applicability as an initial basis for identifying “High Priority Significant Emitters.” We disagree with this methodology because there is not a direct connection between emissions from a stationary source and the air quality impact in the affected community by that source. As proposed, a source could be designated high priority even if it does not cause or contribute to criteria air pollutant concentrations within the overburdened community. Ecology should evaluate both emissions and air quality modeling data in order to determine which sources should be designated High Priority Significant Emitters.”

3. WSPA recommends that this rulemaking include programs within the rule to address non-permitted/registered sources. Without these programs, the rule would leave some 96% of emissions in the state unaddressed.⁴
 - a. The draft rule explicitly covers only stationary sources subject to permitting or registration requirements under the State Clean Air Act., This limitation excludes wood-burning stoves and any of the various forms of open burning covered by other programs in the state Clean Air Act, or mobile sources, highlighting a clear mismatch between what is being regulated and what is causing elevated pollution.
4. Provide a method for how to demonstrate a source does not “cause or contribute to criteria air pollution in the identified community.” If the ambient air quality impact of a given source are de minimis, a straightforward method to demonstrate this status is needed.
5. Provide a clear path for a source to reduce emissions and not be subject to this rule’s requirements. As a result of the current language, a point source may remain designated even if its emissions are reduced or eliminated, until the entire community’s air quality is improved. A determination should be based on a facility’s contribution, rather than community-level pollution data.
6. Address economic hardship issues resulting from imposing costly emission reduction requirements on permitted/registered sources, more likely the case for small businesses and sole proprietorships. This economic hardship is of particular concern when the reductions being required are not expected to achieve an improvement in ambient air quality levels, such as in the Yakima Valley.

Neighboring Community Boundaries

Neighboring Community Boundaries

In addition, the statute states that air quality in an overburdened community should be as good as in a neighboring community, as it relates to National Ambient Air Quality Standards. A reasonable interpretation would be comparison at a maximum within the same airshed, city or even

⁴ The industrial/commercial stationary categories account for only 4% of state-wide criteria pollutant emissions from Ecology’s most recent emission inventory report ([2020 Washington Comprehensive Emissions Inventory](https://apps.ecology.wa.gov/publications/documents/2002012.pdf), apps.ecology.wa.gov/publications/documents/2002012.pdf), 7% if “Industrial, commercial, and consumer solvent use” is conservatively included. Categories included in these totals are “Large point sources,” “Industrial/Commercial/Institutional fuel use,” and “Gasoline storage and transport.”

neighborhoods. Ecology instead defined “neighboring community” as any location within the broader Ecology Regional Office boundaries, which spans large and diverse geographic areas, airsheds, and population sizes.

During the Dec. 10, 2025 public meeting on the draft rule, Ecology expressed its vision of using the Regional Office boundaries to denote the “neighboring community”. The approach discussed instead would be a process of producing design value/air quality target concentration based on an average or other statistical measure of all monitors in the region and outside of an OBC. If this approach is what Ecology intends to implement, the rule text will need significant revision to make that approach clear and it could still be problematic. This approach still poses the same issue of including monitors in locations that are not neighboring communities and not comparable to the OBC. In addition, the approach does not address the situation where the boundary of an OBC encompasses two regional office boundaries and does not resemble a reasonable interpretation of what a ‘nearby community’ would be.

Definition of Contributing Sources and High Priority Significant Emitters

The overburdened community boundary should be maintained for inclusion of contributing sources and “High Priority Significant Emitters.” The draft rule uses the overburdened community boundary to determine whether sources can be included as contributing sources needing criteria pollutant reduction. This approach aligns with the statute in WAC 70A.65,(1)(c)(i) and should be maintained. In addition, any other approach would lead to high uncertainty. Ecology has limited options for determining a scientifically sound alternative boundary or other approach for inclusion of sources other than completing a detailed analysis similar to a non-attainment area analysis.

Volatile Organic Compounds (VOC) as a Precursor to PM_{2.5}

During the December 10, 2025 public meeting, Ecology invited comments on whether VOC should be treated as a precursor to PM_{2.5}. EPA’s permitting regulations and guidance for ozone and fine particulate permit modeling do not treat VOC as a PM_{2.5} precursor because VOC is often not a significant contributor to PM_{2.5} in the specific area.⁵ Under the regulations, a state may include VOC as a precursor if they choose to demonstrate that VOC emissions in a specific area are a significant contributor. Therefore, if Ecology is considering including VOC as a PM_{2.5} precursor, a demonstration should be conducted for each specific overburdened community airshed where VOC may be considered. Based on Ecology’s source apportionment work using their chemical speciation network monitoring data, PM_{2.5} from VOC (known as secondary organic aerosol) is not identified as a contributor to PM_{2.5}. In the Tacoma area, the top contributor is wood smoke (53%). In addition, biogenic VOC far outweighs anthropogenic VOC in Washington – VOC emissions from soil, vegetation and wildfires made up 65% of VOC from the state in the most recent inventory, compared to only 1.7% from the “large point sources” category.⁶

⁵ See 73 FR at 28333. The EPA’s PSD and nonattainment program regulations do not presumptively require VOC to be treated as precursors to PM_{2.5}. However, a state or the EPA may demonstrate that VOC emissions in a specific area are a significant contributor to that area’s ambient PM_{2.5} concentrations and, thus, should be treated as a regulated NSR pollutant subject to the PSD and NNSR permitting requirements. 40 CFR 50.165(a)(1)(xxxvii)(4) and 40 CFR 52.21(b)(50)(i)(b)(4).

https://www.epa.gov/sites/default/files/2020-09/documents/draft_guidance_for_o3_pm25_permit_modeling.pdf

⁶ apps.ecology.wa.gov/publications/documents/2002012.pdf

Conclusion

As noted previously, WSPA supports policy makers and Ecology's efforts to improve air quality in overburdened communities. However, the agency should adopt a rule that focuses on highest contributors of criteria air pollution as required by the CCA to achieve meaningful reductions.

Thank you for considering our comments. We look forward to continued engagement in this important rulemaking process. If you have any questions regarding our comments, please do not hesitate to contact me directly at (360) 918-2178 or via email at jspiegel@wspa.org.

Sincerely,



Jessica Spiegel
Vice President, Northwest Region



Attachments:
Appendix A: Washington OBC PSAT Analysis 02-13-26

Appendix A. Washington OBC PSAT Analysis 02-13-26

The memo below was prepared by Alpine Geophysics, LLC (Alpine) and is based on modeling and materials created in 2024.

I.) Introduction

In November 2025, the Washington Department of Ecology released a proposed regulation—WAC 173-448, *Air Quality in Overburdened Communities*—designed to reduce unequal air pollution impacts in communities experiencing elevated environmental burdens. The proposal establishes an approach for improving air quality in overburdened communities (OBCs) by developing localized air-quality benchmarks using a combination of regulatory monitoring stations and sensor networks. Air-quality goals would be set based on either conditions in nearby communities or the National Ambient Air Quality Standards, depending on which standard offers greater protection. Under the proposal, Ecology would identify major pollution sources and priority emitters through emission inventories, air-quality modeling, monitoring results, and community feedback, and could require these entities to adopt monitoring plans, submit additional reporting, or implement pollution-control measures.

Utilizing previously prepared CAMx photochemical grid modeling, Western States Petroleum Association and its members analyzed the data at the monitors closest to the four refineries in northwest Washington. Based on this analysis, the contributions to PM_{2.5} in all communities, including overburdened, is insignificant and any further source controls on this industry will have little to no measurable difference on monitored concentrations.

