SIP Update and 4 Year Exemption 110 (l) Anti-Backsliding Demonstration

Proposed 2024 VIP Updates

Submitted to: EPA Region 10

Date: Submission Date Upon Rule Adoption

State of Oregon
DEQ Department of Environmental Quality

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Executive Summary

This report details the proposed changes to the Oregon State Implementation Plan and intends to satisfy the requirements under Clean Air Act 110(l), requirements for anti-backsliding demonstration. Proposed changes to the Oregon Administrative Rules from the 2024 VIP Rulemaking Update include codifying the initial testing exemption for new vehicles in the first four most recent model years. This demonstration uses the most recent MOVES modeling to reveal the impacts of the testing exemption. The modeling shows a minimal percent increase of volatile organic compounds, oxides of Nitrogen , and carbon monoxide. The purpose of this report is to request that EPA make a finding that the proposed rule changes do not interfere with the State of Oregon’s efforts to comply with the NAAQS.

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Introduction

DEQ's Vehicle Inspection Program reduces air pollution and helps Oregon comply with national air quality standards by requiring that motorists in the Portland-Metro and Medford-Ashland areas maintain their vehicles' emission control systems. A motorist residing in these areas must obtain a certificate of compliance before they may renew their vehicle registration. The Portland-Metro vehicle inspection area has six testing stations that performed more than 1.1 million tests in the last biennium, about one-third of the registered vehicles in Oregon. DEQ inspects light- and heavy-duty gasoline vehicles with model years between 1975 and 2016 in Portland-Metro and 2004 and 2020 in Medford-Ashland (the five most recent model year cars are exempted). DEQ inspects 1996 and newer diesel vehicles up to 8,500 pounds. About 90 DEQ staff support all VIP functions, including vehicle inspection, administration and management, customer support, equipment and facility operations.

In 2001, the Oregon legislature passed a bill changing the initial registration period for new vehicles from two years to four years (2001 HB 2132). After the initial four-year registration period, the registration period operates on a two-year registration cycle. In 2004, DEQ completed a rulemaking to update the VIP rules. As part of the SIP submittal for the rulemaking, DEQ included in its emissions estimates, the revised registration requirements, but did not include a specific rule that exempted the first 4 model years of vehicles for receiving a certificate of compliance. Since 2004, VIP has operated the program based on a 4-model year exemption. Modeling conducted as part of this SIP submittal shows a change from 2 model year to 4 model year testing has a minimal increase in overall emissions.

Over the years, EPA has worked with car manufacturers to reduce emissions from vehicles and increase the length of warranties for emission control devices on those vehicles. In combination, these increased regulations have meant controls on new vehicles reduce more pollution and last longer. The MOVES run conducted by DEQ as part of this SIP submittal demonstrates the effectiveness of EPA programs and justifies the current practice of exempting the first 4 model years of new vehicles from the requirement to receive a certificate of compliance prior to registering.

Purpose of SIP

Section 110 of the CAA, 42 U.S.C. Section 7410, requires state and local air pollution control agencies to adopt federally approved control strategies to minimize air pollution. The resulting body of regulations is known as the State Implementation Plan.

SIPs serve two main purposes. The first is to demonstrate that the state has the basic air quality management program components in place to implement new or revised NAAQS. The second is to identify the emissions control requirements the state will rely upon to attain and/or maintain the primary and secondary NAAQS.

The Clean Air Act requires the EPA to set National Ambient Air Quality Standards for widespread pollutants from numerous and diverse sources considered harmful to public health and the environment. The Act established two types of standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children and the elderly. Secondary standards set limits to protect public welfare, including protection against visibility impairment, damage to animals, crops, vegetation and buildings. The Act requires periodic review of the science on which the standards are based and the standards themselves.

SIPs generally establish emission limits or work practice standards to minimize emissions of air pollutants (and their precursors) for which EPA has issued air quality criteria (the “criteria pollutants”). The six current criteria pollutants are sulfur oxides (sulfur dioxide as indicator), particulate matter, oxides of nitrogen (nitrogen dioxide as indicator), lead, carbon monoxide and ozone. EPA has established NAAQS for these pollutants and updated these standards over time. As the standards change, states must submit revisions to the infrastructure elements of their SIPs to reflect these changes.

