RESOURCE GUIDE FOR AIR QUALITY ACTION

DRAFT

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Acknowledgements

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Chapter 1 Introduction

How Poor Air Quality Impacts You

Poor air quality affects everyone, and people who are more vulnerable find themselves at higher risks of health problems. Air quality is a critical determinant of public health, environmental well-being, and overall quality of life. In the densely populated metropolitan Washington region, maintaining good air quality is essential but also challenging, due to high levels of vehicle traffic, industrial activity, and energy consumption contributing to air pollution. Poor air quality compromises public health and accelerates environmental degradation, making it a pressing concern for communities and leaders alike.

Exposure to air pollutants can lead to a host of health problems. Short-term exposure can cause respiratory issues such as coughing, wheezing, and shortness of breath, while long-term exposure increases the risk of chronic diseases such as asthma, bronchitis, and cardiovascular conditions. Vulnerable populations, including children, the elderly, and those with pre-existing conditions, are particularly susceptible.

Additionally, clean air supports healthy ecosystems, enabling biodiversity and sustaining natural processes that keep our environment resilient. When air quality is maintained, local flora and fauna thrive, and natural landscapes continue to provide essential services—such as water purification and climate regulation—that directly contribute to the overall quality of life for communities. The synergy between improved environmental conditions and better health outcomes contributes significantly to the overall quality of life, creating vibrant, sustainable communities where both people and nature can flourish.

Purpose of this Document

This document provides a framework to guide the Metropolitan Washington Air Quality Committee (MWAQC) members and their associated communities in considering equity and environmental justice in air quality planning and policy development. This document is neither a policy nor a mandate, but rather, a set of recommendations that are voluntary for stakeholders to consider and use. The sections below will 1) describe what is meant by equity and environmental justice, 2) provide a look at air quality in the region, and 3) present strategies that will empower MWAQC members and community organizers to use to improve air quality. The strategies are designed to be broad enough to allow members to build more detailed roadmaps that are specific to each jurisdiction.

This document focuses on policies and programs related primarily to outdoor air quality, and not indoor air quality. Below is a list of seven strategies that can be used to improve air quality within metropolitan Washington region:

1. Improve Air Quality Monitoring
2. Foster Stronger Partnerships
3. Improve Air Quality Regulation
4. Increase Public Outreach
5. Reduce Emissions from Stationary Sources
6. Reduce Vehicle Emissions
7. Promote Land Use Planning in Support of Air Quality Improvement

The strategies are described in more detail in Chapter 4 and are further broken down into more specific actions described in Chapter 5.

Importance of Considering Equity

Underserved communities that tend to be made up of low-income and racial minority populations in Metropolitan Washington are disproportionately affected by poor air quality[1]. These communities often

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[1] Bullard, R. D., Mohai, P., Saha, R., & Wright, B. (2008). Toxic wastes and race at twenty: Why race still matters after all of these years. *Environmental Law, 38*(2), 371–411; Clark, L. P., Millet, D. B., & Marshall, J. D. (2014). National patterns in

live closer to highways, industrial facilities, and power plants, exposing them to higher levels of air pollution[2] . Additionally, limited access to healthcare, green spaces, and resources for mitigation further exacerbates negative health outcomes [3]. Environmental justice research has consistently shown that these disparities are linked to systemic inequities in housing, transportation, and urban planning [4].

The health outcomes associated with air pollution in disadvantaged communities include higher rates of asthma, respiratory infections, and cardiovascular diseases [5]. For instance, children living in these areas are more likely to suffer from asthma attacks and miss school days, affecting their education and future opportunities [6]. Similarly, adults face increased risks of premature mortality, reduced lung function, and heightened vulnerability to diseases such as cancer [7].

Addressing these outcomes requires a multi-faceted approach that integrates public health, environmental science, and community advocacy. Chapter 3 can help MWAQC members understand more about how environmental justice and equity principles can be applied to air quality policies and programs.

Action MWAQC is Currently Taking

MWAQC has taken a number of actions to improve air quality in the metropolitan Washington region over the years. These actions have been included in and implemented through various State Implementation Plans (SIPs) submitted to US EPA for the demonstration of attainment for ozone and fine particle standards.

1997 Ozone Standard Attainment Plan

State control measures included NOx RACT, Maryland Healthy Air Act, Architectural and Industrial Maintenance Coatings rule, Reformulated Consumer Products rule, Portable Fuel Containers rule, Mobile Repair and Refinishing rule, Solvent Cleaning Operations rule, Transportation Control Measures, Enhanced I/M, and Industrial Adhesives and Sealants rule.

Local control measures included a voluntary bundle of regional wind power purchasing program, renewable portfolio standards, LED traffic sign retrofits, VRE idling reduction, low VOC paint, and gas can replacement.

1997 PM2.5 Standard Attainment Plan

State control measures included RACT, seasonal open burning restrictions, Transportation Control Measures, and I/M programs with updated cut-points. Virginia CAIR and New Source Review permitting, and District CAIR.

Local control measures included regional wind power purchasing program, clean energy rewards program, renewable portfolio standards, green building programs, building energy efficiency programs, (led) traffic signal retrofit program, high electrical demand day emission reduction strategies, diesel retrofit program, alternative fuel vehicle/low-emission vehicle purchase program, urban heat island mitigation/tree planting/canopy conservation and management, and code red/code orange telework program.

environmental injustice and inequality: Outdoor NO_2 air pollution in the United States. *PLOS ONE, 9*(4), e94431. https://doi.org/10.1371/journal.pone.0094431

[2] Clark, L. P., Millet, D. B., & Marshall, J. D. (2014). National patterns in environmental injustice and inequality: Outdoor NO_2 air pollution in the United States. *PLOS ONE, 9*(4), e94431. https://doi.org/10.1371/journal.pone.0094431

[3] Bullard, R. D., Mohai, P., Saha, R., & Wright, B. (2008). Toxic wastes and race at twenty: Why race still matters after all of these years. *Environmental Law, 38*(2), 371–411.; Morello-Frosch, R., Pastor, M., Porras, C., & Sadd, J. (2011). Environmental justice and regional inequality in southern California: Implications for future research. *Environmental Health Perspectives, 110*(Suppl 2), 149–154. https://doi.org/10.1289/ehp.02110s2149

[4] Bullard, R. D., Mohai, P., Saha, R., & Wright, B. (2008). Toxic wastes and race at twenty: Why race still matters after all of these years. *Environmental Law, 38*(2), 371–411.; Morello-Frosch, R., Pastor, M., Porras, C., & Sadd, J. (2011). Environmental justice and regional inequality in southern California: Implications for future research. *Environmental Health Perspectives, 110*(Suppl 2), 149–154. https://doi.org/10.1289/ehp.02110s2149

[5] Brulle, R. J., & Pellow, D. N. (2006). Environmental justice: Human health and environmental inequalities. *Annual Review of Public Health, 27*, 103–124. https://doi.org/10.1146/annurev.publhealth.27.021405.102124

[6] Clark, L. P., Millet, D. B., & Marshall, J. D. (2014). National patterns in environmental injustice and inequality: Outdoor NO_2 air pollution in the United States. *PLOS ONE, 9*(4), e94431. https://doi.org/10.1371/journal.pone.0094431

[7] Bell, M. L., & Dominici, F. (2008). Effect modification by community characteristics on the short-term effects of ozone exposure and mortality in 98 US communities. *American Journal of Epidemiology, 167*(8), 986–997. https://doi.org/10.1093/aje/kwn002

EJ Actions

DOEE installed and started operating monitors for ozone, PM2.5, and NO2 in the District's Bald Eagle location. DOEE also worked with ACLIMA to perform a few mobile monitoring studies for different pollutants.

MDE is working in partnership with the Town of Cheverly and the Community Engagement, Environmental Justice, and Health (CEEJH) Laboratory at the University of Maryland School of Public Health to implement a local air monitoring program in the Cheverly area using low-cost sensors to look at community scale air quality. MDE implemented enhanced enforcement of vehicle idling and observed fugitive dust.

How the Resource Guide Was Developed

This guide was developed based on direct feedback from stakeholders within the metropolitan Washington region. A complete list of stakeholders engaged during the development of this resource guide is provided in Appendix B. Over the course of the resource guide's development, several community engagement events and listening sessions were held to solicit feedback from the public on how to consider equity in the development of air quality policies and programs. A comprehensive list of recommended actions and strategies was collected from the public and captured in the list of actions (Appendix A).

The complete list of actions was first evaluated by the Metropolitan Washington Council of Governments (COG) staff using the criteria listed below. The criteria include:

1. **Improvement to Air Quality**: To what extent does the action directly improve air quality?

2. **Improvement to Disadvantaged Communities**: To what extent does the action address and improve equity in air quality for disadvantaged communities?

3. **Implementation Feasibility**: How feasible is it to implement this action either from a practical or political standpoint?

4. **Enforceability**: How enforceable is this action at the state, local, or regional level?

5. **Economic Feasibility**: How economically feasible is the action?

Each action was given a preliminary rating under each of the individual criteria. Following this step, the actions were given a "priority" rating of either high, medium or low, based on the following analysis:

1. How well does the action directly improve air quality?

2. How well does the action improve conditions for disadvantaged communities?

3. Which actions are rated the highest overall across all criteria?

Following the initial prioritization, the actions were validated again with COG staff, the MWAQC Environmental Justice Subcommittee, and MWAQC. Draft actions rated "high" are considered high priorities for communities and should be considered by representatives as some of the first actions to undertake. Chapter 5 expands upon the high-priority actions with more detail about the immediate first steps to implementation and how obstacles related to implementation may be overcome.

Chapter 2 Air Quality in the Region

Air Quality 101

Key Pollutants and Their Impact on Human Health

Air quality is determined by the concentration of various atmospheric pollutants, which can profoundly affect human health. The six primary pollutants regulated under the Clean Air Act, known as criteria pollutants, are listed in Table 1 below. Each pollutant affects the body differently. For example, fine particulate matter (PM2.5) can penetrate the lungs and bloodstream, causing respiratory and cardiovascular issues, while ground-level ozone irritates the respiratory tract and exacerbates conditions like asthma. Long-term exposure to these pollutants is linked to chronic diseases such as lung cancer, heart disease, and reduced cognitive function.

Vulnerable populations, including children, the elderly, and those with pre-existing conditions, are particularly at risk.

