

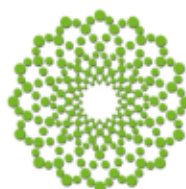
DECONSTRUCTING DIESEL

A CONCISE GUIDE

Strategies for Reducing Diesel Emissions
in the Portland Metropolitan Area

AMELIA SCHLUSSER, LEV BLUMENSTEIN,
& NATASCHA SMITH

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GREEN ENERGY
INSTITUTE
AT LEWIS & CLARK LAW SCHOOL

AUTHORS & CONTRIBUTORS

AUTHORS:

AMELIA SCHLUSSER

Staff Attorney
Green Energy Institute

LEV BLUMENSTEIN

Energy Law Fellow
Green Energy Institute

NATASCHA SMITH

Energy Law Fellow
Green Energy Institute

CONTRIBUTORS:

MELISSA POWERS

Director
Green Energy Institute

GREG HIBBARD

Energy Law Fellow
Green Energy Institute

CASILLE SYSTERMANS

Legal Extern
Green Energy Institute

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Licia Sahagun, Deputy Director, Green Energy Institute

Mary Peveto, Executive Director, Neighbors for Clean Air

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I. INTRODUCTION

Diesel pollution presents a profoundly serious problem in Portland, Oregon, and surrounding Multnomah County. Exhaust from diesel-fueled engines contains toxic air pollutants that present significant threats to public health and contribute to global climate change. Multnomah County, which encompasses the city of Portland and is home to nearly twenty percent of Oregon's population, has one of the highest rates of diesel exhaust exposure in the United States.¹ Area residents are regularly exposed to diesel particulate matter concentrations that are more than ten times higher than Oregon's health-based standards, and many local

communities are exposed to even higher levels of these toxic air pollutants.² Portland's diesel pollution places local residents at higher risk of developing cancer, heart attack, stroke, cardiovascular disease, and respiratory disorders, with low-income and minority communities disproportionately impacted by diesel pollution and the health threats it presents.³ These disparate impacts are most pronounced in communities of color, which may be exposed to up to three times more diesel pollution than the average area resident.⁴ Children are particularly vulnerable to diesel pollution, which can cause permanent damage to growing lungs.⁵



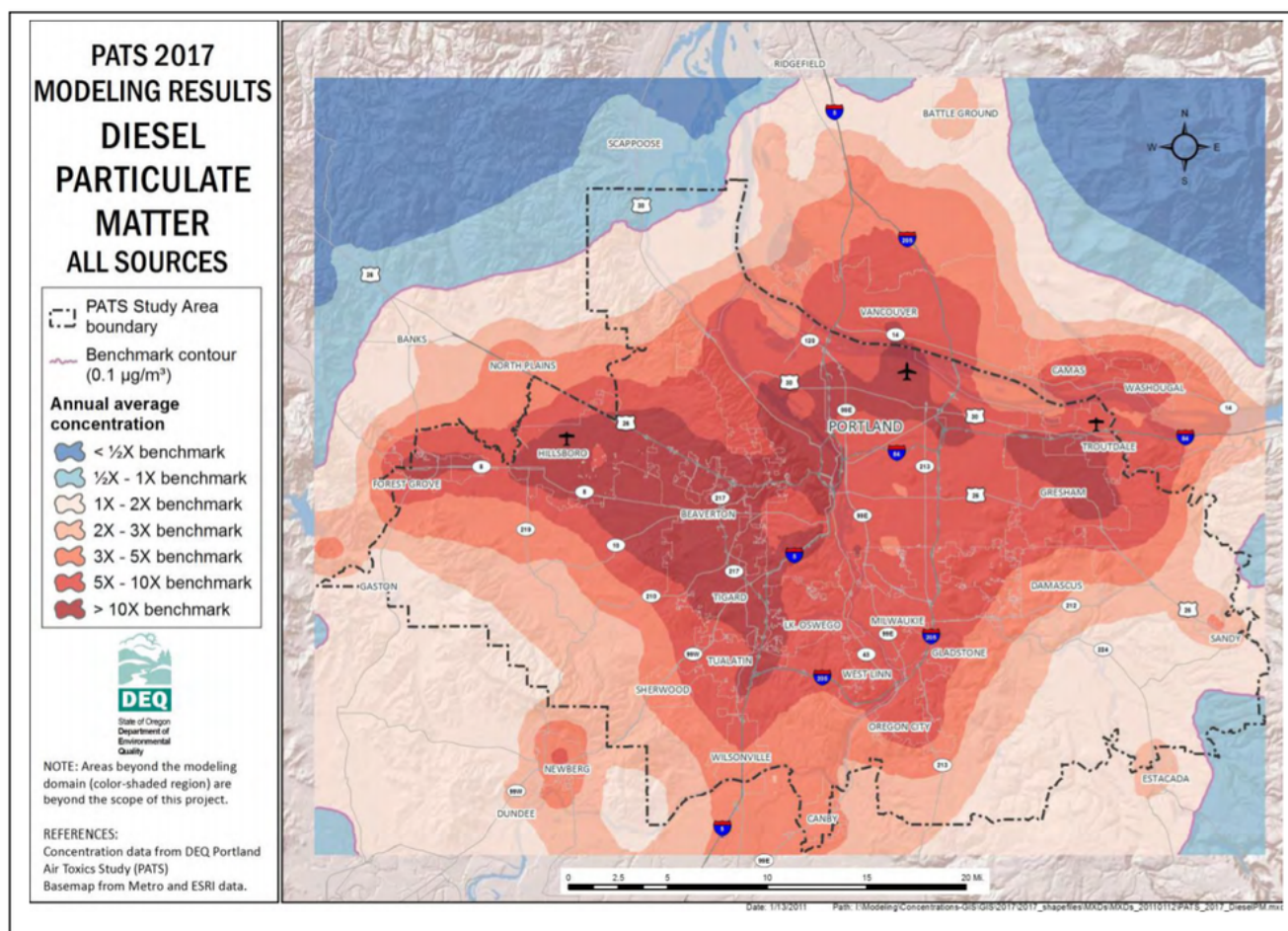
Toxic diesel pollution presents a serious health threat for residents of Portland and Multnomah County.