VIP helps Oregon maintain compliance with national air quality standards for pollutants, such as ozone, nitrogen oxides, carbon monoxide and fine particles. VIP also reduces tons of air toxic pollutants each year, like benzene, ethylbenzene and acetaldehyde. In 2015, EPA lowered the ozone standard from 75 parts per billion to 70 parts per billion and considered values as low as 60 ppb. Vehicle miles traveled and population in Oregon are expected to increase over the next several years, both of which are likely to increase vehicle emissions. As well, expected hotter summer temperatures and more wildfires may cause ozone concentrations to approach or exceed the current standard. VIP is one of several pollution control strategies, including industrial emission controls, which collectively make up Oregon’s EPA-approved SIP.

Public involvement

DEQ provided notice of the proposed rulemaking and rulemaking hearing by:

- On Sept. 27, 2024, Filing notice with the Oregon Secretary of State for publication in the October 2024 Oregon Bulletin
- Posting the notice, invitation to comment and draft rules on the web page for this rulemaking
- Emailing interested parties on the following DEQ lists through GovDelivery:
    - Rulemaking
    - DEQ Public Notices
    - Vehicle Inspection Program Updates
- Emailing the following key legislators required under ORS 183.335:
    - Rep. Pam Marsh, Chair, House Committee on Climate, Energy, and Environment
    - Rep. Bobby Levy, Vice-Chari, House Committee on Climate, Energy, and Environment
- Emailing advisory committee members
- Posting on the DEQ event calendar: DEQ Calendar

As part of the notice, DEQ asked for public comment on the proposed rules. Anyone can submit comments and questions about this rulemaking. A person can submit comments by email, regular mail or at the public hearing.

- Email: Send comments by email to VIP.2024@DEQ.oregon.gov
- Postal mail: Oregon DEQ, Attn: Graham Bates, 700 NE Multnomah Street, Suite 600, Portland, Oregon 97232-4100
- At the public hearing: 5:30 p.m. PT, Monday, Oct. 28, 2024

Comment deadline

DEQ will only consider comments on the proposed rules that DEQ receives by **4 p.m., Pacific Time on Thursday, Nov. 7, 2024.**

Note for public university students: ORS 192.345(29) allows Oregon public university and OHSU students to protect their university email addresses from disclosure under Oregon's public records law. If you are an Oregon public university or OHSU student, notify DEQ that you wish to keep your email address confidential.

DEQ plans to hold one virtual public hearing. Anyone may attend.

Date: Oct. 28, 2024, 5:30 p.m. PT

- Join Zoom meeting
  Meeting ID: 894 1284 7118

- Join by phone:
  719-359-4580
  Meeting ID: 89412847118#

DEQ will consider all comments and testimony received before the closing date. DEQ will summarize all comments and respond to comments in the Environmental Quality Commission staff report.

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Updates to the SIP

Upon adoption the proposed rulemaking would make the following revisions to Oregon SIP approved rules:

Table 1. Changes to SIP Approved Rules under ORS 340-256

Rule Number	Rule Title	Explanation
0010	Definitions	Amends existing language and additional language to include new definitions, renumbering definitions
0300	Emission Control System Inspection: Scope	Amends language to include new language describing the testing exemption for vehicles four-years after the vehicles designated model year.
0370	Emission Control System Inspection: Renewal of Registration for Light-duty Motor Vehicles and Heavy-duty Gasoline Motor Vehicles Temporarily Operating Outside of the Oregon Vehicle Inspection Boundaries	Amends administrative language for consistency of style. No controls removed or added.
0465	Emission Control System Inspection: Test Equipment Criteria for OBD Test Program	Amends language including the title. Language updates clarify terminology for agency infrastructure related to requirements. Language updates remove unclear rule. No controls removed or added.