Table 1 Summary of Key Air Pollutants and Impact on Human Health[8]

Pollutants	Description	Primary Source	Health Impacts
Particulate Matter (PM2.5 and PM10)	Tiny particles suspended in the air; PM2.5 refers to particles ≤2.5 microns, PM10 ≤10 microns.	Combustion (vehicles, power plants), construction, agriculture, natural sources (wildfires, dust storms).	Respiratory irritation, reduced lung function, exacerbation of asthma, heart attacks, stroke, premature death, and long-term exposure linked to lung cancer.
Ground Level Ozone (O3)	A harmful pollutant formed by the reaction of sunlight with nitrogen oxides (NOx) and volatile organic compounds (VOCs).	Vehicle emissions, industrial facilities, chemical solvents.	Irritation of airways, worsening of asthma and bronchitis, reduced lung function, and increased susceptibility to respiratory infections.
Carbon Monoxide (CO)	A colorless, odorless gas resulting from incomplete combustion of fossil fuels.	Vehicle exhaust, industrial processes, residential heating, and wildfires.	Reduces oxygen delivery to the body, leading to headaches, dizziness, confusion, and in high levels, can cause death. Chronic exposure worsens cardiovascular conditions.
Sulfur Dioxide (SO$_2$)	A gas produced by burning fossil fuels containing sulfur.	Power plants, industrial processes, and combustion of coal and oil.	Causes throat and lung irritation, aggravates asthma and other respiratory diseases, and contributes to the formation of particulate matter
Nitrogen Dioxide (NO$_2$)	A gas formed by high-temperature combustion processes.	Vehicle emissions, power plants, and industrial activities.	Causes inflammation of airways, exacerbation of asthma, reduced lung function, and increases the risk of respiratory infections.
Lead (Pb)	A toxic metal historically used in fuels, paints, and industrial processes.	Battery manufacturing, industrial emissions, and legacy contamination in soil.	Impairs cognitive development in children, causes kidney damage, affects the nervous system, and increases cardiovascular risks in adults.

Types and Sources of Pollutants

Air pollutants can be broadly classified into two categories: primary and secondary. Primary pollutants are directly emitted from sources, such as carbon monoxide from vehicle exhaust or sulfur dioxide from power plants. Secondary pollutants form when primary pollutants react in the atmosphere; for instance, ground-level ozone results from the interaction of sunlight with nitrogen oxides (NOx) and volatile organic compounds (VOCs). Major sources of air pollution include transportation, industrial processes, agriculture, residential heating, and energy production. In urban areas like the metropolitan Washington region, transportation and industrial emissions significantly contribute to poor air quality. In contrast, rural areas might see higher impacts from agricultural practices and natural sources.

Air Quality Measurement and Monitoring

Monitoring air quality is essential for designing air quality treatment systems, identifying pollution trends, assessing health risks, and developing mitigation strategies. Air quality is measured using a network of ground-based monitors, satellite observations, and modeling tools. The locations of the federal regulatory monitors within the metropolitan Washington region are shown on Table 2.

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[8] U.S. EPA, "Criteria Air Pollutants." January 8, 2025. https://www.epa.gov/criteria-air-pollutants

Table 2 Air Monitors within the COG Region

Metropolitan Washington's Air Monitors
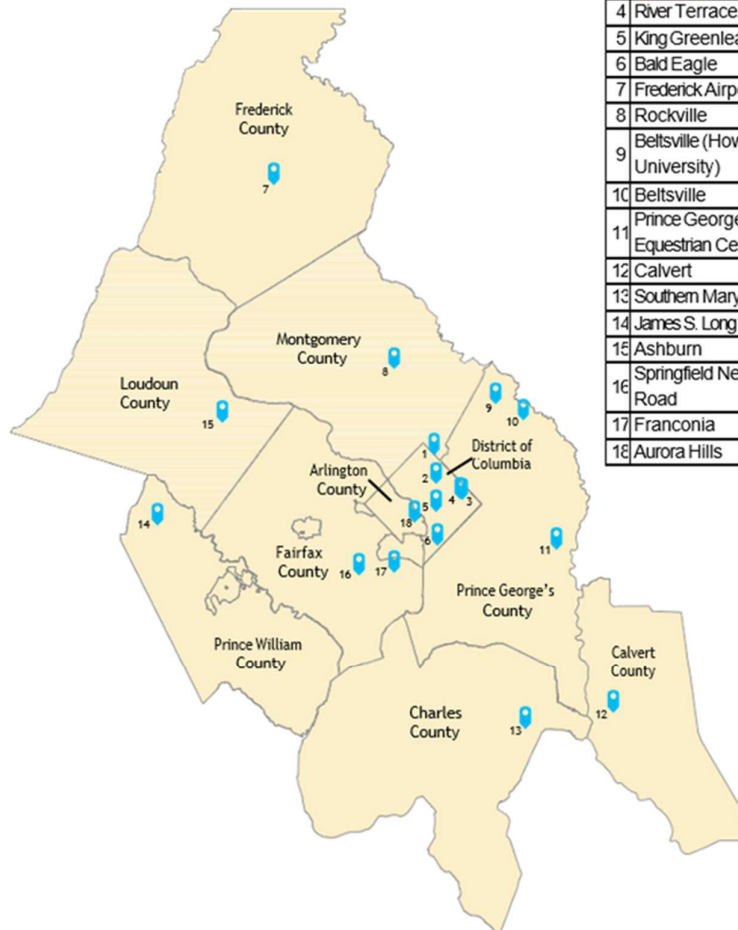
	Monitor Name	Pollutants Currently Monitored					
		O	PM2.5	PM10	CO	NO	SO
1	Takoma	•				•	
2	McMillan NCore	•	•	•	•	•	•
3	DC Near Road		•		•	•	
4	River Terrace	•	•			•	
5	King Greenleaf		•				
6	Bald Eagle	•	•			•	
7	Frederick Airport	•					
8	Rockville	•	•				
9	Beltsville (Howard University)	•	•	•	•	•	•
10	Beltsville	•					
11	Prince George's Equestrian Center	•					
12	Calvert	•					
13	Southern Maryland	•					
14	James S. Long Park	•				•	
15	Ashburn	•	•	•		•	
16	Springfield Near Road		•		•	•	
17	Franconia	•	•	•			•
18	Aurora Hills	•	•		•	•	

The Air Quality Index (AQI) is a widely used scale that translates complex pollutant data into a simple, color-coded format ranging from "Good" (green) to "Hazardous" (dark red). The AQI focuses on pollutants that pose immediate health risks, such as ozone and PM2.5. In addition to monitoring networks, advances in technology, like low-cost air sensors and mobile apps, are making real-time air quality data more accessible to communities. This increased accessibility can empower individuals and policymakers to make informed decisions, whether planning outdoor activities or implementing regulatory changes to improve air quality.

Table 3: COG Air Quality Forecast[9]

Air Quality Index	Who Needs to be Concerned?	What Should I Do?
Good (0-50)	It's a great day to be active outside.	
Moderate (51-100)	Some people who may be unusually sensitive to particle pollution.	**Unusually sensitive people:** Consider making outdoor activities shorter and less intense. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier. **Everyone else:** It's a good day to be active outside.
Unhealthy for Sensitive Groups (101-150)	Sensitive groups include **people with heart or lung disease, older adults, children and teenagers, pregnant women, minority populations, and outdoor workers.**	**Sensitive groups:** Make outdoor activities shorter and less intense. It's OK to be active outdoors, but take more breaks. Watch for symptoms such as coughing or shortness of breath. **People with asthma:** Follow your asthma action plan and keep quick relief medicine handy. **People with heart disease:** Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider.
Unhealthy (151-200)	**Everyone**	**Sensitive groups:** Avoid long or intense outdoor activities. Consider rescheduling or moving activities indoors.* **Everyone else:** Reduce long or intense activities. Take more breaks during outdoor activities.
Very Unhealthy (201-300)	**Everyone**	**Sensitive groups:** Avoid all physical activity outdoors. Reschedule to a time when air quality is better or move activities indoors.* **Everyone else:** Avoid long or intense activities. Consider rescheduling or moving activities indoors.*
Hazardous (301-500)	**Everyone**	**Everyone:** Avoid all physical activity outdoors. **Sensitive groups:** Remain indoors and keep activity levels low. Follow tips for keeping particle levels low indoors.*

Air Quality Regulation and Control

How is Air Quality Regulated?

Air quality is primarily regulated through comprehensive legislation and enforcement frameworks at the federal, state, and local levels. In the United States, the Clean Air Act (CAA) serves as the cornerstone of air quality regulation. Administered by the U.S. Environmental Protection Agency (EPA), the CAA establishes National Ambient Air Quality Standards (NAAQS) for six criteria pollutants — particulate matter, ground-level ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, and lead. These standards are set to protect public health and welfare, particularly for vulnerable populations. States are required to develop State Implementation Plans (SIPs) to ensure compliance with NAAQS, addressing local sources of pollution. Additionally, the CAA mandates stricter standards for mobile sources such as motor vehicles (e.g., cars, trucks, buses, motorcycles) and aircraft, and industrial point/stationary sources like power plants and manufacturing facilities.

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[9] "Air Quality Forecast", *MWCOG*, accessed February 2025, https://www.COG.org/environment/planning-areas/air-quality/air-quality-forecast/

What Methods Are Used to Control Air Quality?

Controlling air quality involves a mix of technological, policy-driven, and behavioral approaches. Technological controls include advanced filtration systems, catalytic converters, and scrubbers used in industrial settings to capture pollutants before they are released into the atmosphere. Vehicle emission standards, such as those established under the CAA, require the use of cleaner-burning fuels and more efficient engines to reduce pollutants like NOx and CO. Renewable energy sources, such as wind and solar, play a critical role in reducing reliance on fossil fuels, which are major contributors to air pollution. Additionally, urban planning measures, such as creating green spaces and promoting public transportation and ride sharing, help minimize pollution from motor vehicles and other localized sources.

How is Air Quality Improved Through Policy?

Policy-driven initiatives are crucial for sustainable air quality improvement. Market-based approaches like cap-and-trade programs limit total emissions while allowing flexibility in how industries meet reduction targets. Incentives for adopting cleaner technologies, such as tax credits for electric vehicles or renewable energy installations, encourage both businesses and individuals to reduce emissions. Local governments could implement measures such as congestion pricing to reduce vehicle traffic in urban areas.

Improving air quality also depends on public participation and behavioral change. Public awareness campaigns help communities understand the importance of air quality and the steps they can take to reduce pollution, such as carpooling, conserving energy, and avoiding the use of polluting household products. Tools like real-time air quality apps equip individuals with information to make informed choices about their activities, especially during high-pollution days. When engaged, the public can advocate for stricter regulations, hold polluters accountable, and support clean energy and transportation initiatives to influence local policy.

Additionally, improving air quality requires collaboration across sectors, including government, industry, academia, and community groups. Integrating regulatory measures with technological innovation and public education creates a holistic approach to managing air quality. These efforts protect public health and contribute to climate action and environmental justice goals.