II.) Modeling Methodology

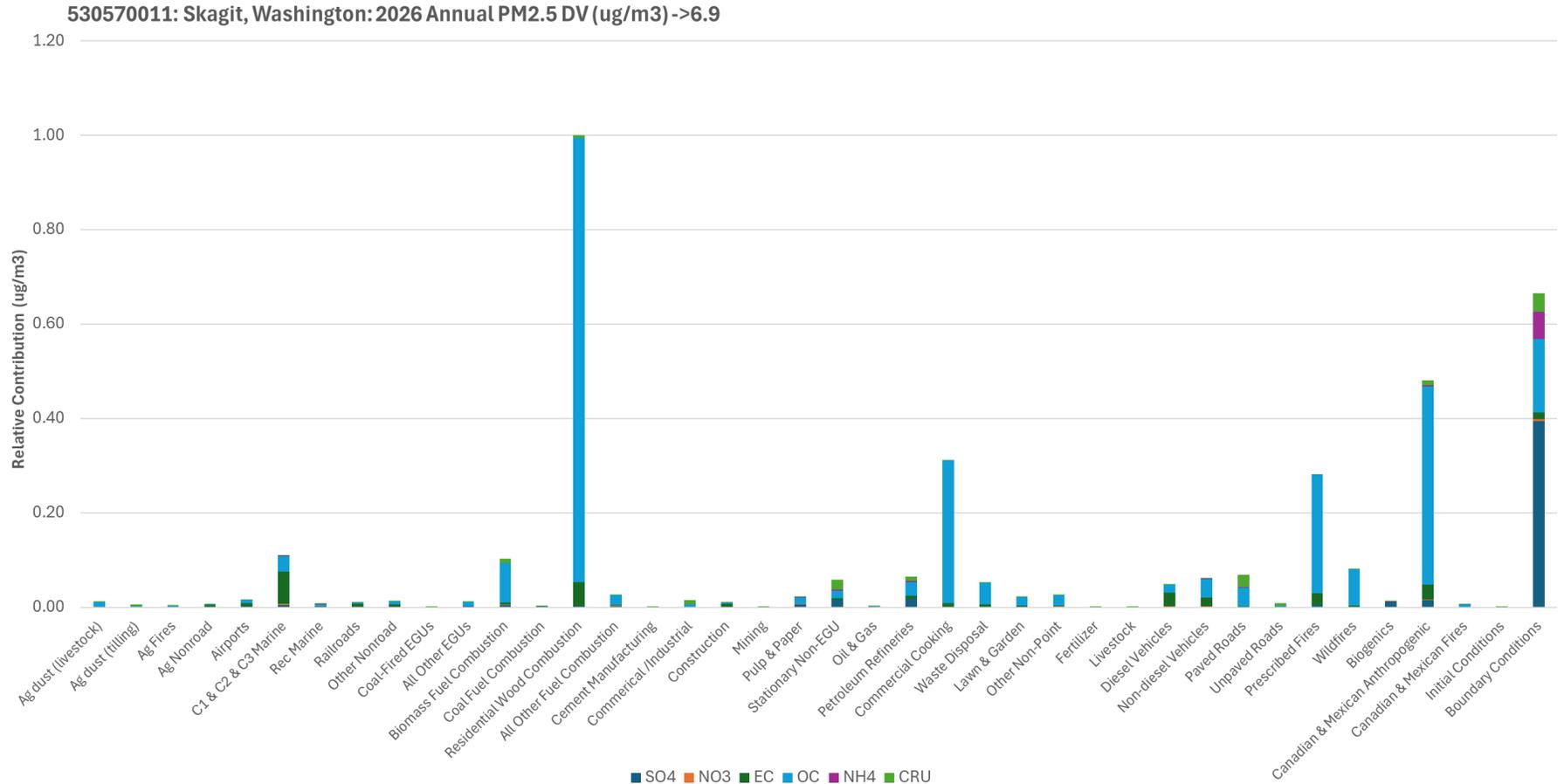
In early 2024, Alpine Geophysics, LLC (Alpine) ran a particulate matter source apportionment run¹ with thirty-nine (39) tagged emission categories using EPA's 2016v3 modeling platform projections to 2026. This simulation allowed for the calculation of relative contribution of specific PM_{2.5} species from each of the tagged categories to the modeled PM_{2.5} concentrations at downwind receptors. Below we present a summary of this modeling for monitor 530570011 in Skagit County, Washington with overall and top ten category contribution tables and figures. We also summarize EPA's and Alpine's findings that in most regions in the United States, proximal emissions dominate the modeled PM_{2.5} concentration found at PM_{2.5} monitors which is consistent with National Ambient Air Quality Standard (NAAQS)² exceedances being driven by the urban PM_{2.5} increment as documented in EPA's RIA. We also note the low responsiveness of PM_{2.5} concentrations to primary PM_{2.5} emission reductions the farther the source of emissions to the monitor as documented by EPA in its assessment that adjacent county control of primary PM_{2.5} emissions is four times less responsive than the value used when applying in-county emissions reductions.

¹ https://www.midwestozonegroup.com/_files/ugd/7ec07f_744eb1e14e444b2b93dff141fadee7b8.pdf

² Primary NAAQS standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly with an adequate margin for safety.

III.) Monitor 530570011 – Skagit County, WA (Near HF Sinclair and Marathon Petroleum Anacortes)

Skagit County has one monitor that is currently attaining ($5.1 \mu\text{g}/\text{m}^3$; 2022-2024 annual $\text{PM}_{2.5}$ design value) and is projected in the 2026 base case to be in attainment of the $9.0 \mu\text{g}/\text{m}^3$ primary health-based NAAQS. Monitor 530570011 has a modeled 2026 base case annual $\text{PM}_{2.5}$ design value of $6.9 \mu\text{g}/\text{m}^3$. The relative contribution of tagged $\text{PM}_{2.5}$ species from each of the categories to this monitor is presented below. The relative height of each bar represents the relative contribution of that category to the overall modeled $\text{PM}_{2.5}$ concentration.

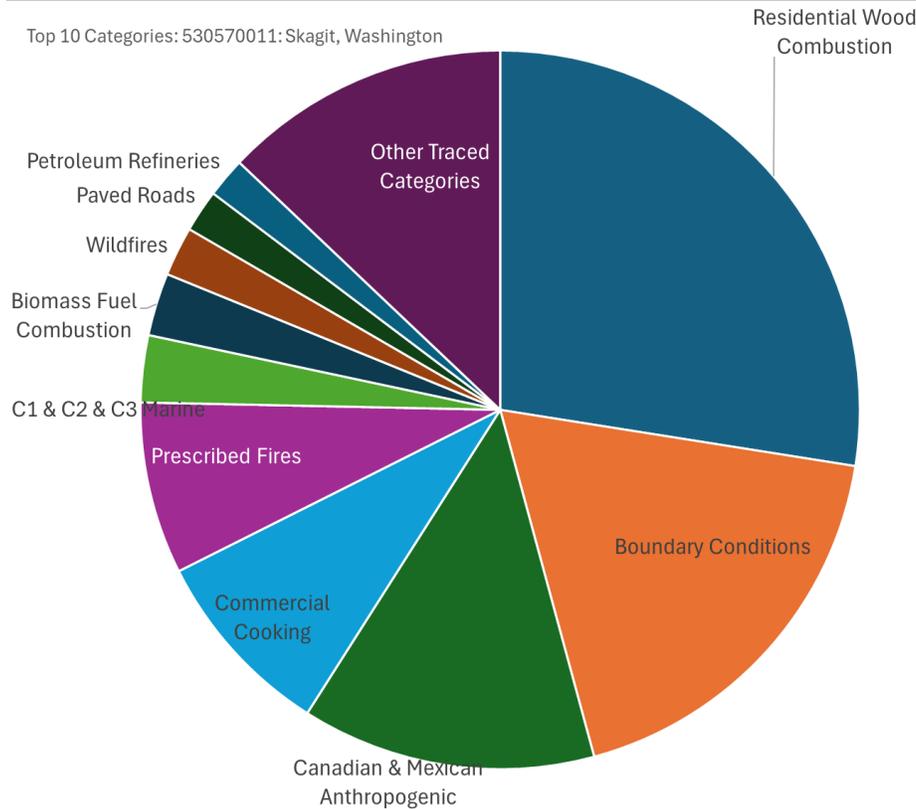


Top Ten Categories

From the thirty-nine categories tagged in the simulation, the top ten categories contributing to this monitor are listed by category and tagged species in the table and pie chart below. These figures and tables may provide information valuable in determining upwind source categories that would have greatest potential for incremental control in helping to maintain attainment with the NAAQS at this location.