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The health and environmental impacts associated with diesel pollution impose serious social, emotional, and economic strains on Portland's communities. Diesel-related illnesses contribute to absences from work and school and drive up health care spending. On a statewide level, these impacts are estimated to cost the state more than \$1.8 billion each year.⁶ Efforts to reduce diesel emissions can therefore create far-reaching benefits for those who live and work in the metropolitan area. If quick action is taken to address the diesel pollution problem, **Oregon could prevent 460 premature deaths and save the state \$3.5 billion each year** through avoided illnesses, fatalities, and environmental damage.⁷

Early action to reduce diesel emissions can also produce long-term climate benefits by reducing atmospheric concentrations of black carbon. Commonly known as "soot," black carbon is a type of particulate matter that significantly contributes to climate change by directly absorbing solar radiation. Diesel emissions are one of the primary sources of black carbon. While black carbon is a very potent climate forcer, it is also short-lived, remaining in the atmosphere for days or weeks rather than decades. Short-term reductions in diesel black carbon emissions can therefore have a profound impact on global temperatures.⁸

\$188,000,000
Estimated Annual Economic Impact
of Diesel Black Carbon in Oregon

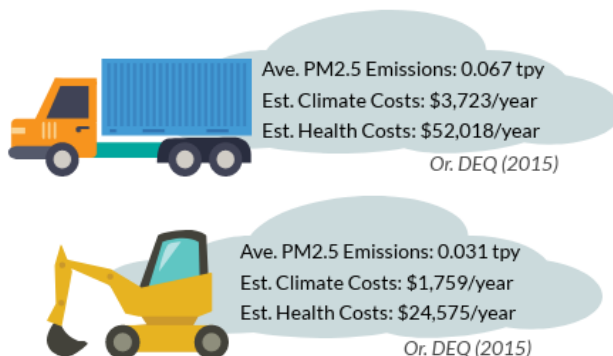


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The term “diesel pollution” refers to the combination of toxic air pollutants emitted by diesel-fueled vehicles and engines, which include fine particulate matter (some of which is emitted as black carbon) and nitrogen oxides. Emissions from heavy-duty on-road diesel vehicles, such as trucks and buses, and from nonroad diesel engines, such as construction vehicles, trains, ships, and lawn and garden equipment, are the primary sources of diesel pollution in the Portland metropolitan area. While all diesel engines emit toxic air pollutants, old engines are a much larger problem than new engines—**older diesel engines emit as much as 99% more pollution than newer engines**. Because newer diesel engines are much cleaner than older engines, California has taken action to phase out older diesel vehicles from its public and private fleets. As a result, many old, dirty diesel vehicles from California are being sold into Oregon. Unless quick action is taken to address this issue, Portland’s diesel problem will likely continue to worsen over time.