Demonstration of continued Attainment

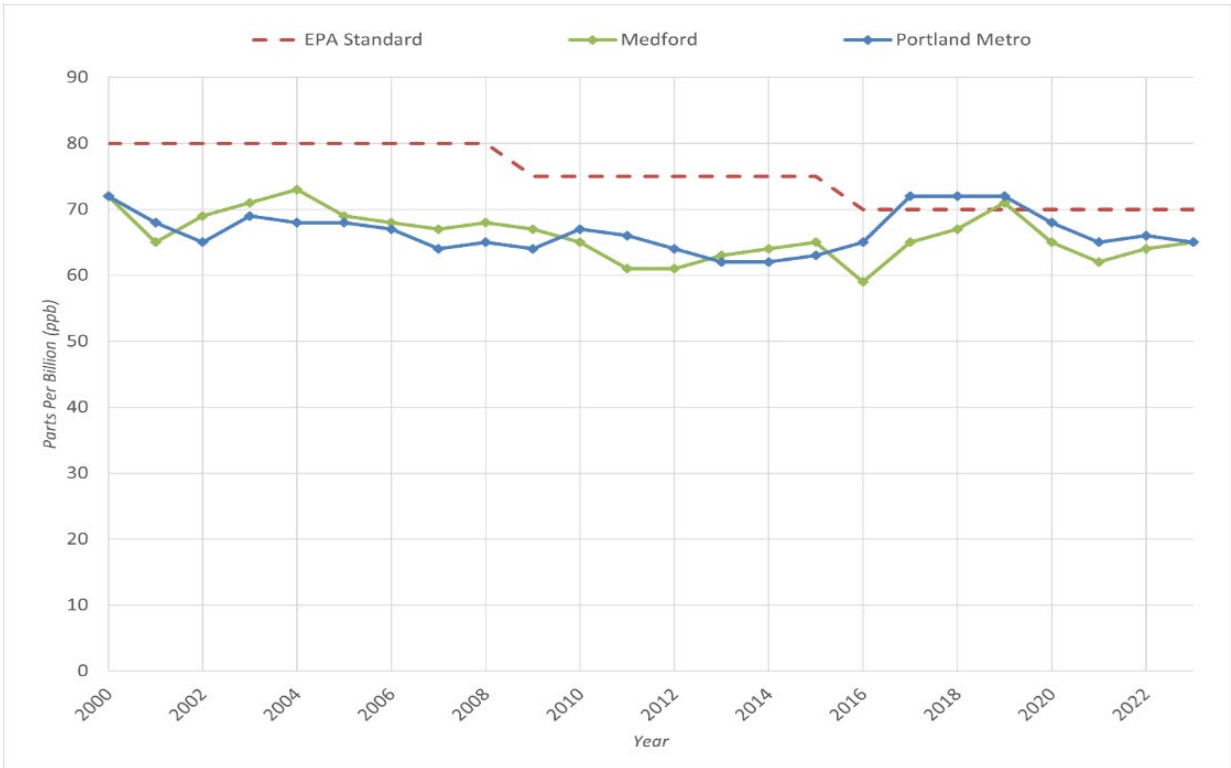
Current NAAQS designation

The state of Oregon has maintained a designation of attainment with the 1997, 2008, and 2015 8-Hour Ozone NAAQS. The state of Oregon has received a redesignation of the Portland-Vancouver AQMA Area to attainment for the 1979 1-Hour Ozone NAAQS effective June 18, 1997 (62 FR 27024).

Air quality design values

Air quality design values describe an area's air quality status relative to the NAAQS in a particular location. Design values are defined to be consistent with individual NAAQS as described in 40 CFR Part 50. The EPA publishes design value reports for each criteria pollutant annually.

[Figure 1] Ozone Design Values for Portland-Metro and Medford Areas 2000-2023 in parts per billion of Ozone



A review of the past 23 years of ozone design values for the testing areas (figure 1) shows that both areas have maintained design values below the EPA standard for the most part. The

elevated design values seen from 2017 to 2019 are due to an increase in VOCs resulting from wildfires. Oregon was able to maintain attainment with the 2015 8-Hour Ozone Standard.

Emission trends and projections

Table 2. Impact of proposed rule change on VOC emissions by county.

County	Total Increase in VOC (lbs./year)	% change VOC (lbs./year)
Clackamas	2320.5	.094
Multnomah	3859	.09
Washington	3129	.095
Jackson	1538.5	.094

Table 3. Impact of proposed rule change on NOx emissions by county

County	Total Increase in NOx (lbs./year)	% change (lbs. NOx/year)
Clackamas	1225.5	.038
Multnomah	2268.5	.032
Washington	1642.5	.039
Jackson	808.5	.033

Table 4. Impact of proposed rule change on CO emissions by county

County	Total Increase in CO (tons/year)	% change (lbs. CO/year)
Clackamas	19.6	.028
Multnomah	36.4	.038

Washington	**27.1**	**.031**
Jackson	**11.4**	**.021**

Discussion

These tables show percentage the increase in VOC (table 2), NOx (table 3), and C emissions as a result of the possible program changes. On-road mobile source emissions were modeled using the EPA's MOVES 4.0.1 model. The runs included all vehicle and road types. The output was total emissions in grams for most of the MSAT and CAP. The model was run in emission inventory mode to output emissions for each county.