Air Quality in Metropolitan Washington

The COG region has made significant strides in improving air quality over recent decades. However, certain areas continue to experience higher levels of pollution, often referred to as air quality "hotspots." These hotspots are typically urban centers with dense traffic, industrial activities, and higher population densities, which lead to elevated concentrations of pollutants such as ground-level ozone and particulate matter. For instance, the District of Columbia has historically faced challenges with ozone levels, though recent data indicates improvements.[10]

To address these hotspots, COG, through the MWAQC, coordinates regional air quality planning activities. MWAQC develops and implements air quality plans in collaboration with the District of Columbia, Maryland, and Virginia to promote compliance with NAAQS. These plans include strategies such as enhancing public transportation, promoting the use of cleaner fuels, and implementing stringent emission controls on industrial sources.[11]

Recent trends indicate a positive trajectory in the region's air quality with the number of unhealthy air days significantly decreasing over the years. For example, in 2022, the region experienced just three "code orange" unhealthy air days, a decrease from eight days in 2021. This improvement is attributed to sustained efforts in emission reductions and policy implementations.[12] Additionally, the region now meets both the daily and annual federal fine particle (PM2.5) standards, reflecting a downward trend in particulate matter levels.[13]

[10] "Ambient Air Quality, Trends Report, 1996-2019." Washington, D.C.: District of Columbia Department of Energy and Environment, July 2020. https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/2020%20Ambient%20Air%20Quality%20Trends%20Report.pdf?utm_source=chatgpt.com

[11] "Air Quality", *MWCOG,* accessed February 2025, https://www.COG.org/environment/planning-areas/air-quality/

[12] "2022 ozone data shows steady improvement in region's air quality", *MWCOG,* accessed February 2025, https://www.COG.org/newsroom/2022/10/04/2022-ozone-data-shows-steady-improvement-in-regions-air-quality/

[13] "Air Quality Progress Dashboard", *MWCOG,* accessed February 2025, https://www.COG.org/environment/data-and-tools/air-quality-progress-dashboard/

COG's latest trends report covers levels of ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, nitrogen dioxide, and lead ("criteria pollutants") in the metropolitan Washington region during 2007-2024. All pollutants show a downward trend and all pollutants except for ground level ozone now meet federal standards as shown in the most recent analysis of data through 2022.[14]

Figure 1 Air Quality Index Trends
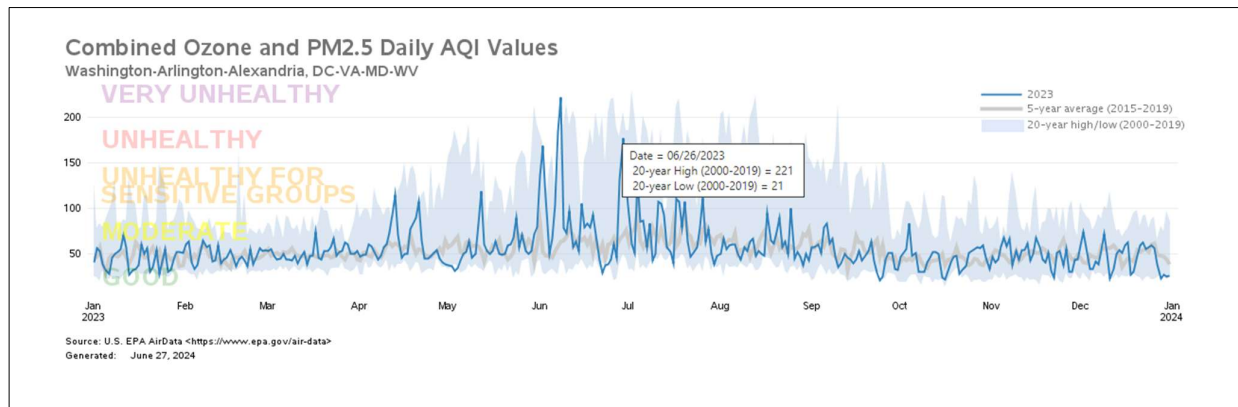
Despite these advancements, challenges remain, particularly concerning ground-level ozone. While there has been a decline of approximately 78 percent in unhealthy ozone days between 1997 and 2023, the region continues to work towards full compliance with federal standards. Ongoing initiatives focus on further reducing emissions from transportation and industrial sectors, enhancing air quality monitoring, and fostering public awareness to maintain and accelerate this positive trend.

Chapter 3 Defining Equity and Environmental Justice

Air quality policies and programs must begin by recognizing the uneven distribution of pollution and its health impacts, particularly in underserved and disadvantaged communities. . The American Public Health Association defines environmental justice as "the idea that all people and communities have the right to live and thrive in safe, health environments with equal environmental protections and meaningful involvement in these actions[15]. Research and studies[16] [17] have shown that historically, low-income neighborhoods and communities of color have been disproportionately affected by sources of air pollution, such as industrial facilities, highways, and landfills.

These areas often experience higher concentrations of pollutants, resulting in elevated rates of respiratory illnesses, cardiovascular conditions, and other health disparities. Equity-focused air quality policies involve using tools such as the CDC's Social Vulnerability Index (SVI), help map these disparities and prioritize resources and interventions for the most affected areas. Figure 2 shows the CDC's comparison of vulnerability by census track in the COG region. The SVI ranks areas on a scale from 0 to 1 relative to all other communities nationwide, with higher scores indicating greater vulnerability to environmental and public health risks. This includes measurements of socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation. COG uses the Government Alliance on Race Equity's principle of equity as "when race can no longer be used to predict life outcomes and outcomes for all groups are improved"[18]. Equity-focused policies reflect COG's definition of distributional equity (as cited by The American Council for

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[14] "Improving the Region's Air: Air Quality Trends for Metropolitan Washington, *MWCOG,* September 2017, https://www.COG.org/file.aspx?D=ut25hQ5WFEF7KjTEbGoJo6CrlDQ6gf3vIVBWF4c50VQ%3D&A=rMds3aZBdR1NNTU3xSDIJqNZ8Sj2g2UnoQN90oJoIXc%3D

[15] American Public Health Association. (n.d.). *Environmental justice*. American Public Health Association. Retrieved May 1, 2025, from https://www.apha.org/topics-and-issues/environmental-health/environmental-justice

[16] "Disparities in the Impact of Air Pollution", *American Lunch Association,* November 2, 2023*,* https://www.lung.org/clean-air/outdoors/who-is-at-risk/disparities

[17] "Racial , ethnic minorities and low-income groups in U.S. exposed to higher levels of air pollution", *Harvard T. H. Chan School of Public Health,* January 12, 2022, https://hsph.harvard.edu/news/racial-ethnic-minorities-low-income-groups-u-s-air-pollution/

[18] https://www.COG.org/file.aspx?&A=zGeGoE7w%2FfTXdV0visskV185caMOB5X4AOzpwB48%2FHo%3D

Energy-Efficient Economy) which states "…programs and policies result in fair distribution of benefits and burdens across all segments of a community, prioritizing the highest need.

Inclusive and meaningful engagement with impacted communities is essential to promoting equity in air quality policies. This involves creating opportunities for residents to participate in decision-making processes, such as public hearings, community workshops, and advisory committees. By incorporating local knowledge and addressing community-specific concerns, policymakers can design programs that better reflect the needs and priorities of those most affected by poor air quality. Transparent communication and the use of culturally and linguistically appropriate materials also build trust and foster collaboration between governments and communities.

Environmental justice considerations can be explicitly integrated into air quality regulations by requiring impact assessments for proposed projects and policies. For example, permitting processes for industrial facilities can include evaluations of cumulative impacts on surrounding communities, ensuring that no area bears an undue pollution burden. Cumulative impacts are defined as the totality of chemical and nonchemical stressors and their effects on health, well-being, and quality of life outcomes (EPA, 2023). Additionally, enforcement mechanisms should prioritize addressing violations in disproportionately affected areas to improve accountability and health outcomes.

Equity-focused air quality programs must include mechanisms to monitor progress and promote accountability. This involves collecting and analyzing data on air quality improvements, health outcomes, and community engagement in impacted areas. Reporting this data publicly allows for transparency and helps display to communities that efforts are effectively reducing disparities. Regular assessments also provide opportunities to adjust policies and programs based on emerging challenges or inequities. By embedding equity and environmental justice principles into air quality policies and programs, governments can address historical injustices, reduce health disparities, and support that all communities benefit from cleaner air and a healthier environment.

Figure 2 Level of Vulnerability by Census Tract within Metropolitan Washington
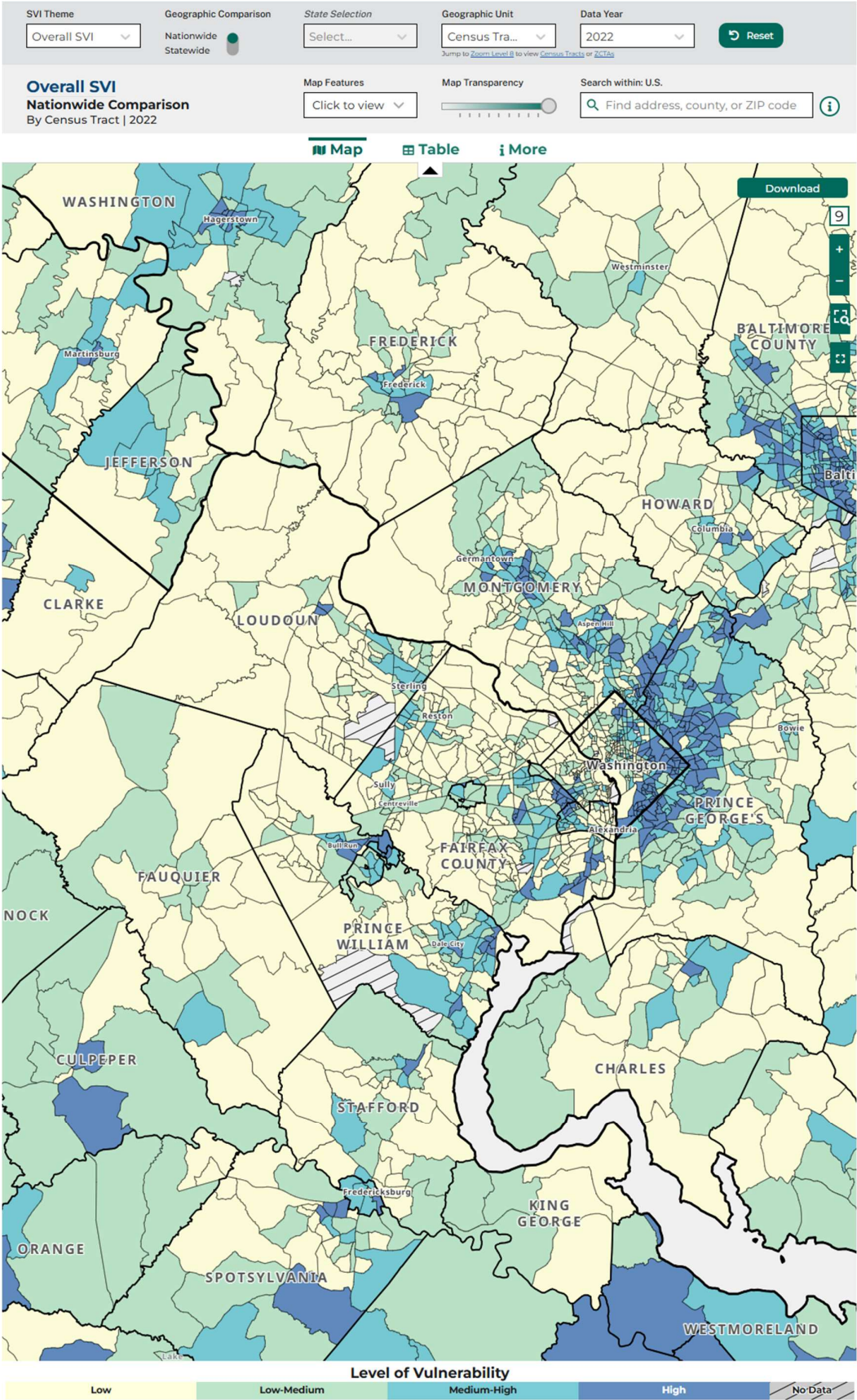
Chapter 4 Strategies to Consider Equity and Improve Air Quality