HEALTH & CLIMATE COSTS ASSOCIATED WITH AN AVERAGE DIESEL TRUCK & EXCAVATOR



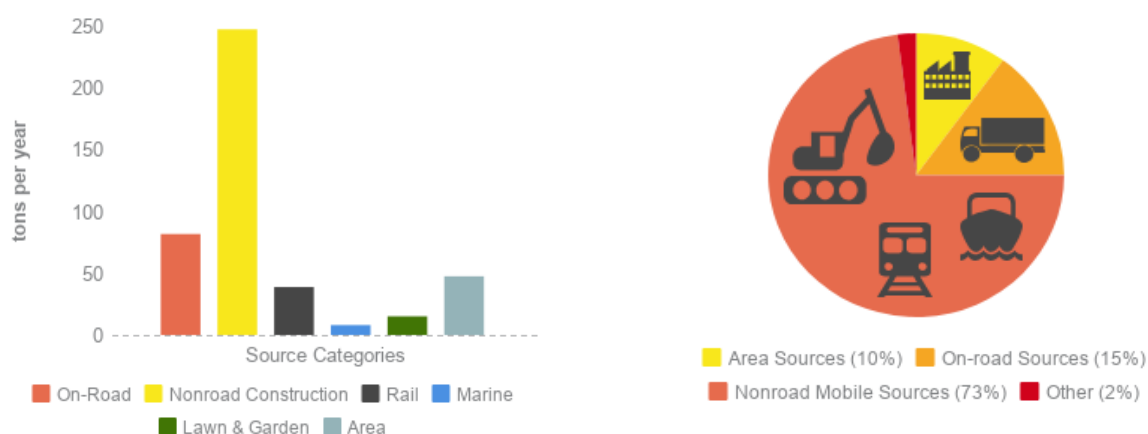
To reduce the significant health and environmental risks associated with diesel pollution, Portland and Multnomah County must adopt and implement effective strategies to reduce local diesel emissions. Unfortunately, local governments face a number of legal and regulatory hurdles that limit available options for addressing diesel emissions. A series of complex legal frameworks and jurisdictional dynamics at the state and federal levels restrict local authority to regulate diesel vehicles and engines in certain contexts. This Guide aims to help local governments and community stakeholders better understand the legal frameworks and regulatory limitations local governments must navigate to effectively address diesel pollution at the local level. The Guide also identifies a variety of strategies local governments can implement to reduce diesel pollution from local sources. This Guide is intended to provide a concise overview of the legal and policy issues surrounding diesel emissions regulation. More detailed explanations of these issues and strategies are available in the Green Energy Institute’s comprehensive *Deconstructing Diesel* law and policy roadmap.⁹

II. SOURCES OF DIESEL POLLUTION

Oregon's diesel pollution is generated by a wide variety of on-road and nonroad diesel engines and vehicles. On-road diesel vehicles include heavy-duty trucks used to transport freight; medium-duty trucks used for local deliveries; buses; waste collection vehicles; and emergency vehicles, such as fire engines. Nonroad diesel vehicles and engines include most construction equipment; off-road vehicles, such as diesel-fueled recreational vehicles; agricultural equipment, such as

tractors; lawn and garden equipment; railroad locomotives; and marine vessels. These diesel vehicles and engines collectively emit approximately 472 tons of particulate matter pollution in Portland each year.¹⁰ To achieve Oregon's health-based standard (called an "ambient benchmark concentration"¹¹) for diesel particulate matter, **Portland must reduce its annual diesel particulate matter emissions by 86%.**¹²

PORTLAND'S ESTIMATED DIESEL PARTICULATE MATTER EMISSIONS BY SOURCE CATEGORY



ESTIMATED DIESEL PARTICULATE MATTER EMISSIONS REDUCTIONS NEEDED TO MEET OREGON'S AMBIENT BENCHMARK CONCENTRATION

Source Category	Average Concentration ($\mu\text{g}/\text{m}^3$)	Estimated Emissions (tons per year)	Reductions Needed (tons per year)	Percentage Reduction
On-Road Mobile	1.117	81.7	74.4	91%
Nonroad Construction	1.22	247.3	228.7	92.5%
Rail	0.954	38.8	35.6	91.8%
Marine	0.819	8.0	7.2	89.5%
Lawn & Garden	1.33	15.1	14.0	92.3%

Oregon's Ambient Benchmark Concentration for diesel particulate matter is 0.1 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Data from DEQ Portland Air Toxics Solutions Study (2011).