Vehicle miles traveled VMT for 2020 was given to DEQ by Oregon Department of Transportation. This should/would be fewer vehicle miles traveled than pre-pandemic: 90 % of normal. In a normal year, these increases in emissions would be greater than reported here.

Regardless, the percentage change would be the same ([EF1]x[ACT]/[EF2]x[ACT]).

The modeling run and the choices made are in document "Modeling the VIP Program - 2 to 4 Year Exemption", available on request.

Request to EPA

The purpose of this report is to request that EPA make a finding that the proposed rule changes do not interfere with the State of Oregon's efforts to comply with the NAAQS. Any increase in emissions from this rule change will have no impact on the design value of either the Portland-Metro or the Medford-Ashland areas. Both areas will continue to model compliance should the proposed rules be adopted.

Appendices

Appendix A.1: MOVES run specifications

On-road mobile source emissions were modeled using the EPA's MOVES 4.0.1 model. The runs included all vehicle and road types. The output was total emissions in grams for most of the MSAT and CAP. The model was run in emission inventory mode to output emissions for each county. The MOVES modeling Run Spec(s) are detailed below:

Table 5: MOVES runspec (MRS) for 2 year

Panel Item	Settings
Description	VIP ``baseline'' JP 2024-09-18
Scale	
Scale	County
Calculation Type	Emission Inventory
Time Spans:	
Aggregation:	Day
Year	2023
Months	January, July
Days	Weekdays, weekend
Hours	24
Geographic Bounds	Multnomah County (41051), Clackamas County (41005),
	Washington County (41067), Jackson County (41029)
Vehicles/Equipment	All Vehicles/All Fuel Types
Road Type	All
Pollutants and Processes	
Pollutants	All MSAT and CP (except lead)
Processes	All
Manage Input Datasets	Starting point CDBs for 2023 [1]
	(2020 VMT used - starting point CDBs are
	"Missing: dayVMTFraction is missing roadTypeID(s) 1"

Panel Item	Settings
Strategies	None
Output	
General Output	Mass units = grams, Distance units = miles
Emissions Detail	Mass by pollutant and emission process (running, start, evap, etc)

Appendix A.2: Raw Data – MOVES 4 Emissions Estimates

Table 6: Clackamas County emissions for all scenarios, all species, in lbs./year.

Pollutant	base	scen_a
1,3-Butadiene	6388.5	6388.5
Acetaldehyde	19192	19192
Acrolein	1538.5	1538.5
Benzene	48917	48917
Carbon Monoxide (CO)	25651593	25690835.5
Composite - NonECPM	38226	38226
Elemental Carbon	41850.5	41850.5
Ethanol	231189.5	231372
Formaldehyde	18931	18931
Naphthalene gas	2764	2764
Non-Methane Hydrocarbons	2359027	2361295.5
Organic Carbon	21538	21538
Oxides of Nitrogen (NOx)	3226071.5	3227297
Primary Exhaust PM10 - Total	88864	88864
Primary Exhaust PM2.5 - Total	80207	80207
Primary PM10 - Brakewear Particulate	158264.5	158264.5
Primary PM10 - Tirewear Particulate	56870.5	56870.5
Primary PM2.5 - Brakewear Particulate	19871	19871

Pollutant	base	scen_a
Primary PM2.5 - Tirewear Particulate	8605	8605
Sulfate Particulate	3494	3494
Sulfur Dioxide (SO2)	13376.5	13376.5
Total Gaseous Hydrocarbons	2640047.5	2642629
Volatile Organic Compounds	2480527	2482847.5

Table 7: Multnomah County emissions for all scenarios, all species, in lbs./year.

Pollutant	base	scen_a
1,3-Butadiene	10821.5	10821.5
Acetaldehyde	34629	34629
Acrolein	2894.5	2894.5
Benzene	84171	84171
Carbon Monoxide (CO)	50165879	50238680
Composite - NonECPM	78303.5	78303.5
Elemental Carbon	86334.5	86334.5
Ethanol	389222	389456.5
Formaldehyde	36715	36767
Naphthalene gas	5032.5	5032.5
Non-Methane Hydrocarbons	4085457.5	4089264.5
Organic Carbon	41981	41981
Oxides of Nitrogen (NOx)	7096038	7098306.5
Primary Exhaust PM10 - Total	181873.5	181873.5
Primary Exhaust PM2.5 - Total	164638	164638
Primary PM10 - Brakewear Particulate	343467.5	343467.5
Primary PM10 - Tirewear Particulate	125214	125214
Primary PM2.5 - Brakewear Particulate	42976	42976
Primary PM2.5 - Tirewear Particulate	18852.5	18852.5
Sulfate Particulate	8344	8344
Sulfur Dioxide (SO2)	28839	28839
Total Gaseous Hydrocarbons	4644292	4648594.5
Volatile Organic Compounds	4293939.5	4297798.5

Table 8: Washington County emissions for all scenarios, all species, in lbs./year.