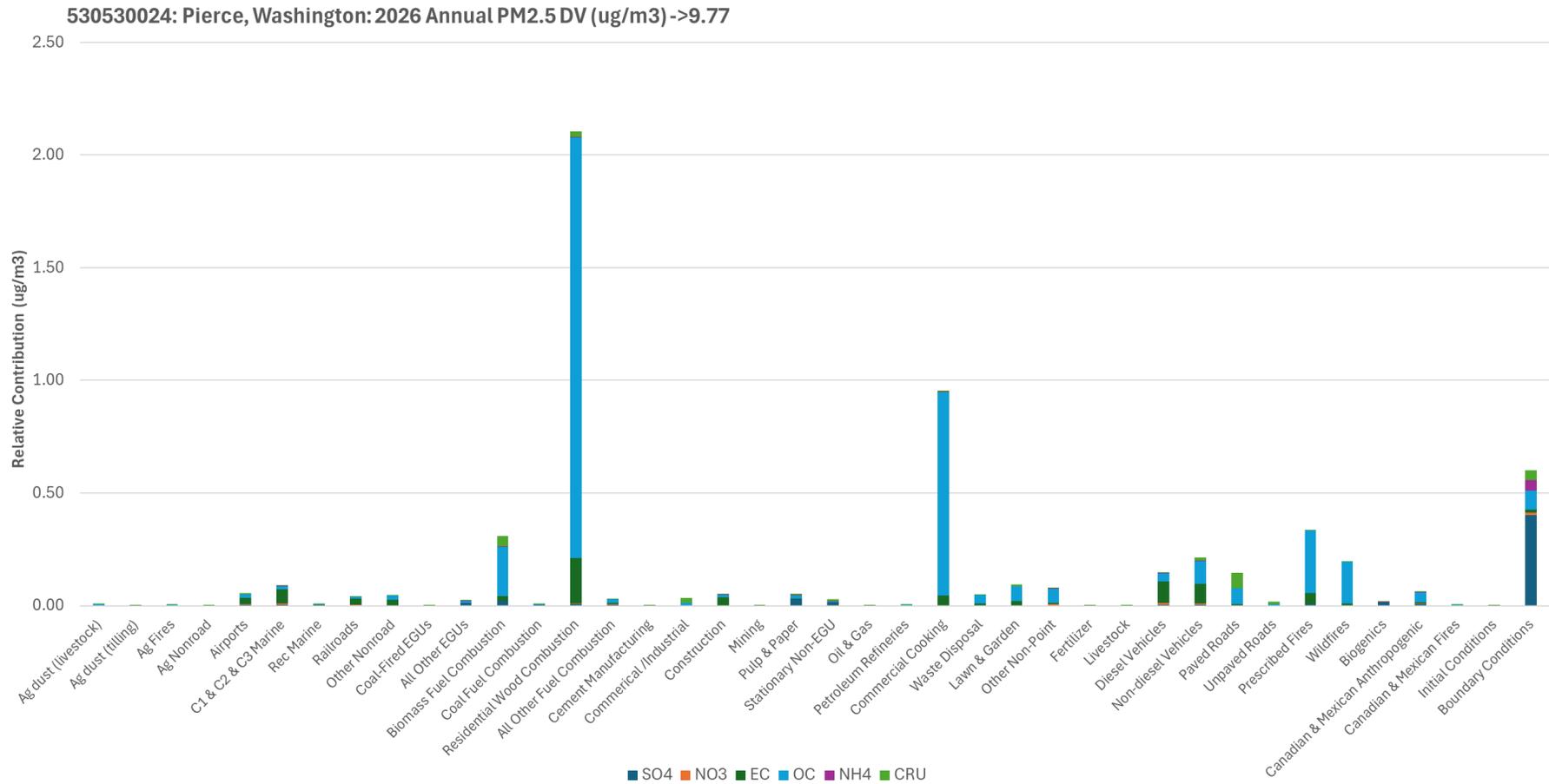
530570011: Skagit, Washington		2026 Annual PM2.5 DV (ug/m3) ->						6.90
Relative Traced Species Contribution (ug/m3)								
Top 10 Categories	Species Total	SO4	NO3	EC	OC	NH4	CRU	
Residential Wood Combustion	1.000	0.002	0.000	0.051	0.941	0.000	0.005	
Boundary Conditions	0.665	0.395	0.003	0.015	0.154	0.058	0.039	
Canadian & Mexican Anthropogenic	0.481	0.015	0.002	0.031	0.420	0.003	0.010	
Commercial Cooking	0.312	0.000	0.000	0.008	0.302	0.000	0.001	
Prescribed Fires	0.282	0.005	0.000	0.025	0.251	0.001	0.001	
C1 & C2 & C3 Marine	0.109	0.005	0.002	0.068	0.033	0.001	0.000	
Biomass Fuel Combustion	0.103	0.005	0.000	0.005	0.083	0.001	0.009	
Wildfires	0.081	0.001	0.000	0.003	0.077	0.000	0.000	
Paved Roads	0.069	0.001	0.000	0.002	0.039	0.000	0.027	
Petroleum Refineries	0.065	0.018	0.001	0.006	0.029	0.003	0.009	

SO4 = Particulate Sulfate
 NO3 = Particulate Nitrate
 EC = Elemental Carbon
 OC= Organic Carbon
 NH4 = Ammonium
 CRU = Crustal Material



IV.) Monitor 530530024 – Pierce County, WA (Tacoma 36th Street Monitor) near U.S. Oil

Pierce County has three monitors that are currently attaining ($6.5 \mu\text{g}/\text{m}^3$, $7.0 \mu\text{g}/\text{m}^3$, and $7.7 \mu\text{g}/\text{m}^3$; 2022-2024 annual $\text{PM}_{2.5}$ design value) the $9.0 \mu\text{g}/\text{m}^3$ primary health-based NAAQS. Monitor 530530024 has a modeled 2026 base case annual $\text{PM}_{2.5}$ design value of $9.77 \mu\text{g}/\text{m}^3$. The relative contribution of tagged $\text{PM}_{2.5}$ species from each of the categories to this monitor is presented below. The relative height of each bar represents the relative contribution of that category to the overall modeled $\text{PM}_{2.5}$ concentration.