III. REGULATING DIESEL EMISSIONS: JURISDICTIONAL DYNAMICS AND LIMITATIONS

The only meaningful way to reduce diesel pollution concentrations in Portland and Multnomah County is to reduce the aggregate unfiltered emissions produced by diesel vehicles and engines. This can be achieved by restricting the number of diesel vehicles and engines operating in the area, restricting the amount of time these vehicles and engines operate in the area, and/or restricting the amount of air pollution these vehicles and engines emit in the area. While these strategies may seem fairly straightforward in concept, local governments face a number of barriers to implementing these types of regulatory restrictions at the local level. Most of these barriers stem from a combination of federal laws that limit state and local jurisdiction over motor vehicle regulations.

On a general level, the federal government has reserved near-exclusive authority to regulate the design and manufacturing of new vehicles and engines. Because vehicle manufacturers typically operate on a national scale, the federal government aimed to create a degree of certainty and uniformity within the automotive industry by preventing individual states from adopting their own unique vehicle requirements. States and local governments therefore have very limited authority to establish emissions standards for new vehicles and engines, because these types of standards would presumably require compliance at the manufacturing level. Similarly, because many commercial transport companies operate in interstate commerce



Local governments have limited authority to regulate emissions from new diesel trucks.

(i.e., they transport commercial property between different states), the federal government also reserved near-exclusive authority to regulate commercial transportation of goods and people.

In some instances, federal laws expressly prohibit state and local governments from regulating in a certain area. This is known as “preemption.” If a federal law preempts state regulation in a certain area, local regulation is typically preempted as well. Some federal laws preempt state and local governments from regulating a certain activity or industry for economic reasons but make exceptions for regulations designed to protect public safety. Other laws provide more tailored exceptions for specific states, activities, or purposes. State governments also occasionally adopt laws that preempt local governments from regulating certain activities or industries.

A. Federal Restrictions on State and Local Authority

The federal government has reserved nearly exclusive jurisdiction over motor vehicle manufacturing and design. As a result, most states are prohibited from adopting laws and regulations targeting certain aspects of motor vehicle design, including vehicle emissions

and fuel economy. Federal law also limits state and local authority to adopt laws and regulations that place economic burdens on commercial transportation or discriminate against out-of-state industries.

The following federal laws restrict state and local authority to regulate motor vehicles:

- The **Clean Air Act** preempts state and local governments from adopting or enforcing emissions standards for new on-road motor vehicles and both new and existing non-road vehicles and engines. The Clean Air Act makes an exception for the State of California, which may request a waiver from the U.S. Environmental Protection Agency (EPA) to adopt its own emissions standards for new on-road vehicles and most new and existing nonroad vehicles and engines. If California receives a waiver from EPA, other states (including Oregon) may adopt California's emissions standards.
- The **Energy Policy and Conservation Act** preempts states from adopting or enforcing fuel economy standards for new and existing motor vehicles that are subject to existing federal fuel economy standards.
- The **Federal Aviation Administration Authorization Act** preempts states and local governments from adopting laws or regulations that directly affect the prices, routes, or services of commercial transport providers.
- The **Commerce Clause of the U.S. Constitution** prohibits states and local governments from adopting laws or regulations that unduly burden interstate commerce or unreasonably discriminate against out-of-state businesses or industries.



A freight train passes through Southeast Portland. Federal law preempts Oregon from directly regulating emissions from diesel locomotives.

B. State Restrictions on Local Government Authority

Just as federal law can restrict state and local regulatory authority, state law may preempt local governments from regulating in certain areas. The Oregon Constitution generally protects local “home rule” authority, which allows local governments to adopt regulations and policies that apply exclusively within their jurisdictional boundaries. However, the Oregon legislature can restrict

home rule authority by explicitly or unambiguously prohibiting local regulation in a specific context. Much like the federal government, Oregon aims to provide a degree of statewide uniformity in its regulation of motor vehicles and preempts or restricts local governments from regulating in certain areas.