Below is a description of each overarching strategy to improve air quality in either the short-term or long-term and to consider equity.

Improve Air Quality Monitoring

Short-Term and Long-Term Impact

Enhancing air quality monitoring is critical for more accurately identifying pollution hotspots and tracking progress in improving air quality. In the short term, real-time monitoring can provide communities with actionable data to avoid exposure during high-pollution events, such as issuing health alerts during smog days. In the long term, a robust monitoring network helps policymakers evaluate the effectiveness of interventions, identify trends, and adapt strategies to changing conditions, ensuring sustained air quality improvements. By integrating advanced technologies like satellite imagery and low-cost sensors, monitoring systems can also expand coverage in underrepresented areas.

Equity Considerations

Effective and targeted air quality monitoring addresses equity by focusing on communities historically exposed to disproportionate pollution levels. By installing monitors in areas with limited historical data or near marginalized communities, decision-makers can better understand localized pollution burdens and allocate resources accordingly. Transparent data sharing and community engagement display that affected populations are aware of their air quality risks and can participate in shaping solutions, fostering trust and accountability.

Foster Stronger Partnerships

Short-Term and Long-Term Impact

Building partnerships among government agencies, non-profits, academia, and the private sector accelerates air quality improvements. In the short term, these collaborations can pool resources for immediate projects, such as deploying air quality sensors or launching public awareness campaigns. Over the long term, partnerships create a framework for sustained efforts, such as developing cleaner energy infrastructure or implementing regional transportation plans that reduce emissions. Partnerships also allow for leveraging diverse expertise and resources, ensuring air quality initiatives are comprehensive and science driven.

Equity Considerations

Stronger partnerships prioritize equity by including community organizations and advocates in decision-making processes. This elevates the voices of disadvantaged populations and can lead to solutions that address their specific needs. Partnerships with environmental justice groups and local stakeholders can uncover unique challenges and opportunities within underrepresented areas, ensuring that interventions are inclusive and effective.

Improve Air Quality Regulation

Short-Term and Long-Term Impact

Strengthening air quality regulations yields immediate benefits, such as reducing emissions from industrial sources or implementing stricter vehicle standards. Over the long term, robust regulatory frameworks drive systemic changes, such as transitioning to renewable energy and decarbonizing the economy. Policies like emissions caps, clean energy mandates, and enforcement mechanisms support sustained improvements in air quality across sectors.

Equity Considerations

Equitable air quality regulations prioritize reducing pollution in areas most impacted by environmental injustices. By targeting regulations to mitigate emissions near marginalized communities, policymakers can address disproportionate health burdens. Community engagement in the regulatory process also promotes that the needs of vulnerable populations are reflected in policy outcomes, fostering trust and accountability.

Increase Public Outreach and Education

Short-Term and Long-Term Impact
Public outreach and education empower individuals to make informed choices that improve air quality. In the short term, campaigns can raise awareness about behaviors that reduce pollution, such as carpooling, conserving energy, and avoiding outdoor activities during high-pollution periods. Long-term education efforts build a culture of sustainability, encouraging widespread adoption of practices that reduce emissions, such as using public transportation or investing in energy-efficient technologies.

Equity Considerations
Education initiatives must be accessible and inclusive, ensuring that all communities, especially those with limited resources, can participate in and benefit from cleaner air strategies. Tailoring messages in multiple languages and using culturally relevant approaches helps diverse populations understand and resonate with the information to promote action. Community-based organizations can serve as trusted messengers, bridging gaps in knowledge and encouraging equitable participation in solutions.

Reduce Emissions from Stationary Sources

Short-Term and Long-Term Impact
Reducing emissions from stationary sources, such as power plants, factories, and refineries, is essential for immediate and sustained air quality improvements. Short-term strategies include retrofitting facilities with emissions control technologies like scrubbers and filters. Long-term efforts involve transitioning to renewable energy sources, adopting cleaner manufacturing processes, and decommissioning high-pollution facilities. These measures reduce pollutants at their source, significantly improving air quality over time.

Equity Considerations
Equity-focused strategies target emission reductions in areas disproportionately impacted by stationary sources, such as communities near industrial zones. Ensuring compliance with stricter regulations and providing incentives for cleaner technologies in these areas can reduce health disparities. Community involvement in permitting and oversight processes reflects that affected populations have a say in decisions that impact their environment and health.

Reduce Vehicle Emissions

Short-Term and Long-Term Impact
Vehicle emissions are a major source of air pollution, particularly in urban areas. Short-term solutions include implementing stricter emissions standards, incentivizing carpooling, and expanding public transportation options. Long-term strategies focus on transitioning to electric vehicles (EVs), improving fuel efficiency, and redesigning urban spaces to reduce dependence on personal vehicles. These efforts not only reduce air pollution but also contribute to broader climate change mitigation goals.

Equity Considerations
An equitable approach to reducing vehicle emissions can prioritize investments in underserved areas, such as expanding public transit options in low-income communities and providing subsidies for EVs. Engaging communities in the planning process aligns solutions with their needs and reduces existing disparities.

Promote Land Use Planning in Support of Air Quality Improvement

Short-Term and Long-Term Impact
Land use planning plays a critical role in improving air quality by influencing transportation patterns, green space availability, and industrial zoning. In the short term, policies like zoning regulations can minimize residential exposure to pollution sources. Over the long term, sustainable land use planning fosters mixed-use developments, transit-oriented growth, and urban green infrastructure, reducing pollution from both stationary and mobile sources.

Equity Considerations
Equitable land use planning supports that disadvantaged communities benefit from cleaner environments, access to green spaces, and reduced exposure to industrial pollution. Addressing

historical zoning injustices, such as clustering polluting facilities near marginalized populations, is critical to achieving environmental justice. Inclusive planning processes that prioritize community input help create healthier, more resilient neighborhoods for all residents.

Chapter 5 Recommended Actions

In the following sections there are more detailed voluntary actions that MWAQC members can take that consider equity and environmental justice in the development of air quality plans and policies. The actions are broken down into three groups: high priority actions meant for immediate implementation, and medium and low priority actions which are meant for consideration in the future. High priority actions tend to provide the most improvement to air quality and to disadvantaged communities and were rated the highest overall in consideration of the criteria described in Chapter 1.

High Priority Actions

Table 4 presents the overarching strategy along with the recommended high priority actions, details and considerations for each action, which type of entity or stakeholder would be the primary action owner or implementor, and the rough timeline it would take to implement each action. More details on the implementation of each action are provided below.

Table 4 Voluntary High Priority Actions

Strategy	Recommended Actions	Details and Considerations	Implementation Timeframe
Improve Air Quality Monitoring	Deploy hyper-local air quality monitors/stationary community monitoring networks.	- Air monitoring could be focused in Environmental Justice areas for criterial pollutants that exceed NAAQS and/or for pollutants that do not exceed NAAQS (i.e. black carbon) - Develop method to select Environmental Justice Areas and deploy air quality monitors; develop quality control plan - Obtain federal funding for hyper-local air quality monitoring program and staffing	Short-term and Long-term
Improve Air Quality Monitoring	Deploy mobile air quality monitors to get better resolution on hotspots	Already being done, evaluate how to expand	Short-term and Long-term
Improve Air Quality Regulation	Advocate for stronger ambient air quality standards	Advocate for setting air quality standards based on cumulative risk assessments, not just individual pollutant thresholds.	Long-term
Increase Public Outreach and Education	Facilitate Knowledge Sharing of Success Stories	Invite groups to share their approach, including Cheverly, DC EJ Coalition, DC Asthma Coalition, Empower DC, UMD Center for Community Engagement	Short-term
Reduce Emissions from Stationary Sources (Commercial & Industrial Facility)	Adopt and implement enhanced enforcement of sources of fugitive dust	Focus enforcement in marginalized areas and/or high impact residential areas	Short-term and Long-term
	Adopt and implement enhanced enforcement of sources of pollution	- Focus enforcement in marginalized areas - Narrow down enforcement method by sector	Short-term and Long-term
	Adopt Rule to Require Additional Controls at Stationary Point Sources	Focus enforcement in marginalized areas and/or high impact residential areas	Short-term and Long-term
Reduce Vehicle Emissions	Retrofit Diesel Vehicles	Consider focus on public fleets servicing marginalized high impact areas; Apply for DERA Grants	Short-term and Long-term

	Transition Fleets to Zero-Emission Vehicles	Convert fleets (bus and publicly owned) to zero emission electric models to reduce air pollution	Short-term and Long-term
	Promote Public Transportation	Increase greener public transportation options to reduce greenhouse gas emissions and improve air quality	Short-term and Long-term
	Reduce Idling of Heavy-Duty Vehicles	- Consider creation of no-idling zones - Combine with fleet electrification - Enhanced enforcement	Short-term and Long-term

1. Improve Air Quality Monitoring

Strategy	Improve Air Quality Monitoring
Detailed Description	Enhancing air quality monitoring is critical for more accurately identifying pollution hotspots and tracking progress in improving air quality. In the short term, real-time monitoring can provide communities with actionable data to avoid exposure during high-pollution events, such as issuing health alerts during smog days. In the long term, a robust monitoring network helps policymakers evaluate the effectiveness of interventions, identify trends, and adapt strategies to changing conditions, ensuring sustained air quality improvements. By integrating advanced technologies like satellite imagery and low-cost sensors, monitoring systems can also expand coverage in underrepresented areas.
Action Owner(s)	State or Local Governments, Citizens, Schools, Other Organizations
Action Status	Ongoing in selected areas (e.g., DC and Cheverly, MD). Broader regional deployment has not yet been uniformly implemented.
Primary Challenges	• High initial cost for sensor installation and data infrastructure • Data quality assurance and validation requirements • Limited staffing and technical expertise for managing sensor networks • Variability in community engagement and trust • Need for sustainable funding and cross-jurisdictional coordination
Near-term Implementation Steps	• Develop method to select Environmental Justice Areas and deploy air quality monitors; develop quality control plan. • Identify Monitoring Gaps: Use vulnerability mapping to pinpoint under-monitored communities disproportionately impacted by pollution. • Expand Partnerships: Work with local nonprofits and residents to co-develop monitoring plans, ensure transparency, and build community trust.