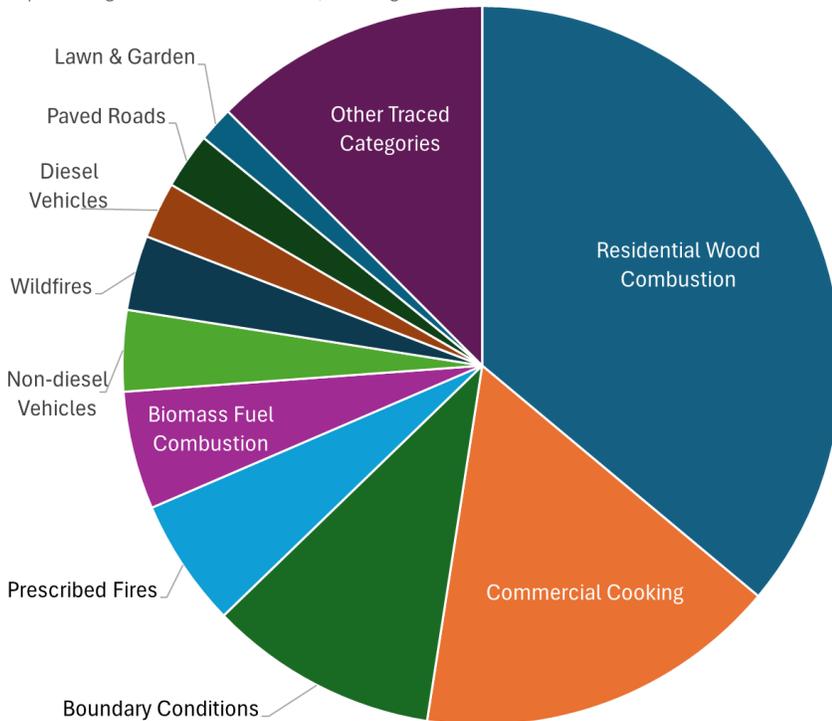
Top Ten Categories

From the thirty-nine categories tagged in the simulation, the top ten categories contributing to this monitor are listed by category and tagged species in the table and pie chart below. These figures and tables may provide information valuable in determining upwind source categories that would have greatest potential for incremental control in helping to maintain attainment with the NAAQS at this location.

530530024: Pierce, Washington		2026 Annual PM2.5 DV (ug/m3) ->						9.77
Relative Traced Species Contribution (ug/m3)								
Top 10 Categories	Species Total	SO4	NO3	EC	OC	NH4	CRU	
Residential Wood Combustion	2.104	0.008	0.002	0.201	1.869	0.001	0.025	
Commercial Cooking	0.956	0.002	0.000	0.043	0.903	0.000	0.008	
Boundary Conditions	0.602	0.403	0.011	0.013	0.083	0.049	0.044	
Prescribed Fires	0.337	0.007	0.000	0.048	0.278	0.001	0.001	
Biomass Fuel Combustion	0.309	0.020	0.001	0.022	0.218	0.003	0.046	
Non-diesel Vehicles	0.213	0.005	0.005	0.087	0.102	0.002	0.012	
Wildfires	0.196	0.001	0.000	0.008	0.186	0.000	0.000	
Diesel Vehicles	0.148	0.005	0.008	0.096	0.033	0.003	0.003	
Paved Roads	0.147	0.002	0.000	0.004	0.072	0.000	0.069	
Lawn & Garden	0.093	0.000	0.001	0.020	0.065	0.000	0.008	

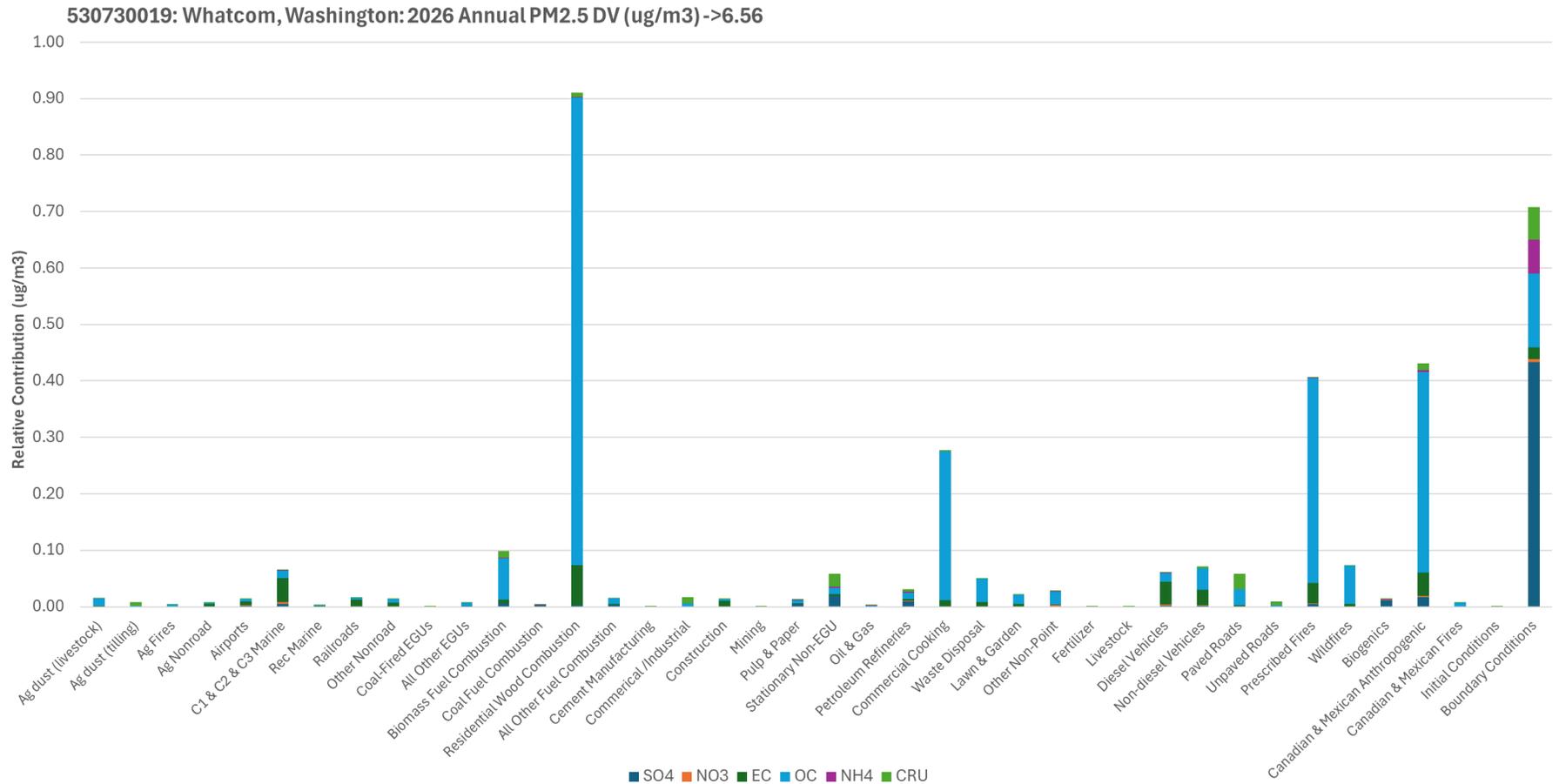
SO4 = Particulate Sulfate
NO3 = Particulate Nitrate
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Top 10 Categories: 530530024: Pierce, Washington



V.) Monitor 530730019 – Whatcom County, WA (Bellingham) Near Phillips 66 Refinery

Whatcom County has one monitor (with an incomplete design value due to invalid data completeness in one quarter of 2022) that is currently attaining (5.6 $\mu\text{g}/\text{m}^3$; 2022-2024 annual $\text{PM}_{2.5}$ design value) and is projected in the 2026 base case to be in attainment of the 9.0 $\mu\text{g}/\text{m}^3$ primary health-based NAAQS. Monitor 530730019 has a modeled 2026 base case annual $\text{PM}_{2.5}$ design value of 6.56 $\mu\text{g}/\text{m}^3$. The relative contribution of tagged $\text{PM}_{2.5}$ species from each of the categories to this monitor is presented below. The relative height of each bar represents the relative contribution of that category to the overall modeled $\text{PM}_{2.5}$ concentration.