Oregon limits local authority to regulate motor vehicles and other mobile sources through the following mechanisms:

- Article IX, Section 3a of the Oregon Constitution significantly restricts how local governments may use revenues associated with motor vehicle ownership and use.
- Oregon law expressly preempts local governments from regulating certain aspects of motor vehicle operation, such as idling of commercial vehicles.
- The Oregon legislature has delegated certain regulatory authorities to specific state agencies. For example, the Oregon Department of Transportation has authority to administer many provisions within the Oregon Vehicle Code, and local governments are prohibited from adopting regulations that conflict with many Vehicle Code requirements.
- Some state agencies have adopted regulations that preempt local governments from regulating in certain areas. For example, Environmental Quality Commission regulations impose restrictions on local governments that wish to regulate emissions from indirect sources of air pollution.¹³



Due to restrictions imposed by Article IX, section 3a of the Oregon Constitution, vehicle fuel taxes and many other transportation-related revenues are deposited into the State Highway Trust Fund and dedicated for specific highway-related uses.

C. What State and Local Governments Can Do to Reduce Diesel Pollution

While the federal laws described above restrict state and local authority to adopt emissions standards for new (and some existing) motor vehicles and impose certain economic restrictions on commercial vehicles, state and local governments have authority to regulate diesel pollution in other

ways. For example, while the Clean Air Act prohibits individual states (other than California) from imposing unique design requirements on motor vehicle manufacturers, federal law generally does not intrude on state and local authority to protect public health and safety.

To protect air quality and control diesel pollution, states may:

- Adopt California's EPA-approved emissions standards for new on-road vehicles and new and existing nonroad vehicles and engines.
- Regulate emissions from existing on-road motor vehicles.
- Regulate motor vehicle ownership, operation, and use within their borders.
- Regulate emissions from indirect sources of diesel pollution.
- Adopt proprietary or voluntary policies designed to reduce diesel emissions.

Unless otherwise preempted under state law, local governments generally possess the same regulatory authorities that state governments possess. However, as section B explained, Oregon restricts local governments from regulating in certain

contexts. Part IV presents a variety of strategies local governments can pursue to reduce diesel emissions while avoiding preemptive constraints under federal and state law.

EXAMPLES OF GENERALLY PERMISSIBLE STATE & LOCAL EMISSIONS CONTROLS



State and local governments may regulate emissions from existing on-road diesel vehicles.



State and local governments may regulate aggregate emissions from indirect sources of air pollution (e.g., construction sites).



State and local governments may adopt clean vehicle standards for publicly owned fleets.

IV. LOCAL STRATEGIES TO REDUCE DIESEL EMISSIONS

Diesel pollution presents a very serious public health threat for those who live and work in the Portland metropolitan area. Fortunately, the City of Portland and Multnomah County have a variety of tools at their disposal to address the area's diesel problem.¹⁴

Oregon's local governments, including the City and County, generally have authority to adopt regulations and policies to protect the health and safety of local residents and the environment. The City and County can exercise their so-called "police powers" to target diesel emissions by regulating vehicle use and operation within their respective jurisdictional boundaries. The City and County can also act in a proprietary capacity to phase out dirty diesel engines in public

fleets and in private fleets operating under public contracts. In addition, the City and County can incentivize private parties to voluntarily transition to cleaner vehicles and engines.

Local governments must balance an assortment of diverse, and potentially conflicting, considerations and concerns when adopting policies that could have widespread social, economic, and/or environmental impacts. On a general level, policies should provide a public benefit while minimizing public harm. In practice, however, the distinction between benefits and harms can be difficult to discern. For example, a diesel reduction policy may benefit a group



A diesel truck passes by residential condos and outdoor dining in Southeast Portland.

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of people by reducing their exposure to toxic air pollution, but also impose additional compliance costs on the group. Local policy makers must also consider and balance a policy's near-term economic impacts with the long-term costs of inaction. For example, a diesel reduction policy may impose relatively high near-term compliance costs, yet avoid decades of diesel-related health care costs for local communities.

