Interim Guidance on Reporting and Documenting Emissions from Lubricants under the Cap-and-Invest Program

Issued by the Climate Commitment Act Implementation Group, Air Quality Program
Washington State Department of Ecology
Olympia, Washington
October 2023, Publication No. 23-14-006

DEPARTMENT OF ECOLOGY
State of Washington

Publication Information

This document is available on the Department of Ecology's website at:
https://apps.ecology.wa.gov/publications/summarypages/2314006.html

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Introduction

In 2021, Washington State adopted the Climate Commitment Act (CCA) which, among other things, created an economy-wide Cap-and-Invest Program (Program). The Program establishes a cap on approximately 75% of the State's greenhouse gas (GHG) emissions, and gradually reduces that cap over time to help meet the State's GHG reduction requirements set forth in RCW 70A.45.020. Facilities and entities that emit, or are responsible for the emission of, 25,000 metric tons or more of GHG each year are "covered entities" under the Program. This includes entities that sell fossil fuels that, if combusted or oxidized within Washington, would emit 25,000 metric tons or more. These covered entities must report their emissions to Ecology, obtain compliance instruments (allowances or offset credits) equivalent to their emissions, and remit those instruments to Ecology to meet their compliance obligation. Ecology conducts four regularly scheduled allowance auctions each year, at which allowances can be purchased. The proceeds of the allowance auctions are invested in initiatives to decarbonize transportation and other sectors of the economy, promote clean energy, implement climate resilient strategies, and advance equity and environmental justice.

In preparation for the beginning of the Program on January 1, 2023, Ecology engaged in multiple rulemakings during 2021 and 2022. On February 9, 2022, after an extensive stakeholder engagement process, Ecology updated Chapter 173-441 WAC, "Reporting of Emissions of Greenhouse Gases." The updated reporting rule went into effect on March 12, 2022. Although many covered entities had been reporting their emissions to Ecology for years (under the prior version of the rule), the updated rule made changes necessary to implement the CCA, including specific provisions concerning the reporting of emissions by fuel suppliers. On September 29, 2022, Ecology also adopted Chapter 173-446 WAC, the "Climate Commitment Act Program" rule, which went into effect on October 30, 2022. Chapter 173-446 WAC contains extensive provisions concerning how the Program functions. The two rules work together to establish requirements concerning how covered entities must report and verify their emissions, and to define what emissions are covered under the Program and what emissions may be exempt.

This interim guidance document addresses Ecology's stance on reporting of emissions from lubricants. This document is based on the relevant provisions of the CCA (Chapter 70A.65 RCW) and Chapters 173-441 WAC and 173-446 WAC. It reflects Ecology's interpretation based on the statutory and rule provisions as of the date of issuance noted in the footer of this document. As Program implementation continues, additional facts and/or changed circumstances may warrant revisions to this interim guidance. In this case, revised guidance will be issued and published to the Ecology website, with the revision date noted in the footer.

Lubricants in Subpart MM

EPA's Mandatory Greenhouse Gas Reporting regulation, 40 CFR Part 98, defines lubricants as including "all grades of lubricating oils, from spindle oil to cylinder oil to those used in greases. Petroleum lubricants may be produced from distillates or residues." (40 CFR 98.6) EPA has classified lubricants as a petroleum product listed in Table MM-1 of 40 CFR Part 98 and specified that suppliers "must report the CO_2 emissions that would result from the complete combustion or oxidation of each petroleum product … during the calendar year." During promulgation of this rule, EPA further addressed emissions from lubricants in the proposed preamble for 40 CFR Part 98:

> Petroleum products are ultimately consumed in one of two ways: Either through combustion for energy use, or through a non-energy use such as petrochemical feedstocks or lubricants. Combustion of petroleum products produces CO_2 and lesser amounts of CH_4 and N_2O, which are in almost all cases emitted directly into the atmosphere. Some non-energy uses of fuels, such as lubricants, also result in oxidation of carbon and CO_2 emissions. This process may occur immediately upon first use or, in the case of biological deterioration, over time. Carbon in other petroleum products, such as asphalts and durable plastics, may remain un-oxidized for long periods unless burned as fuel or incinerated as waste.

The final preamble for 40 CFR Part 98 further states:

> A comprehensive and rigorous system for tracking the fate of petroleum products that may have non-emissive uses is beyond the scope of this rule, and would require a much more burdensome reporting obligation for petroleum product suppliers and other downstream users of petroleum products and natural gas liquids.
>
> EPA has and will continue to characterize CO_2 emissions data reported under 40 CFR part 98, subpart MM as emissions that would result from the complete combustion or oxidation of the reported product(s) and not as actual emissions.

Thus, EPA requires refiners and importers/exports of fuel to include emissions from the combustion and oxidation of lubricants. Ecology incorporated this concept in the GHG Reporting Program and requires fuel suppliers to report all fuel products listed in 40 CFR Part 98, Tables MM-1 and MM-2, which includes lubricants. WAC 173-441-122(5).