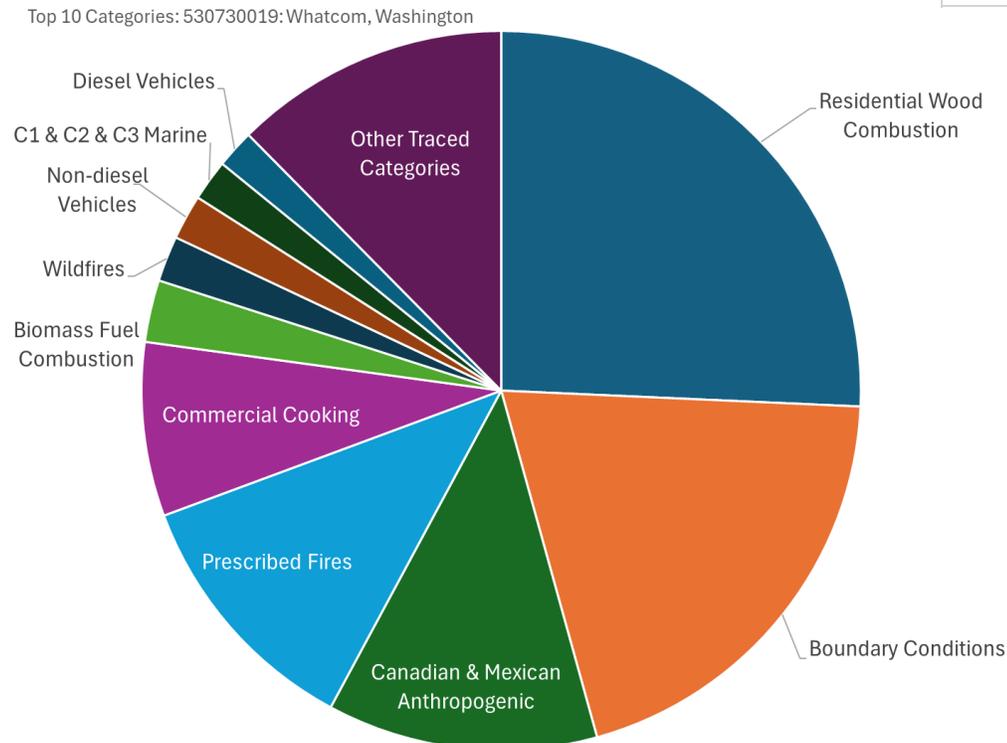


Top Ten Categories

From the thirty-nine categories tagged in the simulation, the top ten categories contributing to this monitor are listed by category and tagged species in the table and pie chart below. These figures and tables may provide information valuable in determining upwind source categories that would have greatest potential for incremental control in helping to maintain attainment with the NAAQS at this location.

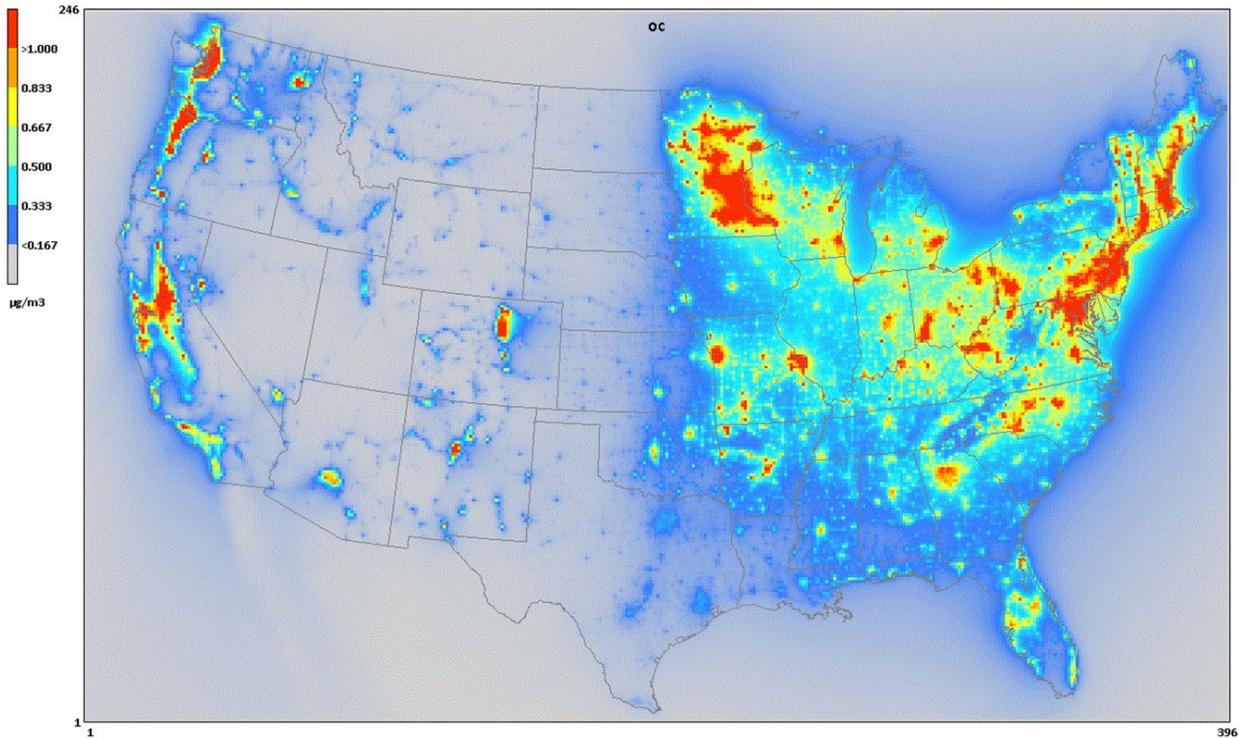
530730019: Whatcom, Washington		2026 Annual PM2.5 DV (ug/m3) ->						6.56
Relative Traced Species Contribution (ug/m3)								
Top 10 Categories	Species Total	SO4	NO3	EC	OC	NH4	CRU	
Residential Wood Combustion	0.910	0.003	0.000	0.071	0.828	0.000	0.008	
Boundary Conditions	0.708	0.433	0.006	0.021	0.131	0.059	0.058	
Canadian & Mexican Anthropogenic	0.431	0.017	0.003	0.042	0.355	0.003	0.012	
Prescribed Fires	0.407	0.005	0.000	0.036	0.363	0.001	0.001	
Commercial Cooking	0.277	0.000	0.000	0.011	0.264	0.000	0.002	
Biomass Fuel Combustion	0.099	0.006	0.000	0.006	0.073	0.001	0.012	
Wildfires	0.072	0.000	0.000	0.004	0.067	0.000	0.000	
Non-diesel Vehicles	0.071	0.002	0.001	0.027	0.038	0.001	0.003	
C1 & C2 & C3 Marine	0.065	0.005	0.003	0.042	0.014	0.002	0.000	
Diesel Vehicles	0.061	0.002	0.002	0.040	0.016	0.001	0.001	