The following sections present a variety of regulatory, proprietary, and voluntary strategies to reduce diesel emissions in the Portland metropolitan area. The strategies outlined in this Guide were selected due to their potential to achieve meaningful, long-term reductions in diesel emissions while balancing competing legal, social, economic, and environmental considerations. In general, each strategy outlined in this Guide is intended to be **effective at achieving public policy objectives** (*i.e.*, reducing diesel emissions), relatively **feasible to implement** under existing political and regulatory

frameworks, and **legally justifiable** (*i.e.*, likely capable of surviving a legal challenge). While each of the strategies described below will impose some costs on the private or public sector, strategies with completely unrealistic or infeasible economic impacts were omitted from this analysis. (For example, the City could effectively reduce diesel emissions by purchasing low-emissions vehicles to replace every privately owned diesel vehicle operating in Portland, but the costs to do so would be extremely high.) Strategies that would impose disproportionate economic burdens on frontline communities were also omitted.

Section A presents strategies for addressing emissions from on-road vehicles and section B presents strategies targeting nonroad emissions. Section C outlines a series of statewide legislative and regulatory solutions that would complement local efforts to reduce emissions. Finally, section D describes potential strategies for raising revenue to fund local diesel reduction efforts.



In 2018, the City of Portland and Multnomah County adopted clean air construction requirements for public works projects.

A. Reducing Emissions from On-Road Diesel Vehicles

A large portion of the Portland area's diesel pollution comes from emissions from large, on-road diesel vehicles, particularly trucks and buses. Exhaust from medium-duty and heavy-duty diesel vehicles contributes to air pollution throughout the metropolitan area, and these emissions are directly responsible for elevated diesel particulate matter concentrations near highways and high-traffic local roads. Unfortunately, the City and County generally lack authority to prohibit new diesel vehicle purchases or restrict diesel

vehicle registrations. However, the City and County have considerable authority to regulate the operation and use of vehicles along local roads within their respective jurisdictions. The City and County also have authority to promote or require the use of clean diesel vehicles and practices through public procurement policies and public contracts. Finally, the City and County have broad discretion to implement voluntary programs that incentivize private parties to transition to clean diesel vehicles.

Local On-Road Emissions Reduction Strategies

- **Impose restrictions on truck traffic and parking:**
 - Establish **mandatory truck routes** and prohibit truck traffic on alternate routes, particularly along roads near schools or hospitals or in communities with elevated levels of diesel pollution
 - Establish **time of day truck routes** to reduce on-road emissions during high-traffic periods
 - **Restrict truck loading zone hours** to encourage off-hours deliveries
 - Establish voluntary clean diesel and diesel-free zones on public and private property
 - Impose **dynamic road user fees** on heavy-duty diesel vehicles through time-of-day or zone-based tolls
- **Adopt clean fleet requirements:**
 - Establish City and County **clean fleet requirements** for public fleets, public contractors, and local franchises
 - Encourage the Port of Portland to adopt **voluntary drayage fleet standards** for diesel drayage trucks operating under contract with the Port
- **Restrict diesel vehicle idling:**
 - Restrict idling on public school property by school buses and diesel delivery vehicles
 - Impose idling restrictions through public contracts
 - Enforce state idling laws
 - Educate property owners and vehicle operators of idling-related costs and emissions
- **Promote the transition to electric trucks and buses:**
 - Develop a plan to deploy heavy-duty EV charging infrastructure
 - Encourage TriMet to electrify its bus fleet on an accelerated schedule



B. Reducing Emissions from Nonroad Engines and Indirect Sources of Diesel Pollution

Nonroad engines and vehicles are the largest categorical source of diesel particulate matter pollution in the Portland metropolitan area.¹⁵ Construction machinery, ships, locomotives, and diesel-fueled lawn and garden equipment all contribute to the area's diesel pollution problem. Construction sites and other indirect sources of air pollution, such as ports, rail yards, shipping terminals, and industrial facilities, emit large amounts of diesel pollution in localized areas, particularly during daytime hours. These sites are

commonly located near minority and low-income communities that are disproportionately impacted by poor air quality and pollution. To address diesel emissions from nonroad sources, the City of Portland and Multnomah County should establish targeted programs to reduce emissions from construction sites, other indirect sources (such as railyards and commercial shipping terminals) and lawn and garden equipment.