Pollutant	base	scen_a
1,3-Butadiene	8553	8553
Acetaldehyde	25085	25215.5
Acrolein	1903.5	1903.5
Benzene	65735.5	65866
Carbon Monoxide (CO)	35909849	35963954.5
Composite - NonECPM	50377	50377
Elemental Carbon	53271.5	53271.5
Ethanol	306516	306698.5
Formaldehyde	24641.5	24641.5
Naphthalene gas	3624.5	3624.5
Non-Methane Hydrocarbons	3143946.5	3147075.5
Organic Carbon	28917.5	28917.5
Oxides of Nitrogen (NOx)	4186072	4187714.5
Primary Exhaust PM10 - Total	114887	114887
Primary Exhaust PM2.5 - Total	103596.5	103596.5
Primary PM10 - Brakewear Particulate	223197.5	223197.5
Primary PM10 - Tirewear Particulate	80886	80886
Primary PM2.5 - Brakewear Particulate	27903	27903
Primary PM2.5 - Tirewear Particulate	12099	12099
Sulfate Particulate	4406.5	4406.5
Sulfur Dioxide (SO2)	18904.5	18904.5
Total Gaseous Hydrocarbons	3505045.5	3508539.5
Volatile Organic Compounds	3304218	3307347

Table 9: Jackson County emissions for all scenarios, all species, in lbs./year.

Pollutant	base	scen_a
1,3-Butadiene	3572.5	3572.5
Acetaldehyde	11812.5	11812.5
Acrolein	991	991
Benzene	28604.5	28604.5
Carbon Monoxide (CO)	15900214	15922951
Composite - NonECPM	25527.5	25527.5
Elemental Carbon	29699.5	29699.5
Ethanol	157272	157454.5
Formaldehyde	12047	12047
Naphthalene gas	1590.5	1590.5
Non-Methane Hydrocarbons	1562662	1563939.5
Organic Carbon	13376.5	13376.5
Oxides of Nitrogen (NOx)	2430934.5	2431743
Primary Exhaust PM10 - Total	60989.5	60989.5
Primary Exhaust PM2.5 - Total	55227	55227
Primary PM10 - Brakewear Particulate	98521	98521
Primary PM10 - Tirewear Particulate	35619	35619
Primary PM2.5 - Brakewear Particulate	12282.5	12282.5
Primary PM2.5 - Tirewear Particulate	5345.5	5345.5
Sulfate Particulate	2816	2816
Sulfur Dioxide (SO2)	8396	8396
Total Gaseous Hydrocarbons	1735597	1737005
Volatile Organic Compounds	1644139.5	1645678

A.2.1 In tons/year

Table 10: Clackamas County emissions for all scenarios, all species, in tons/year

Pollutant	base	scen_a
1,3-Butadiene	3.19425	3.19425
Acetaldehyde	9.596	9.596
Acrolein	0.76925	0.76925
Benzene	24.4585	24.4585
Carbon Monoxide (CO)	12825.7965	12845.41775
Composite - NonECPM	19.113	19.113
Elemental Carbon	20.92525	20.92525
Ethanol	115.59475	115.686
Formaldehyde	9.4655	9.4655
Naphthalene gas	1.382	1.382
Non-Methane Hydrocarbons	1179.5135	1180.64775
Organic Carbon	10.769	10.769
Oxides of Nitrogen (NOx)	1613.03575	1613.6485
Primary Exhaust PM10 - Total	44.432	44.432
Primary Exhaust PM2.5 - Total	40.1035	40.1035
Primary PM10 - Brakewear Particulate	79.13225	79.13225
Primary PM10 - Tirewear Particulate	28.43525	28.43525
Primary PM2.5 - Brakewear Particulate	9.9355	9.9355
Primary PM2.5 - Tirewear Particulate	4.3025	4.3025
Sulfate Particulate	1.747	1.747
Sulfur Dioxide (SO2)	6.68825	6.68825
Total Gaseous Hydrocarbons	1320.02375	1321.3145
Volatile Organic Compounds	1240.2635	1241.42375