SO4 = Particulate Sulfate
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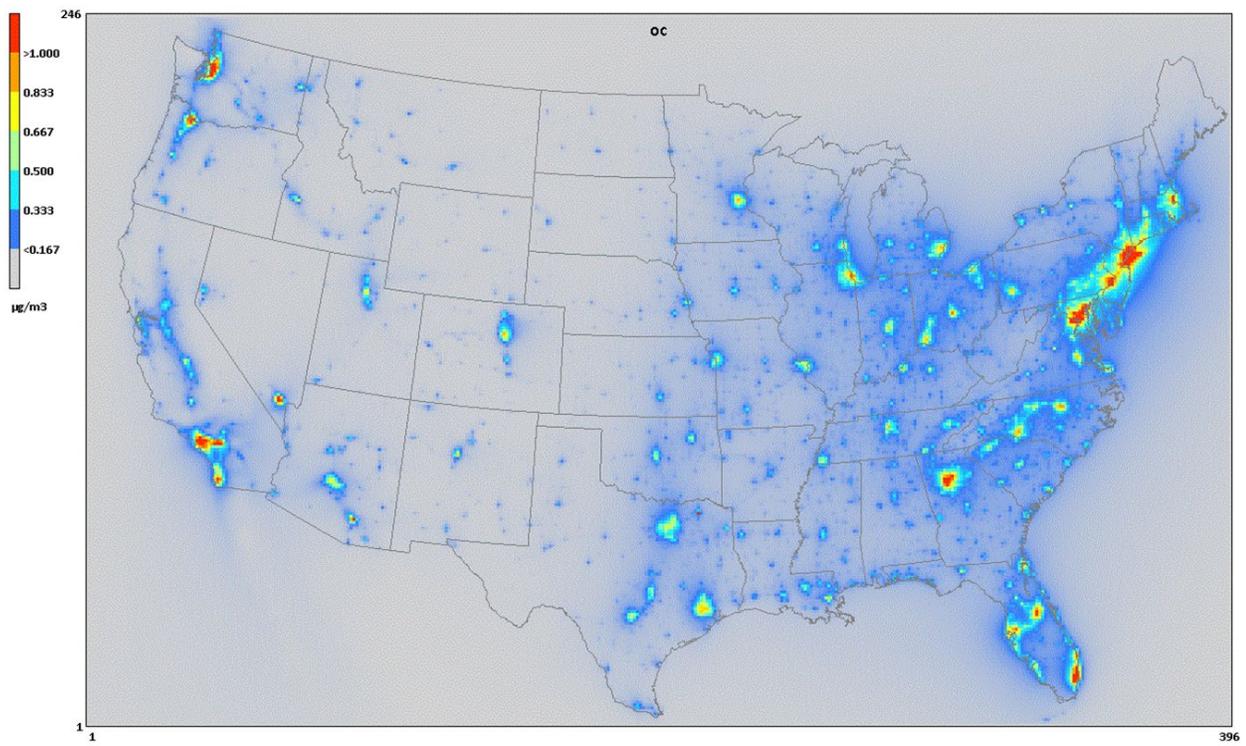
VI.) National Category-Based Spatial Distribution

Selected top ten maximum contributing categories by traced species concentrations for the Skagit County monitor are represented in the following national figures below. To best demonstrate the spatial distribution of each tagged category, the following are represented by the tagged species of highest concentration as modeled within each individual category. Note that the scale remains the same for each figure. Additional category-specific graphics can be found in the Alpine report³.

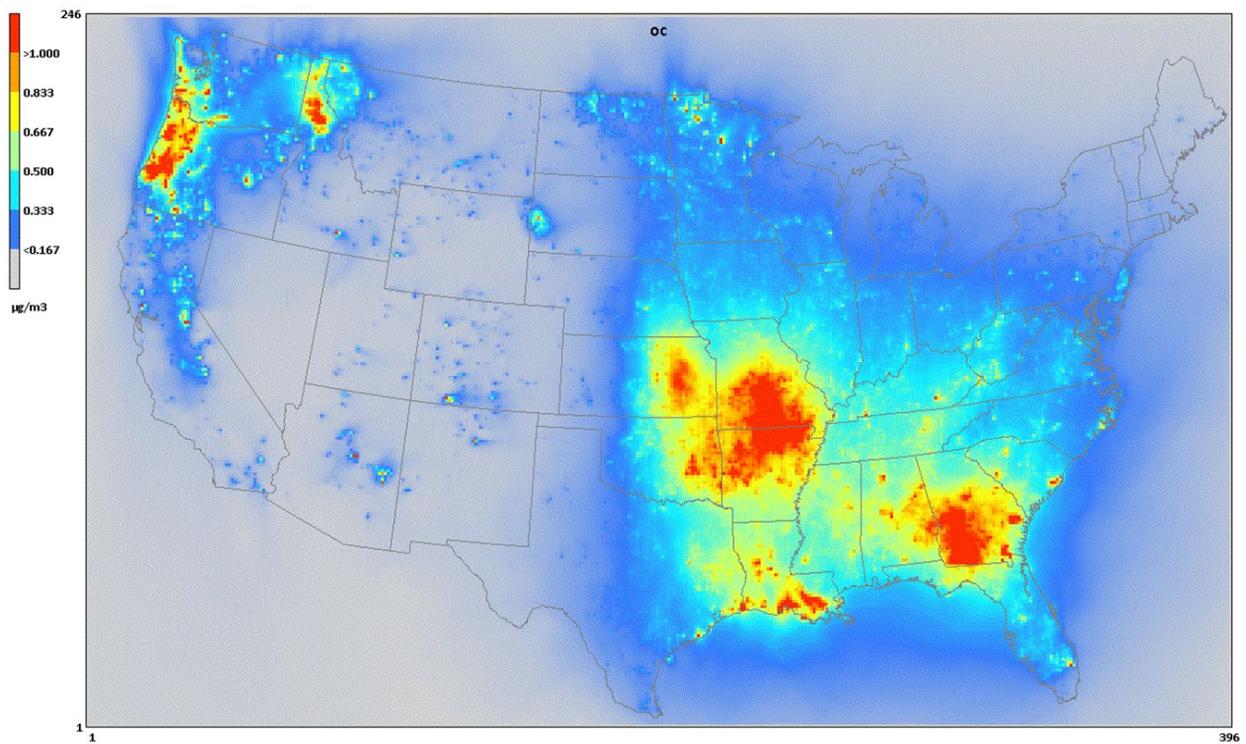


Modeled annual organic carbon concentrations ($\mu\text{g}/\text{m}^3$) from 2026 base case simulation for residential wood combustion category.