All fuel volumes that meet the point of regulation must be reported, regardless of combustion or oxidation. However, Chapter 173-446-040(2)(v) WAC allows an exemption for "products listed in Table MM-1 of 40 C.F.R. Part 98 Subpart MM as adopted in WAC 173-441 when the supplier can demonstrate to Ecology's satisfaction that the product is not combusted or oxidized. All products listed in Table MM-1, except asphalt and road oil, are by default assumed to be combusted or oxidized unless demonstrated otherwise." Therefore, for a fuel to be exempted from an entity's covered emissions, it must demonstrate to Ecology's satisfaction that the product is not combusted or oxidized.

Combustion or Oxidation of Lubricants

Products that are not intended to be combusted for energy could still release CO_2 emissions from either oxidation over the product's lifetime or via the lubricant's final disposal method at the end of its life. Thus, Ecology must consider a product's end-of-life disposal in addition to the intended use of the product to determine the CO_2 emissions that should be reported as associated with the product.

The possible end-of-life fates of lubricants are documented in literature referenced throughout this document and include one of the following outcomes:

- Combusted
- Dumped on the ground or in storm sewers
- Landfilled
- Re-refined into lube oil base stock or other products

EPA's U.S. National Emissions Inventory includes emissions from lubricants and considers these end-of-life scenarios in its calculations. The Washington State Greenhouse Gas Emissions Inventory also includes emissions from lubricants and adopts EPA's methods for calculating those emissions. In Annexes to the Inventory of U.S. Greenhouse Gas Emissions and Sinks, published in 2023, EPA subdivides lubricants into oils and greases and estimates the portion of oil and grease lubricants that fall into the end-of-life scenarios listed above.

For instance, EPA calculates that 20% of oil lubricants are combusted during use and another 64% are combusted as 'used oil' after their initial use. For grease lubricants, only 5% are combusted during use and the rest are assumed to be landfilled or dumped on the ground or in sewers. EPA further states that "the ultimate fate of the majority of oils (about 84%) is combustion, either during initial use or after collection as used oil."

The portion of lubricant oils and greases that are not combusted still contribute to GHG emissions through oxidation. Lubricant oxidation is a critical factor impacting lubricants' usable lifetime for various applications. As the lubricant is exposed to air, it reacts with oxygen and forms byproducts. For hydrocarbons, the final products of these reactions are CO_2 and H_2O, the same products as from combustion. As a lubricant ages throughout its use, including after disposal, it will release CO_2 into the air through oxidation. To further illustrate this point, EPA states that for lubricant oils, "Dumping onto the ground or into storm sewers… is another fate that results in conversion to CO_2 given that the releases are generally small and most of the oil is biodegraded (based on the observation that land farming—application to soil— is one of the most frequently used methods for degrading refinery wastes)."

EPA does indicate that lubricant oil or grease that is disposed of in a landfill environment does not degrade due to the anaerobic environment and the likelihood of disposal within a container. However, as stated in Ecology's report, Materials that may or may not be managed as used oil in Washington State, Ecology encourages the recycling of used oil, while solid waste regulations and most local agencies prohibit the disposal of containers of free liquids to

landfills. Additionally, some oxidation of the lubricant happens prior to disposal, and it is not feasible for Ecology to measure the amount of oxidation that occurred prior to being landfilled.

Thus, volumes of lubricants that meet the point of regulation must be reported annually per Chapter 173-441 WAC. The emissions from these lubricant volumes will be incorporated in an entity's covered emissions.

Recycled Lubricants

As described above, some lubricants are re-used or re-refined into other products, either for combustion or to return to their original use. The American Petroleum Institute states that the most common types of recovery include reclaiming as recovered fuel oil, reprocessing to diesel oil products, reprocessing to vacuum gas oil, and regeneration to a base oil (Life Cycle Assessment of Used Oil Management, American Petroleum Institute). In Annexes to the Inventory of U.S. Greenhouse Gas Emissions and Sinks, EPA addresses re-refining of lubricants oils and clarifies that it "adds a recycling loop to the fate of the oil."

RCW 70A.65.080(8) specifies that "The department shall not require multiple covered entities to have a compliance obligation for the same emissions…." Ecology intends for emissions from lubricants to only be counted once under CCA in the lubricants' lifetime, rather than counting every time the oil is re-used or re-refined. It is not feasible to track the individual pathway of each new lubricant from sale to disposal, but it is possible to identify used or re-refined oil that is sold within Washington.

Any fuel supplier selling used, recycled, or re-refined oil that falls under the point of regulation for CCA should provide information to Ecology to demonstrate the reuse of those lubricants. Information could include: the amount of lubricant, whether the product is being imported or sold at the rack by the position holder, and documentation proving the product is used or re-refined. Acceptable documentation might include bills of lading (BOL), purchase receipts, product descriptions, or safety data sheets. Other types of documentation may be acceptable if they properly indicate:

- the source of the product
- its nature as a used or re-refined oil
- the amount of product purchased or sold

Other types of documentation than those listed above may also suffice to document re-used or re-refined oil, and entities and stakeholders with questions should contact Ecology. To track and retain this data and documentation, all covered entities, including fuel suppliers, must establish a data management system (which must be described in the covered entity's GHG monitoring plan pursuant to Chapter 173-441-050(6)(e) WAC) that documents the entity's in-use methods for tracking fuel sale transactions. This information will also be required as part of the third-party verification review process.

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