2. Advocate for stronger ambient air quality standards

Strategy	Improve Air Quality Regulation
Detailed Description	Ambient air quality standards are values that regulators set for the maximum amount of outdoor (ambient) air pollution that can be measured from an air quality monitor. The EPA regulates air quality at the federal level via the NAAQS and provides individual limits for 6 principal pollutants. However, states can set more stringent air quality standards to protect public health in disadvantaged communities. Furthermore, considering that disadvantaged communities are often exposed to several pollutants at the same time from proximity to highways or industrial developments, states can also choose to use a cumulative risk assessment approach. This approach evaluates the combined risk to communities from multiple pollutants, rather than looking at one pollutant at a time. Advocacy for stronger air quality standards can be done at the federal level, and at the state level.
Action Owner(s)	State Air Agencies, MWAQC, Local Governments, the Public
Action Status	MD, VA, and DC generally follow NAAQS
Primary Challenges	• Lack of sufficient and available resources • Limited federal appetite for stronger standards; limited state-led influence at the federal level

	• Industry pushback

Near-term Implementation Steps	• Local governments and state air agencies can assess disadvantaged community risk and exposure; identify community hotspots:
	   ○ Partner with non-profit organizations to identify locations/communities/neighborhoods with co-located major sources of air pollution.
	   ○ Partner with jurisdictional Departments of Health to quantify the presence of wide-spread community health issues in areas of elevated air pollution.
	   ○ Deploy hyperlocal air quality monitoring to gather detailed exposure data.
	• MWAQC can engage local and state legislators to publish reports detailing sources and impacts of air pollution.
	• Community advocacy groups can lobby state legislators for ambient air quality standards that are stronger than the NAAQS

3. Facilitate Knowledge Sharing of Success Stories

Strategy	Increase Public Outreach and Education
Detailed Description	One effective action to improve air quality in the metropolitan Washington region is facilitating knowledge sharing of success stories among local communities. Success stories could include activities communities have completed such as: installing hyperlocal monitoring, effectively reduced vehicle emissions through idling reduction programs or electric vehicle incentives, and incorporating air quality and environmental justice best practices into land use planning. By highlighting real-world successes, communities can adopt tailored solutions, fostering collaboration and accelerating air quality improvements across the region.
Action Owner(s)	The COG and local environmental organizations can lead these efforts with local communities
Action Status	This action is currently funded by MWAQC
Primary Challenges	• Lack of engagement • Limited jurisdictional authority for communities to implement solutions showcased in another state. • Funding/resources constraints
Near-term Implementation Steps	• Knowledge sharing can be done by creating a regional air quality learning network, where local governments, nonprofits, universities, and residents share best practices and lessons learned from successful pollution reduction initiatives. • COG/MWAQC can invite groups including Cheverly, DC EJ Coalition, DC Asthma Coalition, Empower DC, UMD Center for Community Engagement, Campaign to reduce lead exposure and asthma.

4. Adopt and implement enhanced enforcement of sources of fugitive dust

Strategy	Reduce Emissions from Stationary Sources (Commercial & Industrial Facility)
Detailed Description	Fugitive dust is a type of air pollution made up of tiny airborne particles that come from everyday activities like construction, road traffic, and industrial sites. In the metropolitan Washington region, major sources of fugitive dust include construction projects, unpaved roads and parking lots, and material handling at industrial sites. According to the EPA, fugitive dust has been linked to aggravated asthma, chronic bronchitis, emphysema, and other pulmonary diseases.[19] To better control fugitive dust, the region can strengthen enforcement of existing regulations and by requiring dust control plans at construction sites, increasing fines for non-compliance, and expanding real-time air quality monitoring near major dust-generating areas.

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[19] https://www.epa.gov/system/files/documents/2022-02/fugitive-dust-control-best-practices.pdf

Action Owner(s)	State and Local Governments
Action Status	MD, VA, and DC each have regulations targeted at minimizing fugitive dust emissions
Primary Challenges	• Resource intensive and limited existing enforcement staff
Near-term Implementation Steps	• Identify hotspot and/or disadvantaged communities • Increase state/local budgets to increase the number of trained enforcement staff specifically in disadvantaged communities

5. Adopt and implement enhanced enforcement of sources of pollution

Strategy	Reduce Emissions from Stationary Sources (Commercial & Industrial Facility)
Detailed Description	The EPA regulates air pollution from stationary sources . Stationary sources of air pollution include power plants, airports, and manufacturing plants. Air pollution emitted from these sources can be reduced in the following ways: 1) requiring pollution control technology 2) requiring cleaner energy sources 3) enforcing strict air quality regulations, 4) improving/upgrading the use of better industrial technology and 5) enhancing monitoring to assure facilities are using sufficient air quality protection measures. Enforcement of the air quality standards requires regulation and staff to monitor and enforce the regulation.
Action Owner(s)	State and Local Governments
Action Status	DOEE, MDE, and VDEQ all have ways citizens can report violations, processes to inspect and investigate the violations, and penalize the violations.
Primary Challenges	• Resource intensive and limited existing enforcement staff
Near-term Implementation Steps	• Identify hotspot and/or disadvantaged communities. • Increase state/local budgets to increase the number of trained enforcement staff specifically in disadvantaged communities

6. Adopt Rule to Require Additional Controls at Stationary Point Sources

Strategy	Reduce Emissions from Stationary Sources (Commercial & Industrial Facility)
Detailed Description	A stationary point source is a fixed, identifiable source of air pollution, such as power plants, which emits pollutants directly into the atmosphere through stacks, vents, or chimneys. To reduce emissions from these sources, state air agencies may adopt stricter air quality regulations that require facilities to implement advanced pollution control technologies, lower emission limits, and improved monitoring systems. These rules could be implemented by revising State Implementation Plans (SIPs), requiring stricter air permits for industrial facilities, increasing inspection and enforcement efforts, and setting region-specific emission caps. Additionally, state agencies may introduce financial incentives for cleaner technologies or penalties for excessive emissions, ensuring that facilities take measurable steps towards improving regional air quality.
Action Owner(s)	State Air Agencies
Action Status	DOEE, MDE, and VDEQ each require control measures to reduce emissions from stationary point sources.

Primary Challenges	• Resource intensive and limited existing enforcement staff
Near-term Implementation Steps	• Review a short list of priority point sources focused specifically on disadvantaged communities; enhance monitoring if needed. • Incorporate regular evaluation of advancement in control technology. • Increase state/local budgets to increase the number of trained enforcement staff specifically in disadvantaged communities

7. Retrofit Diesel Vehicles

Strategy	Reduce Vehicle Emissions
Detailed Description	Although diesel engines can operate for many decades, there are many older and dirtier engines still in use that increase air pollution. Exposure to diesel exhaust can lead to serious respiratory health conditions. In 2005 the EPA increased funding for the reduction of diesel emissions via the Diesel Emissions Reduction Act (DERA) Program. Within the metropolitan Washington region, one of the most significant sources of air pollution and the highest public health impact are vehicle emissions; more specifically, vehicles that use diesel fuel. This fuel is typically used in heavy duty trucks, buses, trains, and construction equipment. State agencies and local governments in partnership with utility companies and non-profit organizations can collaborate to incentivize fleet owners to retrofit their fleets to reduce emissions and improve air quality.
Action Owner(s)	Clean Cities, COG, Local Governments, State Agencies
Action Status	MWAQC has identified strategies for diesel engine retrofits and has an existing voluntary diesel retrofit program; several jurisdictions have made progress in retrofitting school bus fleets and public transit buses
Primary Challenges	• High cost to fleet owners • Limited incentives to fleet owners • Technology availability/compatibility
Near-term Implementation Steps	• Apply for DERA grants • Continue to partner with the largest fleet owners (WMATA, OmniRide, trucking logistics companies, etc.)

8. Transition Fleets to Zero-Emission Vehicles

Strategy	Reduce Vehicle Emissions
Detailed Description	Vehicle emissions contribute significantly to air pollution due to the combustion of fossil fuels like diesel and gasoline, which release harmful pollutants. These pollutants degrade air quality, contribute to smog formation, and pose serious health risks, including respiratory diseases, heart conditions, and cancer. Transitioning to zero-emission vehicles (ZEVs), such as electric vehicles (EVs) and hydrogen fuel cell vehicles, greatly reduces vehicle emissions. This shift can help improve urban air quality, decrease health-related issues, and combat climate change, making communities cleaner and safer. State agencies and local governments in partnership with utility companies and non-profit organizations can collaborate to incentivize fleet owners to transition their fleets to ZEVs.
Action Owner(s)	Clean Cities, COG, Local Governments, State Agencies
Action Status	There are several existing incentive programs that assist fleet owners with transitioning to ZEVs and installing electric vehicle charging infrastructure.
Primary Challenges	• High cost to fleet owners • Lack of charging infrastructure • Technology availability/compatibility

	• Fluctuating political interest and investment
Near-term Implementation Steps	• Identify disfavored communities disproportionally impacted or in proximity to vehicle emissions; target fleet owners for incentives who operate in those communities. • Continue to partner with the largest fleet owners for the most significant impact (school buses, WMATA, OmniRide, trucking logistics companies, etc.)