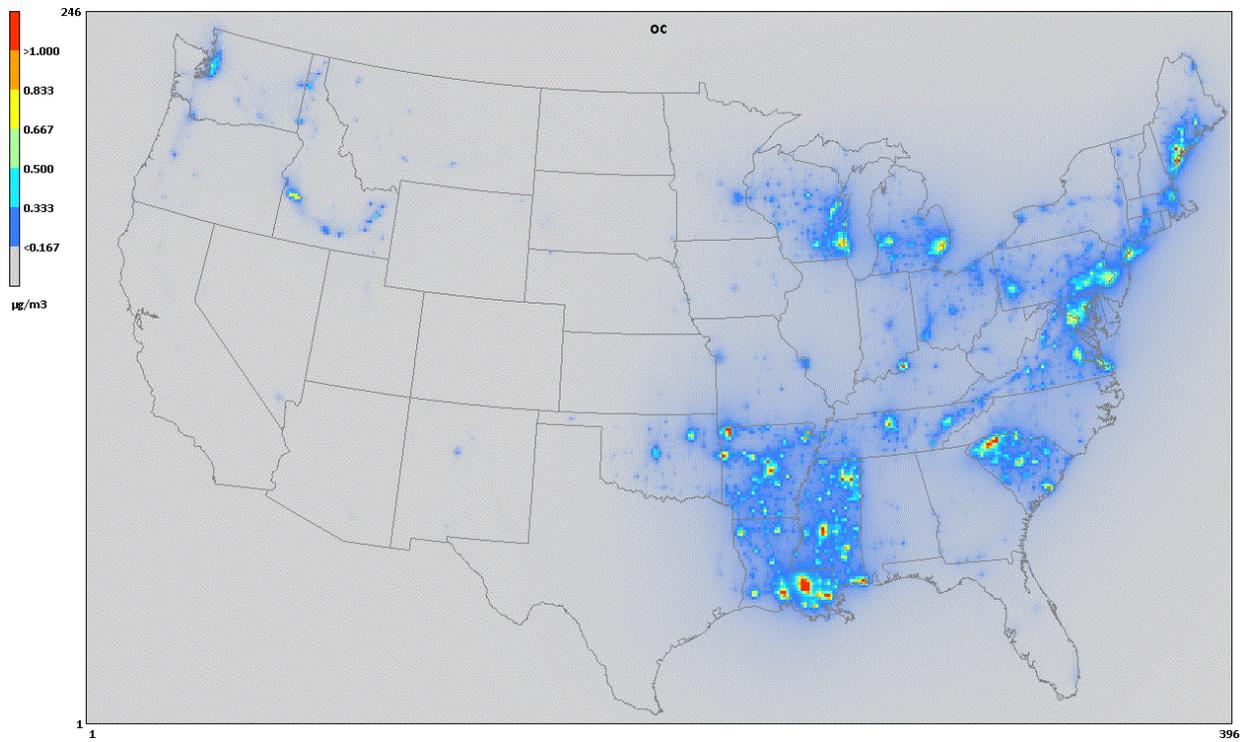
³ https://www.midwestozonegroup.com/_files/ugd/7ec07f_744eb1e14e444b2b93dff141fadee7b8.pdf



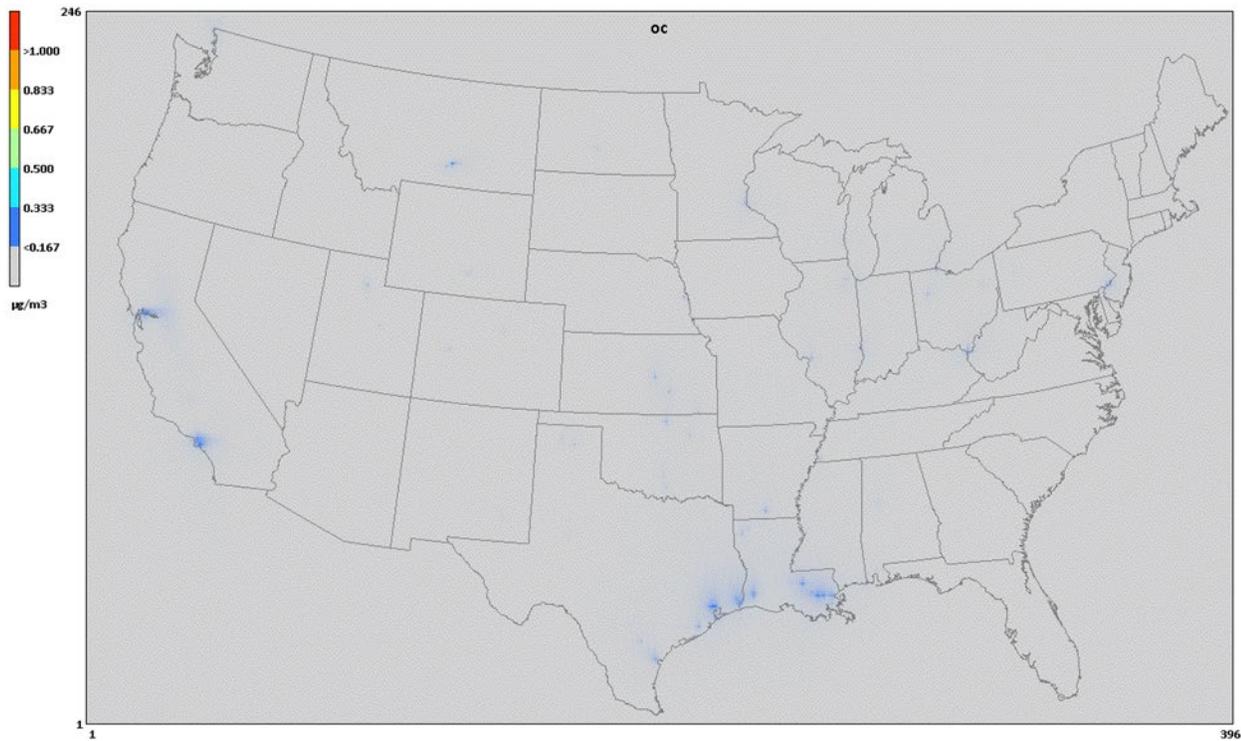
Modeled annual organic carbon concentrations ($\mu\text{g}/\text{m}^3$) from 2026 base case simulation for commercial cooking category.



Modeled annual organic carbon concentrations ($\mu\text{g}/\text{m}^3$) from 2026 base case simulation for prescribed fire category.



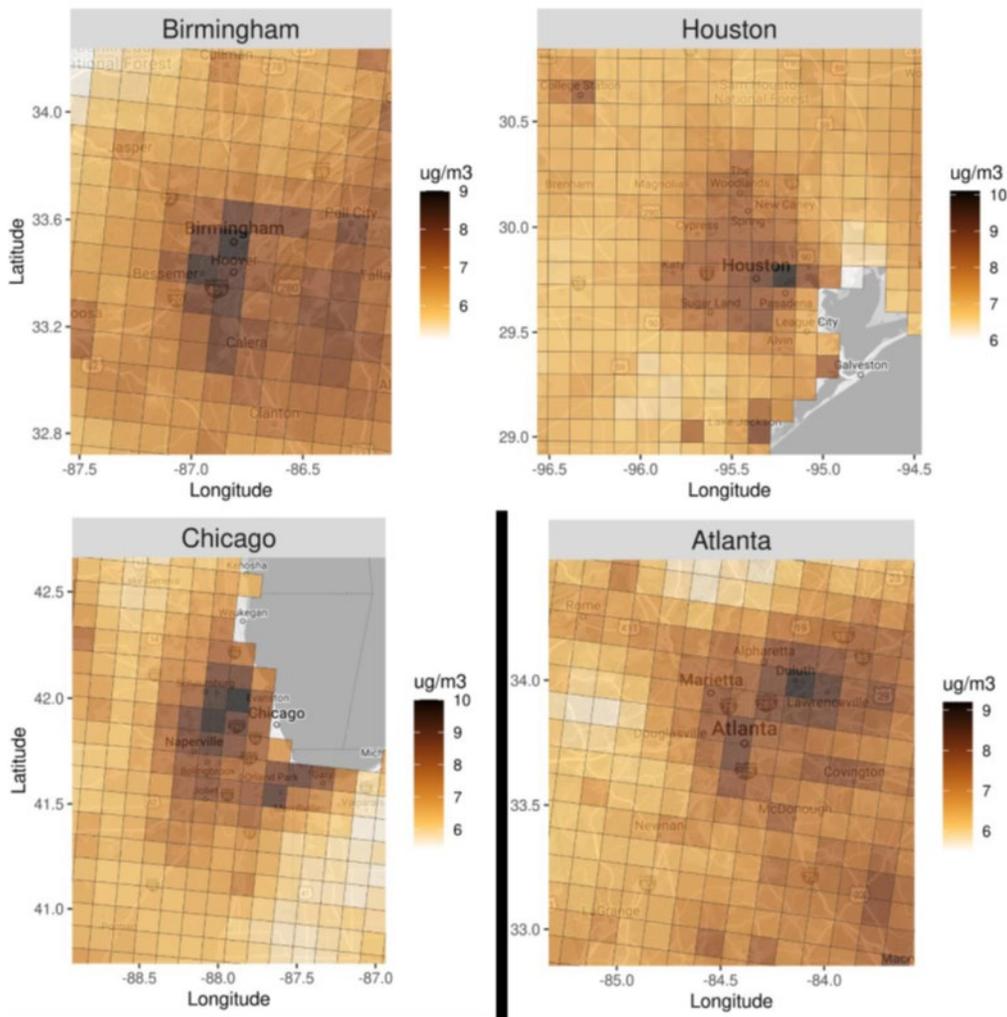
Modeled annual organic carbon concentrations ($\mu\text{g}/\text{m}^3$) from 2026 base case simulation for biomass fuel combustion category.