Local Nonroad and Indirect Source Emissions Reduction Strategies

- **Reduce construction-related emissions:**
 - Adopt **in-use diesel pollution control requirements** for construction sites operating under City or County permits
 - Establish a **voluntary cleaner diesel construction designation** for contractors operating tier 4 equipment
- **Adopt indirect source rules** that require aggregate emissions reductions from all mobile sources (including on-road and nonroad diesel vehicles and engines) operating within the source's boundaries
- **Establish a lawn and garden equipment rebate program** to incentivize local homeowners and lawn care contractors to replace high-emissions equipment with electric models



C. Advocate for Legislative Solutions

While the policies described above have the potential to achieve meaningful diesel emissions reductions within the Portland metropolitan area, the state government has authority to adopt additional diesel reduction policies that may be preempted or infeasible to implement at the local level. The City and County can encourage the Oregon legislature and the state Environmental Quality Commission (EQC) to pursue diesel reduction strategies that would improve air quality at the local level. With approximately

20% of Oregon's population residing in Portland and Multnomah County,¹⁶ the City and County have a certain degree of political influence at the state level. To protect the health and wellbeing of local communities, the City and County should encourage the Oregon legislature and the Oregon Environmental Quality Commission (EQC) to adopt legislation and regulations that will facilitate diesel emissions reduction efforts at the local level.

1. Legislative Strategies. The City and County should encourage the Oregon legislature to make the following changes to Oregon's existing laws to reduce diesel emissions at the state and local levels:

- **Eliminate the statewide idling preemption** to allow local governments to regulate idling of commercial diesel vehicles
- **Eliminate the statewide pollution control equipment exemptions** for heavy-duty diesel vehicles, including proportionally registered vehicles,¹⁷ which is a necessary first step toward regulating emissions from heavy-duty diesel vehicles operating in the Portland area
- **Eliminate the statewide registration exemption for nonroad vehicles**, which prevents the City and County from collecting information on the quantities, types, and ages of nonroad equipment operating in the Portland metropolitan area
- Allow local governments to **adopt more stringent registration requirements** and conditions for vehicles registered within their borders

2. Regulatory Strategies. The City and County should petition the EQC to take the following regulatory actions to address diesel pollution:

- **Strengthen the EQC's indirect source rules** and remove the regulatory restriction on local indirect source rules
- **Require emissions control system inspections** for heavy-duty diesel vehicles
- **Adopt on-road performance standards** for existing medium-duty and heavy-duty diesel vehicles
- **Adopt California's nonroad emissions standards** to facilitate the replacement of older engines with equipment meeting tier 4 emissions standards

D. Funding the Clean Diesel Transition

In Oregon, local governments face unique challenges to acquiring funding for diesel reduction programs. Unlike most state constitutions, the Oregon Constitution significantly restricts how the state and local governments may spend motor vehicle-related revenues. Article IX, section 3a of the Oregon Constitution mandates that all taxes on motor vehicle fuels and taxes and fees levied on motor vehicle operation and use (such as driver's license fees and vehicle title and registration fees) be used for specified highway purposes. As a result, revenue

streams that commonly fund diesel reduction efforts in other states are largely off-limits to Oregon's local governments. The City and County can use revenues from their own general funds to finance diesel reduction efforts, and/or seek federal or state funding to support local diesel reduction programs. To raise additional funding for local diesel programs while avoiding Oregon's constitutional constraints, the City and County should consider raising revenues through permit fees, privilege and sales taxes, and penalties for violations of local regulations.

Funding Strategies:

- **Increase permit fees** for local projects that will produce diesel pollution, such as large construction projects
- **Levy privilege taxes** on dealers or vendors that sell diesel-fueled vehicles or engines, and levy sales taxes on diesel-fueled equipment
- **Impose penalties and fines** for violations of diesel-related ordinances, such as truck route or idling violations



V. CONCLUSION

Diesel pollution in the Portland metropolitan area adversely affects the health and welfare of local residents and negatively impacts the local environment. Fortunately, the City of Portland and Multnomah County have the authority and opportunity to pursue a variety of strategies to address the area's dirty diesel issues. By implementing a combination of regulatory requirements, proprietary initiatives, voluntary incentives, and educational programs, the City and County can effectively reduce local diesel emissions. Moreover, the City and County can design and implement their diesel reduction strategies to provide new economic opportunities for local businesses and promote deployment of newer, cleaner technologies.

To meet the City's and County's long-term climate and energy targets, Portland and Multnomah County must ultimately shift away from diesel fuel and transition to electric and alternatively fueled vehicles and engines. Until this transition is complete, the City and County should prioritize strategies that reduce diesel pollution and minimize negative economic impacts in vulnerable frontline communities. By working together and collaborating with community groups, diesel-intensive industries, and other local stakeholders, Portland and Multnomah County can help create a cleaner, healthier urban environment for current and future generations.