9. Promote Public Transportation

Strategy	Reduce Vehicle Emissions
Detailed Description	Vehicle emissions contribute significantly to air pollution due to the combustion of fossil fuels like diesel and gasoline, which release harmful pollutants. These pollutants degrade air quality, contribute to smog formation, and pose serious health risks, including respiratory diseases, heart conditions, and cancer. In addition to transitioning major fleets to ZEVs, communities can reduce vehicle miles traveled by reducing the number of vehicles on the road. This can be accomplished by promoting and incentivizing public transportation. Public transportation could include buses, light rail and Metrorail, commuter rail, and micromobility-based bike and scooter shares. Additionally, reducing vehicles on the road could be achieved through incentives or making it easier for people to safely walk places nearby.
Action Owner(s)	State and Local Governments, Transit Agencies
Action Status	There are several existing incentive programs that assist fleet owners with transitioning to ZEVs and installing electric vehicle charging infrastructure.
Primary Challenges	• The cost of expanding public transit to areas underserved
Near-term Implementation Steps	• Secure funding and expand incentives for fare discount programs. • Partner with major employers for employer-based incentives for ridesharing and public transit commuting • Identify disfavored communities disproportionally impacted or in proximity to vehicle emissions; target public transit incentives in those communities. • Partner with public transit agencies to offer subsidies to disfavored communities

10.   Reduce Idling of Heavy-Duty Vehicles

Strategy	Reduce Vehicle Emissions
Detailed Description	Idling of heavy-duty vehicles occurs when trucks, buses, and other large diesel-powered vehicles keep their engines running while parked or stationary, often for extended periods. This is common at loading docks, bus terminals, construction sites, and rest areas, where drivers may leave engines running to power auxiliary systems like heating, cooling, or electronics. Idling contributes to air pollution due to the emissions of the diesel-powered engines, worsening respiratory conditions and increasing greenhouse gas emissions. To reduce idling, fleet operators and governments can implement anti-idling regulations, such as time limits on idling and fines for violations. Investing in electric auxiliary power units (APUs), truck stop electrification (TSE), and automatic engine shut-off technology can provide necessary power without continuous fuel combustion. Additionally, driver education programs and incentives for cleaner, idle-free technologies—such as battery-electric and hybrid truck systems—can help significantly cut emissions and improve air quality.
Action Owner(s)	State Environmental Agencies, Transit Agencies, Community Organizations
Action Status	MD, VA, and DC have codes/regulations that limit or prohibit idling.

Primary Challenges	• Limited available enforcement staff • Knowing when/where idling is occurring
Near-term Implementation Steps	• Identify disfavored communities disproportionally impacted by idling (i.e., in proximity to bus terminals, construction sites, etc.). • Evaluate the use of remote monitoring to deploy in disfavored communities. • Improve how communities can report idling and streamline the process for agencies to follow-up/investigate. • Apply for DERA grants.

Medium and Low Priority Actions

A list of medium- and low priority actions is provided on the table below. The actions below were rated as medium and low priority due to either their limited direct improvement to air quality or disadvantaged communities, or overall limited implementation feasibility, enforceability, or economic feasibility. They are still being included to capture the full list of recommended actions sourced from the communities, and so that communities may choose their own priority actions that could have the most impact.

Table 5 Medium and Low Priority Actions

Strategy	Recommended Actions	Details and Considerations	Action Owner	Implementation Timeframe	Priority [L / M / H]
Improve Air Quality Regulation	Develop new local voluntary bundle measures	- Develop groups of optional air quality control strategies to meet specific pollution reduction targets as part of the State Implementation Plan (SIP) - Voluntary Bundle only applicable for Attainment SIP?	Local Governments, MWAQC, State Air Agencies	Short-term	L
Increase Public Outreach and Education	Educate the Public on Data Center Control Measures	Acquire increased transparency from data centers about their efforts to implement clean energy solutions	Local and Industry	Long-term	L
Reduce Emissions from Stationary Sources (Commercial & Industrial Facility)	Reduce Air Pollution from Data Center Generators	Address public health concerns related to air quality and diesel backup generators used at data centers	State and Local Governments	Short-term and Long-term	L
Promote Land Use Planning in Support of Air Quality Improvement	Evaluate how to address local land use zoning for new and existing pollutions sources. Address non-conforming use or permit issues	- Coordinate with local governments - Engage with the Planning Directors and Sustainability Directors	Local Government	Long-term	L
Promote Land Use Planning in Support of Air Quality Improvement	Limit highway expansion projects in areas disproportionally impacted by poor air quality, consider how to address existing roadways	Seek federal grants to address existing roadway impacts on communities	State and Local Governments	Long-term	L

Strategy	Recommended Actions	Details and Considerations	Action Owner	Implementation Timeframe	Priority [L / M / H]
Reduce Emissions from Stationary Sources (Commercial & Industrial Facility)	Increase Jurisdictional Control	- Increase advocacy at the state and local levels to acquire more control despite Dillon's Rule -Target ability to affect stricter building codes and air quality initiatives	State and Local Governments	Long-term	L
Improve Air Quality Regulation	Incorporate EJ in State Implementation Plans	Consider how to include EJ considerations in Attainment or Maintenance SIPs	State Air Agencies/MWAQC	Long-term	L
Reduce Vehicle Emissions	Reduce Vehicle Miles Traveled for Public Transportation	Use smaller buses for routes that are less frequented to limit unnecessary emissions	State and Local Governments, Transit Agencies	Long-term	M
Foster Stronger Partnerships	Partner with health departments	-Study correlations between health impacts and poor air quality -Combine efforts between the health departments and advocacy groups to educate on impacts of poor air quality	State Air Agencies, Local Governments	Short-term	M
Foster Stronger Partnerships	Foster expanded partnerships on hyper-local air monitoring	Expand hyper-local monitoring partnerships	State Air Agencies, Local Governments, Universities, Non-profits, Other Partners	Short-term	M
Improve Air Quality Monitoring	Develop a Community Monitoring Support Center	May require funding or new partnership	New partnership needed	Short-term	M

Strategy	Recommended Actions	Details and Considerations	Action Owner	Implementation Timeframe	Priority [L / M / H]
Improve Air Quality Monitoring	Develop guide for hyper-local monitoring	- Consider EPA's existing resources (https://www.epa.gov/participatory-science)	MWAQC Staff can create a resource guide to post on-line.	Short-term	M
Improve Air Quality Regulation	Evaluate non-NAAQS air pollutants	Consider how to address air pollutants that are not on the NAAQS list	MWAQC and State Air Agencies	Short-term	M
Improve Air Quality Regulation	Freeze Permitting	Direct environmental agencies to halt the issuance of permits for new facilities or expansions that would increase air pollution.	State Air Agencies	Short-term	M
Increase Public Outreach and Education	Develop guide for local emission inventory	Provide technical support to local groups wishing to conduct local emission inventories	MWAQC Staff, State Air Agencies, Local government	Short-term	M
Increase Public Outreach and Education	Maintain and up to date background memo on air monitoring technology and uses	An initial memo has been developed; this strategy would be to keep this document updated.	MWAQC	Short-term	M
Increase Public Outreach and Education	Increase Public Outreach and Education on Air Quality	- Emphasize education about the sources of air pollution - Consider a youth-centered education program on air quality and its impacts - Leverage experts in national media to break down complex issues	Local Communities	Short-term	M
Promote Land Use Planning in Support of Air Quality Improvement	Decrease the amount of impervious surfaces to reduce heat islands and air pollutant concentrations	-Increase tree canopy	State and Local Government, Community Organizations	Long-term	M

Chapter 6 The Call to Action

District of Columbia

Improve Air Quality Monitoring & Increase Public Outreach and Education

DC can leverage its municipal authority to enhance its air quality monitoring network by installing additional low-cost sensors, especially in historically underserved or pollution-prone neighborhoods. By integrating real-time data into public platforms (websites, mobile apps, community bulletins), DC can alert residents during high-pollution events and enable informed decision-making. These efforts provide immediate health protection and build a data-driven foundation for long-term policy adjustments.

Reduce Emissions from Stationary Sources & Promote Land Use Planning

Although DC's regulatory scope is limited compared to state or federal levels, it can implement targeted policies for stationary sources within its jurisdiction—such as retrofitting commercial and industrial facilities with advanced emissions controls. Additionally, DC can incorporate air quality priorities into its land use planning by promoting green infrastructure, zoning for reduced industrial exposure, and encouraging transit-oriented developments. This integrated approach supports both immediate emission reductions and long-term urban design that contribute to a healthier environment.

Example of Strong Partnerships in D.C.

The District of Columbia's Department of Energy & Environment (DOEE), in partnership with climate technology company Aclima, has launched a hyperlocal mobile air quality monitoring initiative to address environmental disparities in historically overburdened neighborhoods. Utilizing vehicles equipped with advanced sensors, the project collects real-time data on pollutants such as PM2.5, nitrogen dioxide, ozone, carbon monoxide, and black carbon at a block-by-block level. The pilot phase, conducted in June 2023, focused on Ivy City/Brentwood, Buzzard Point, and Mayfair, revealing significant variations in pollution levels within these communities. Building on these findings, the 2024 expansion includes additional neighborhoods like South Capitol Hill, Trinidad/Carver, Greater Anacostia, Bellevue, Eckington/Howard/Edgewood, and Georgetown, with monitoring scheduled from May through July. The collected data aims to inform targeted interventions, policy decisions, and community engagement efforts to improve air quality and public health outcomes across the District.

Improve Air Quality Regulations, Reduce Vehicle Emissions & Foster Stronger Partnerships

DC can refine local air quality regulations by setting more ambitious standards where feasible and enforcing them rigorously. While regional dynamics somewhat constrain its authority over vehicle emissions, DC can introduce local initiatives (such as congestion pricing, expanding bike lanes, etc.) to mitigate on-road pollution. Finally, by fostering stronger partnerships with neighboring jurisdictions, state agencies, and community organizations, DC can help align regional strategies and secure additional resources, ensuring that its initiatives have a broader impact beyond city limits.

Maryland

Improve Air Quality Monitoring & Increase Public Outreach and Education

Maryland's state agencies can expand their network of air quality monitors, ensuring data collection in areas that have historically experienced higher pollutant levels. With accurate and granular data in hand, Maryland can launch tailored public outreach campaigns—using multilingual and culturally relevant messaging—to educate communities about air quality risks and mitigation strategies. This dual approach supports both immediate public health protections and long-term community empowerment.

Reduce Emissions from Stationary Sources & Promote Land Use Planning

Maryland has the authority to regulate emissions from industrial and commercial sources. The state can enforce stricter standards and incentivize facilities to adopt cleaner technologies. Additionally, Maryland's local planning agencies can integrate air quality considerations into zoning and land use policies. Maryland can mitigate long-term exposure risks by encouraging smart growth and limiting high-emission sources near residential areas, particularly in underserved communities.