Modeled annual organic carbon concentrations ($\mu\text{g}/\text{m}^3$) from 2026 base case simulation for petroleum refinery category.

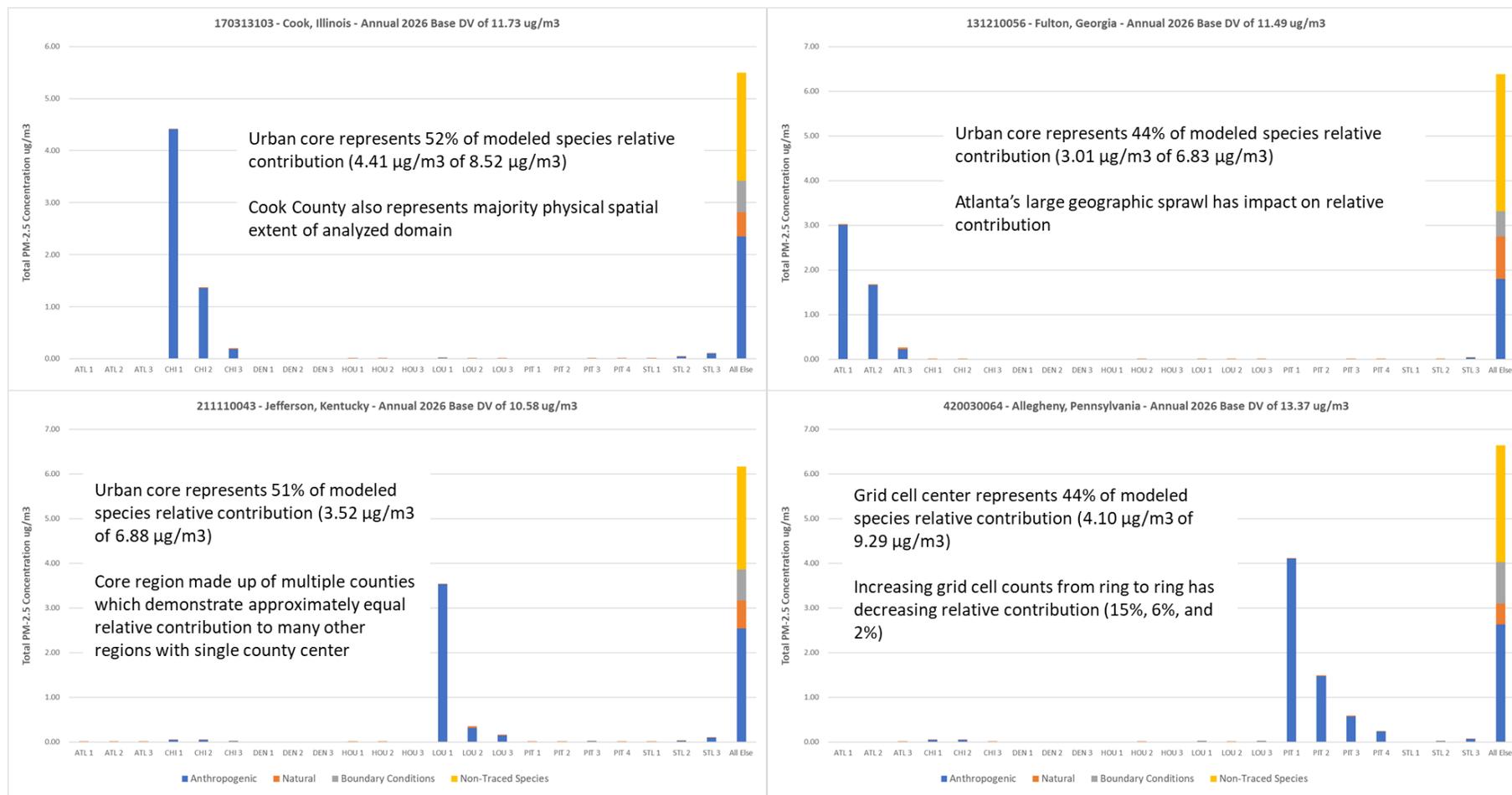
VII.) EPA and Alpine Findings on Spatial Extent of Contribution

In the RIA⁴ to the PM NAAQS reconsideration, EPA calculated gridded PM_{2.5} concentrations over selected urban areas based on the 2032 modeling case. A common feature of these diverse locations was the relatively high PM_{2.5} concentrations over the proximal urban area and lower concentrations just outside of the urban core. PM_{2.5} concentrations in the proximal core of these U.S. areas exceed revised and alternative standards levels considered in the RIA, whereas concentrations surrounding the urban core are below the revised and alternative standard levels. Additionally, when EPA applied the emissions reductions from adjacent counties to monitor locations in their attainment strategy, they used a $\mu\text{g}/\text{m}^3$ per ton PM_{2.5} air quality ratio that was four times less responsive than the ratio used when applying in-county emissions reductions (i.e., they applied four tons of PM_{2.5} emissions reductions from an adjacent county for one ton of emissions reduction needed in a given county). This analysis led to the finding that in most regions, NAAQS concentrations are being driven by the local PM_{2.5} increment and the relatively high responsiveness of PM_{2.5} concentrations to primary PM_{2.5} emission reductions comes from sources in proximity to those monitors.



⁴ https://www.epa.gov/system/files/documents/2024-02/naaqs_pm_reconsideration_ria_final.pdf

Alpine also conducted a source apportionment study⁵ which corroborated EPA's data to support regional PM_{2.5} relative contributions, and therefore also reduction potential, are significantly less effective as distance increases from monitors.



Both analyses support that reductions should focus on local areas around targeted monitors as emission contribution to modeled concentrations and reduction effectiveness drops precipitously the farther from the monitor the reductions occur.

⁵ https://www.midwestozonegroup.com/_files/ugd/7ec07f_744eb1e14e444b2b93dff141fadee7b8.pdf

VIII.) Summary

Based on the data generated by this modeling exercise, refineries in northwest Washington State are well controlled and have minimal impact on PM_{2.5} concentrations. Any further controls at refineries with the hope of targeting reductions in overburdened communities will not show any measurable decrease. Further source apportionment work demonstrates that residential wood burning, commercial cooking, biomass combustion, prescribed fires and well as anthropogenic sources in southern Canada are the primary drivers of PM in northwest Washington.

Lastly, work completed by EPA and Alpine geophysics, show that PM controls on stationary sources become significantly less effective at just one county away, unlike ozone precursors which can travel across state lines. This further demonstrates the futility of relying on further stationary source controls at refineries with the intent to reduce PM concentrations in this region.