Table 11: Multnomah County emissions for all scenarios, all species, in tons/year

Pollutant	base	scen_a
1,3-Butadiene	5.41075	5.41075
Acetaldehyde	17.3145	17.3145
Acrolein	1.44725	1.44725
Benzene	42.0855	42.0855
Carbon Monoxide (CO)	25082.9395	25119.34
Composite - NonECPM	39.15175	39.15175
Elemental Carbon	43.16725	43.16725
Ethanol	194.611	194.72825
Formaldehyde	18.3575	18.3835
Naphthalene gas	2.51625	2.51625
Non-Methane Hydrocarbons	2042.72875	2044.63225
Organic Carbon	20.9905	20.9905
Oxides of Nitrogen (NOx)	3548.019	3549.15325
Primary Exhaust PM10 - Total	90.93675	90.93675
Primary Exhaust PM2.5 - Total	82.319	82.319
Primary PM10 - Brakewear Particulate	171.73375	171.73375
Primary PM10 - Tirewear Particulate	62.607	62.607
Primary PM2.5 - Brakewear Particulate	21.488	21.488
Primary PM2.5 - Tirewear Particulate	9.42625	9.42625
Sulfate Particulate	4.172	4.172
Sulfur Dioxide (SO2)	14.4195	14.4195
Total Gaseous Hydrocarbons	2322.146	2324.29725
Volatile Organic Compounds	2146.96975	2148.89925

Table 12: Washington County emissions for all scenarios, all species, in tons/year

Pollutant	base	scen_a
1,3-Butadiene	4.2765	4.2765
Acetaldehyde	12.5425	12.60775
Acrolein	0.95175	0.95175
Benzene	32.86775	32.933
Carbon Monoxide (CO)	17954.9245	17981.97725
Composite - NonECPM	25.1885	25.1885
Elemental Carbon	26.63575	26.63575
Ethanol	153.258	153.34925
Formaldehyde	12.32075	12.32075
Naphthalene gas	1.81225	1.81225
Non-Methane Hydrocarbons	1571.97325	1573.53775
Organic Carbon	14.45875	14.45875
Oxides of Nitrogen (NOx)	2093.036	2093.85725
Primary Exhaust PM10 - Total	57.4435	57.4435
Primary Exhaust PM2.5 - Total	51.79825	51.79825
Primary PM10 - Brakewear Particulate	111.59875	111.59875
Primary PM10 - Tirewear Particulate	40.443	40.443
Primary PM2.5 - Brakewear Particulate	13.9515	13.9515
Primary PM2.5 - Tirewear Particulate	6.0495	6.0495
Sulfate Particulate	2.20325	2.20325
Sulfur Dioxide (SO2)	9.45225	9.45225
Total Gaseous Hydrocarbons	1752.52275	1754.26975
Volatile Organic Compounds	1652.109	1653.6735

Table 13: Jackson County emissions for all scenarios, all species, in tons/year

Pollutant	base	scen_a
1,3-Butadiene	1.78625	1.78625
Acetaldehyde	5.90625	5.90625
Acrolein	0.4955	0.4955
Benzene	14.30225	14.30225
Carbon Monoxide (CO)	7950.107	7961.4755
Composite - NonECPM	12.76375	12.76375
Elemental Carbon	14.84975	14.84975
Ethanol	78.636	78.72725
Formaldehyde	6.0235	6.0235
Naphthalene gas	0.79525	0.79525
Non-Methane Hydrocarbons	781.331	781.96975
Organic Carbon	6.68825	6.68825
Oxides of Nitrogen (NOx)	1215.46725	1215.8715
Primary Exhaust PM10 - Total	30.49475	30.49475
Primary Exhaust PM2.5 - Total	27.6135	27.6135
Primary PM10 - Brakewear Particulate	49.2605	49.2605
Primary PM10 - Tirewear Particulate	17.8095	17.8095
Primary PM2.5 - Brakewear Particulate	6.14125	6.14125
Primary PM2.5 - Tirewear Particulate	2.67275	2.67275
Sulfate Particulate	1.408	1.408
Sulfur Dioxide (SO2)	4.198	4.198
Total Gaseous Hydrocarbons	867.7985	868.5025
Volatile Organic Compounds	822.06975	822.839