Example of Hyper-Local Air Monitoring & Community Partnership

The Town of Cheverly, Maryland, in collaboration with the University of Maryland's Community Engagement, Environmental Justice, and Health (CEEJH) Lab and the Maryland Department of the Environment (MDE), has established a hyper-local air quality monitoring network to address community concerns about pollution from nearby industrial activities and traffic. This network employs low-cost, real-time sensors—including PurpleAir, Aeroqual, and AirBeam2 devices—to measure pollutants like PM2.5, ozone, and nitrogen dioxide across residential and industrial zones. Community members have been actively involved, receiving training to install sensors and interpret data, fostering local engagement and environmental awareness. Data from the network has guided MDE's targeted inspections, identifying sources of pollution and informing mitigation strategies. Overall, this initiative exemplifies how community-driven science can enhance environmental monitoring and public health protection.

Improve Air Quality Regulations, Reduce Vehicle Emissions & Foster Stronger Partnerships

Working within federal guidelines, Maryland can update its air quality regulations to be more protective—especially in areas facing disproportionate exposure. The state's transportation agencies can drive short-term improvements in vehicle emissions through public transit and EV infrastructure investments. By fostering strong regional partnerships with DC and Virginia through the COG framework, Maryland can align its initiatives with broader regional strategies, ensuring that policy efforts are cohesive and equity driven.

Virginia

Improve Air Quality Monitoring & Increase Public Outreach and Education

Virginia can enhance its monitoring network by deploying innovative sensor technologies in urban and industrial corridors known for elevated pollutant levels. Coupled with robust data collection, Virginia can develop community-focused education programs that demystify air quality data and empower residents to take protective actions. Public workshops, online dashboards, and targeted communication strategies can help translate technical data into actionable insights for local communities.

Reduce Emissions from Stationary Sources & Promote Land Use Planning

Virginia's state regulatory bodies can work to reduce emissions from stationary sources by enforcing stricter emissions controls and offering incentives for adopting cleaner technologies. At the same time, local governments in Virginia can integrate air quality criteria into land use planning, promoting developments that minimize pollution exposure. This may include establishing buffer zones around industrial sites or incentivizing mixed-use developments that reduce travel distances and associated vehicular emissions.

Improve Air Quality Regulations, Reduce Vehicle Emissions & Foster Stronger Partnerships

Within its jurisdiction, Virginia can review and update air quality regulations to highlight that they reflect the latest scientific findings and public health needs. The state's transportation agencies can

spearhead initiatives to reduce vehicle emissions by expanding EV infrastructure, improving transit options, and implementing measures to ease congestion. Finally, Virginia can foster stronger partnerships with neighboring states and local communities, collaborating through regional bodies like COG to create a unified strategy that addresses both immediate and long-term air quality challenges.

State Environmental Agencies

Improve Air Quality Monitoring & Increase Public Outreach and Education
State environmental agencies play a pivotal role in developing and maintaining comprehensive air quality monitoring systems. By standardizing data collection and ensuring broad geographic coverage, these agencies provide the foundation for informed policy decisions. In parallel, they can spearhead public education campaigns that explain the significance of air quality data, helping communities, especially those in high-risk areas—understand their local air quality status and the health implications.

Improve Air Quality Regulations & Foster Stronger Partnerships
Although they do not directly enforce land use or transportation policies, state environmental agencies can guide local governments in embedding air quality considerations into regulatory frameworks. They can work closely with legislative bodies to update standards and promote the address of environmental justice concerns. Through partnerships with municipal governments, academic institutions, and non-profit organizations, state agencies can establish a collaborative, cross-sector approach to tackling air quality challenges.

State Transportation Agencies

Reduce Vehicle Emissions & Promote Land Use Planning in Support of Air Quality Improvement
State transportation agencies are uniquely positioned to influence vehicle emissions through strategic investments in infrastructure that support sustainable mobility. Initiatives such as expanding public transit, developing EV charging networks, and implementing smart traffic management systems can yield immediate reductions in vehicle-related pollutants. Additionally, these agencies can work with local planners to promote the alignment of transportation and land use policies that minimize sprawl and reduce the need for long commutes.

Increase Public Outreach and Education & Foster Stronger Partnerships
Transportation agencies can also play a critical role in raising public awareness about sustainable transportation options and the environmental benefits of reduced vehicle use. These agencies can encourage behavioral shifts toward cleaner transportation alternatives through community engagement, informational campaigns, and stakeholder meetings. By partnering with environmental agencies and local governments, state transportation agencies can demonstrate that their projects contribute to a broader, regionally coordinated air quality improvement strategy that prioritizes equity and sustainability.

National Capital Region Transportation Planning Board

Foster Stronger Partnerships & Promote Land Use Planning in Support of Air Quality Improvement
As a regional planning body, the National Capital Region Transportation Planning Board is ideally suited to coordinate cross-jurisdictional efforts to improve air quality. It can facilitate the sharing of best practices and resources among DC, Maryland, Virginia, and state agencies, to support harmonized land use and transportation planning efforts. By encouraging the prioritization of transit-oriented development and smart growth strategies, the board can help its members create communities less reliant on personal vehicles and more resilient to air pollution challenges.

Reduce Vehicle Emissions & Increase Public Outreach and Education
The board can encourage regional investments in sustainable transportation infrastructure, such as high-speed transit lines, cycling networks, and pedestrian-friendly designs, which all contribute to reducing vehicle emissions. In addition, by serving as a central hub for data and communication, the board can lead public outreach initiatives highlighting the connection between transportation planning and air quality improvements. This approach supports the notion that regional stakeholders are well-informed and engaged in efforts to create a healthier, more sustainable transportation network.

Appendix A List of Stakeholder Groups

Stakeholder Category	Organization / Agency	Interest / Expertise	State/District
Academic	American University Center for Environmental Policy	While not exclusively focused on EJ, this center addresses policy issues related to environmental justice.	DC
Academic	Catholic University of America		DC
Academic	Catholic University of America Environmental Justice Group	Student-led organization focusing on environmental justice and community outreach.	DC
Academic	College of Agriculture & Natural Resources at UMD	Research on environmental science and sustainability.	MD
Academic	College of Arts & Sciences - American University	Environmental science and sustainability research.	DC
Academic	College of Engineering and Architecture - Howard University	Environmental engineering and sustainability.	DC
Academic	George Mason University Center for Climate Change	Research on climate communication and public engagement.	VA
Academic	George Mason University Environmental Science and Policy	Environmental science and sustainability experts.	VA
Academic	George Mason University Schar School of Policy and Government	Focus on environmental policy and public administration.	VA
Academic	George Washington University Environmental Justice Action Network (EJAN)	Focuses on environmental justice initiatives and advocacy within the university and the local community.	DC
Academic	Georgetown Climate Center	Focus on climate law and policy.	DC
Academic	Georgetown University Environmental Justice Program	A program within the university's environmental initiatives focused on addressing EJ concerns.	DC
Academic	GW Law	The George Washington University	Environmental and energy law experts.	DC
Academic	GWU-School of Engineering and Applied Science	Research in environmental engineering and sustainability.	DC

Academic	Howard University College of Medicine	Public health and environmental justice research.	DC
Academic	Howard University Student Sustainability Committee (HUSSC)	Promotes environmental justice and sustainability on campus and in surrounding communities.	DC
Academic	Institute for Local Self-Reliance (ILSR)	Works to achieve this vision through four key initiatives that center local communities, giving citizens the authority, capacity, and responsibility to exercise power over their lives.	DC
Academic	Johns Hopkins University Environmental Justice Network	Engages students and faculty in research and advocacy on environmental justice issues.	MD
Academic	Johns Hopkins Whiting School of Engineering	Research on environmental engineering and sustainability.	MD
Academic	Maryland Energy Innovation Institute	Catalyze clean energy technology to address climate change, stimulate economic growth, and create a sustainable future.	MD
Academic	McCourt School of Public Policy | Georgetown University	Research on environmental policy and public health.	DC
Academic	Milken Institute School of Public Health	Focus on public health research and policy, including air quality.	DC
Academic	School of International Service - American University	Focus on global environmental issues.	DC
Academic	UMD School of Public Policy	Experts in environmental and public policy.	MD
Academic	University of Maryland | School of Public Health	Environmental health and policy experts.	MD
Academic	University of Maryland Office of Sustainability	Engages in environmental justice projects and research, fostering student involvement in sustainability and EJ issues.	MD
Advocacy	350 DC	Local chapter of the global climate movement focused on reducing carbon emissions and promoting renewable energy.	DC
Advocacy	American Lung Association (ALA)	Promotes lung health and clean air through advocacy and education.	Other
Advocacy	Anacostia Watershed Society	Focuses on restoring the Anacostia River, including addressing pollution and promoting environmental education.	MD
Advocacy	Chesapeake Climate Action Network (CCAN)	Regional organization dedicated to climate and EJ advocacy.	MD

Advocacy	Citizens' Climate Lobby	Grassroots organization focused on national policies to address climate change.	Other
Advocacy	Clean Air Partners	Collaboration on air quality initiatives.	Other
Advocacy	Clean Water Action, Maryland	Works on environmental and public health issues, including climate change and water quality.	DC
Advocacy	DC Climate Strike - Action Network	Youth-led climate advocacy.	DC
Advocacy	DC EcoWomen	A community of women who work in environmental fields, promoting sustainability and environmental justice.	DC
Advocacy	DC Environmental Network (DCEN)	Advocates for environmental and EJ policies in the District of Columbia.	DC
Advocacy	Earthjustice	While a national organization, Earthjustice has significant involvement in local EJ issues through its regional offices.	Other
Advocacy	Environmental Defense Fund (EDF)	National organization with a regional presence focusing on clean air and climate policies.	DC
Advocacy	Environmental Protection Agency (EPA) Region 3	Federal agency involved in air quality regulation and enforcement in the region.	Other
Advocacy	Friends of the Earth	Part of an international network advocating for environmental protection and justice.	DC
Advocacy	Greater Greater Washington	Advocacy organization promoting urbanism and sustainable transportation, including walking and biking.	Other
Advocacy	Greenpeace USA	DC Office – Advocates for environmental protection, climate action, and corporate accountability.	DC
Advocacy	Moms Clean Air Force, DC Chapter	A community of mothers and fathers united against air pollution to protect children's health.	DC
Advocacy	National Parks Conservation Association	Mid-Atlantic Regional Office – Advocates for the protection of national parks and surrounding environments.	Other
Advocacy	Natural Resources Defense Council (NRDC)	Environmental advocacy.	DC
Advocacy	Sierra Club, DC Chapter	Local chapter of a national organization advocating for clean air and environmental protection.	DC
Advocacy	Sierra Club, Maryland Chapter	Engages in environmental protection and air quality advocacy throughout the state of Maryland.	MD