END NOTES

¹ *HB 3310: Hearing Before the H. Comm. on Health Care*, 78th Or. Leg. Assem. (Mar. 31, 2015) (testimony of Jae Douglas, Multnomah County Environmental Health Dir.), <https://olis.leg.state.or.us/liz/2015R1/Downloads/CommitteeMeetingDocument/58247>.

² Or. Dept. of Env't'l Quality, Fact Sheet: Air Quality in Portland, Portland Air Toxics Solutions Report and Recommendations 4 (2012), <https://www.oregon.gov/deq/FilterDocs/12aq035patsReport.pdf> [hereinafter PATS Factsheet]. Testing by Portland State University detected localized diesel particulate concentrations that were up to 20 times higher than the state's safety benchmarks. Keely Chalmers, *Diesel Pollution Laws Could Tighten Under Proposed Oregon Bill*, KGW.com (Apr. 3, 2017), <http://www.kgw.com/news/local/diesel-pollution-laws-could-tighten-under-proposed-oregon-bill/428262562>.

³ PATS FACTSHEET, *supra* note 3, at 5.

⁴ Multnomah County Health Dept., 2014 Report Card on Racial and Ethnic Disparities 31 (2014), <https://multco.us/file/37530/download>.

⁵ Damian Carrington, *Diesel Pollution Stunts Children's Lung Growth, Major Study Shows*, THEGUARDIAN.COM (Nov. 14, 2018), <https://www.theguardian.com/environment/2018/nov/14/diesel-pollution-stunts-childrens-lung-growth-london-study-shows>.

⁶ OR. DEPT. OF ENV'T'L QUALITY, THE CONCERNS ABOUT DIESEL ENGINE EXHAUST 6 (2015), <http://www.oregon.gov/deq/FilterDocs/DieselEffectsReport.pdf> [hereinafter DEQ 2015 DIESEL REPORT].

⁷ *Id.* at 7.

⁸ *Id.* at 4–6.

⁹ SCHLUSSE ET AL., DECONSTRUCTING DIESEL: A LAW & POLICY ROADMAP FOR REDUCING DIESEL POLLUTION IN PORTLAND, OREGON (forthcoming 2019), *available at* https://law.lclark.edu/centers/green_energy_institute/publications/.

¹⁰ Portland Air Toxics Solutions Advisory Committee, PATS 2017 Pollutant Modeling Summary 6 (2011), <https://www.oregon.gov/deq/FilterDocs/15pollutantsAboveSummary.pdf> [hereinafter PATS Pollutant Modeling Summary].

¹¹ The Oregon Environmental Quality Commission has adopted a health-based ambient benchmark concentration for diesel particulate matter of 0.1 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). OR. DEPARTMENT OF ENV'T'L QUALITY, AIR TOXICS PROGRAM, AMBIENT BENCHMARK CONCENTRATIONS (ABC) 4 (Oct. 2010), <https://www.oregon.gov/deq/FilterDocs/airtox-abc.pdf>.

¹² PATS POLLUTANT MODELING SUMMARY, *supra* note 11, at 6.

¹³ Unless expressly authorized by statute, administrative restrictions on local authority, such as the EQC's restrictions on local indirect source regulation, very likely interfere with local home rule authority protected under the Oregon Constitution. However, though state agencies have limited authority to preempt local regulation, administrative rules that prohibit local regulation tend to deter local action.

¹⁴ In this Guide, the "City" and the "County" refer to Portland's and Multnomah County's municipal and county governments, respectively. The "Portland metropolitan area" refers to the geographic area encompassing Portland and Multnomah County, as well as portions of adjacent Clackamas and Washington counties.

¹⁵ PATS POLLUTANT MODELING SUMMARY, *supra* note 11, at 6.

¹⁶ As of July 2017, Multnomah County had a population of 807,555 people. U.S. Census Bureau, *Quick Facts: Multnomah County, Oregon* (July 1, 2017), <https://www.census.gov/quickfacts/multnomahcountyoregon>. Oregon had a statewide population of 4,142,776. U.S. Census Bureau, *Quick Facts: Oregon* (July 1, 2017), <https://www.census.gov/quickfacts/fact/table/or,US/PST045217>.

¹⁷ Proportionally registered vehicles are commercial vehicles that are registered in more than one state. OR. REV. STAT. § 815.300(7), (8), 801.285.