Advocacy	Sierra Club, Montgomery County Maryland Group	A local group within the Maryland Chapter focusing on environmental issues in Montgomery County.	MD
Advocacy	Sierra Club, Prince George's County Maryland Group	Another local group under the Maryland Chapter, focusing on air quality and environmental justice in Prince George's County.	MD
Advocacy	Sierra Club, Virginia Chapter	Active in promoting clean air and environmental policies across Virginia, including the northern Virginia area.	VA
Advocacy	Sunrise Movement, DC Hub	Youth-led movement advocating for climate justice and a Green New Deal.	Other
Advocacy	Union of Concerned Scientists (UCS)	The main office located in Washington, DC, which focuses on federal climate policies, science advocacy, and public outreach.	DC
Advocacy	Urban League of Greater Washington	Focus on health and environmental justice issues.	DC
Advocacy	Virginia Railway Express (VRE)	Regional commuter rail service involved in sustainable transportation efforts.	VA
Advocacy	WMATA (Washington Metropolitan Area Transit Authority)	Partner in promoting sustainable transportation to improve air quality.	DC
Environmental	Black Millennials for Flint (BM4F)	A grassroots, environmental justice and civil rights organization focused on the eradication of lead exposure in African-American & Latinx communities.	DC
Environmental	Empower DC	Focuses on promoting racial, economic, and environmental justice in Washington, DC.	DC
Environmental	Environmental Justice Coalition	Local coalitions focused on addressing environmental injustices.	DC
Environmental	Environmental Justice Health Alliance for Chemical Policy Reform	National organization with local affiliates focusing on environmental health and justice.	Other
Environmental	Groundswell	Focuses on building community power through equitable clean energy initiatives.	DC
Environmental	Maryland Clean Energy Center	Advance the adoption of clean energy, and energy efficiency products, services and technologies.	MD
Environmental	Maryland Forestry Foundation	Dedicated to fostering the sustainable use of our forest resources.	MD
Faith-Based	ADAMS Center	Engages in environmental stewardship and sustainability initiatives within the Muslim community.	VA
Faith-Based	Archdiocese of Washington	Catholic Church initiatives focused on environmental stewardship and climate action.	DC

Faith-Based	dcbahai	Engages in environmental sustainability and community service.	DC
Faith-Based	Episcopal Diocese of Washington	Engages in environmental advocacy and sustainability initiatives.	DC
Faith-Based	Faith Alliance for Climate Solutions (FACS)	Engages faith communities in Northern Virginia to advocate for climate solutions and sustainability.	VA
Faith-Based	Interfaith Power and Light (DC.MD.NoVA)	Mobilizes faith communities to advocate for climate action and environmental justice.	Other
Faith-Based	Islamic Society of Washington Area (ISWA)	Promotes environmental stewardship within the Muslim community.	MD
Faith-Based	Jewish Earth Alliance	Mobilizes the Jewish community in advocacy for climate action and environmental justice.	Other
Faith-Based	Mount Zion Baptist Church - Arlington	Engages in environmental justice initiatives and community service.	VA
Faith-Based	National Council of Churches	Engages in advocacy for environmental justice and sustainability.	Other
Faith-Based	UUCF – Unitarian Universalist Congregation in Fairfax Virginia	Focus on climate justice and environmental advocacy.	VA
Faith-Based	Virginia Interfaith Center	Mobilizes faith communities in Virginia for social justice, including environmental advocacy.	VA
Faith-Based	Washington Interfaith Network (WIN)	Coalition of faith-based organizations in DC advocating for social justice, including environmental issues.	DC
Faith-Based	Washington National Cathedral	Environmental and EJ initiatives.	DC
Government	Baltimore Metropolitan Council (BMC)	Works alongside MWCOG in Clean Air Partners initiatives.	MD
Government	District Department of Energy & Environment (DOEE)	Engages in efforts to improve air quality in Washington, DC.	DC
Government	Environmental Management	Focuses on protecting and enhancing the county's natural resources through various programs and initiatives.	VA
Government	Maryland Department of the Environment (MDE)	Focuses on air quality and environmental protection in Maryland.	MD
Government	Metropolitan Washington Council of Governments (MWCOG)	A regional organization that collaborates on air quality and other regional issues.	DC

Government	Public Works | Anne Arundel County Government	Focuses on delivering essential public services to maintain a high quality of life for its residents.	MD
Government	Solid Waste and Recycling		MD
Government	Virginia Department of Environmental Quality (VDEQ)	Works on air quality issues and environmental policies in Virginia.	VA
Other	Alexandria City Public Schools (ACPS)		VA
Other	Arcadia Center for Sustainable Food & Agriculture		VA
Other	Arlington (VA) Chamber of Commerce	Engages in business advocacy with a focus on sustainability and environmental health.	VA
Other	Common Grain Alliance	Supports farmers, millers, bakers, and grain artisans to build a vibrant, integrated, equitable and regenerative grain economy in the Mid-Atlantic.	VA
Other	DC Chamber of Commerce	Business community interest in air quality.	DC
Other	EcoRise	Environmental education and youth engagement.	Other
Other	Greater Washington Board of Trade	Regional business advocacy.	DC
Other	Greater Washington Region Clean Cities Coalition		Other
Other	Green Business Certification Inc.	Promoting green businesses.	DC
Other	Hola Cultura		DC
Other	Maryland Chamber of Commerce	Engages in business advocacy with a focus on sustainable practices and air quality in Maryland.	MD
Other	Montgomery County Chamber of Commerce	Focus on promoting sustainable business practices and environmental initiatives in Montgomery County, MD.	MD
Other	Northern Virginia Chamber of Commerce	Advocates for business interests including sustainability and air quality in Northern Virginia.	VA
Other	Prince Georges County Chamber of Commerce	Advocates for business interests, including sustainability and environmental health.	MD
Public Health Organization	American Heart Association	Addressing cardiovascular health and air pollution.	VA

Public Health Organization	Anne Arundel County Department of Health	Represents local health departments and addresses environmental health issues.	MD
Public Health Organization	Breathe DC	Nonprofit organization dedicated to promoting lung health and clean air in Washington, DC.	DC
Public Health Organization	Children's National Hospital	Focus on pediatric health and air quality.	DC
Public Health Organization	DC Asthma Coalition	Addressing asthma and air quality issues.	DC
Public Health Organization	DC Health	Public health and air quality.	DC
Public Health Organization	Georgetown University Medical Center	Engages in research and policy advocacy on environmental health.	DC
Public Health Organization	Howard University Hospital	Focus on community health, environmental justice, and public health issues.	DC
Public Health Organization	Inova Health System	Northern Virginia healthcare provider with a focus on community health and air quality.	VA
Public Health Organization	Johns Hopkins Bloomberg School of Public Health	Research and advocacy on environmental health and air quality.	MD
Public Health Organization	Kaiser Permanente	Healthcare organization with initiatives on environmental health and air quality.	DC
Public Health Organization	Maryland Department of Health	State health department addressing air quality and public health.	MD
Public Health Organization	MedStar Health	Regional healthcare provider focused on community health and environmental factors affecting health.	MD
Public Health Organization	National Association of County and City Health Officials (NACCHO)	Represents local health departments and addresses environmental health issues.	DC
Public Health Organization	Unity Health Care	Provides health services in underserved communities and addresses environmental health concerns.	DC
Public Health Organization	Virginia Department of Health	State health department focused on environmental health and air quality.	VA
Special Interest Community Group	Arlington Transportation Partners (ATP)	Encourages active transportation and sustainable commuting options in Arlington, VA.	VA
Special Interest Community Group	Bethesda Transportation Solutions	Promotes walking, biking, and other sustainable transportation options in Bethesda, MD.	MD
Special Interest Community Group	Bike Maryland	Statewide advocacy for bicycling infrastructure and policies.	MD

Special Interest Community Group	BikeArlington	County program promoting cycling and active transportation in Arlington, VA.	VA
Special Interest Community Group	Capital Trails Coalition	Promoting trails and active transportation.	DC
Special Interest Community Group	Casey trees	Advocates for tree planting and urban forestry to improve air quality and environmental health in DC.	DC
Special Interest Community Group	Coalition For Smarter Growth	Promotes sustainable growth and transportation options, including walking and biking, in the DC region.	Other
Special Interest Community Group	Dupont Circle Citizens Association	Engages in local advocacy for urban planning, environmental sustainability, and community health in Dupont Circle, DC.	DC
Special Interest Community Group	Electric Vehicle Association of Greater Washington, DC	Promoting electric vehicle adoption.	DC
Special Interest Community Group	Fairfax Alliance for Better Bicycling	FABB	Promoting safe and accessible bicycling in Fairfax County, VA.	VA
Special Interest Community Group	Fairfax County Federation of Citizens Associations	Umbrella group representing various civic associations in Fairfax County, VA, focused on local issues including environmental quality.	VA
Special Interest Community Group	Friends of Kenilworth Aquatic Gardens	Focus on preserving and protecting Kenilworth Aquatic Gardens and improving local environmental health.	DC
Special Interest Community Group	Friends of Oxon Run	Works to protect and restore Oxon Run Park and improve environmental health in the surrounding community.	DC
Special Interest Community Group	Friends of Sligo Creek	Environmental advocacy group focused on protecting Sligo Creek and improving local air and water quality.	MD
Special Interest Community Group	Friends of the Mount Vernon Trail	Community group dedicated to maintaining and improving the Mount Vernon Trail, promoting active transportation.	VA
Special Interest Community Group	Greenbelt Climate Action Network	Community group in Greenbelt, MD, advocating for climate action and environmental sustainability.	MD
Special Interest Community Group	Mo-Co Alliance	Advocates for the protection of agricultural and rural lands in Montgomery County, MD, promoting sustainable practices and clean air.	MD
Special Interest Community Group	Potomac Conservancy	Focus on protecting the Potomac River and surrounding watershed, including water and air quality initiatives.	MD

Special Interest Community Group	Rails-to-Trails Conservancy	National organization with a regional focus.	DC
Special Interest Community Group	Reston Bike Club	Promotes recreational and commuter cycling in Reston, VA.	VA
Special Interest Community Group	Rock Creek Conservancy	Works to restore Rock Creek and its parks, advocating for environmental protection and clean air.	MD
Special Interest Community Group	WalkArlington	Program encouraging walking as a transportation mode in Arlington, VA.	VA
Special Interest Community Group	Ward 7 Environmental Council	Community organization addressing environmental issues and advocating for clean air and sustainability in Ward 7, DC.	DC
Special Interest Community Group	Ward 8 Woods Conservancy	Community group focused on environmental conservation and improving air quality in Ward 8, DC.	DC
Special Interest Community Group	Ward3Vision	Community group advocating for sustainable urban development and environmental protection in Ward 3, DC.	DC
Special Interest Community Group	Washington Area Bicyclist Association	Advocacy for cycling and air quality.	DC
Technical	Community Energy Plan (CEP)	A long-term vision for transforming how we generate, use, and distribute energy in the County.	VA
Technical	Connected DMV		DC
Technical	DC Water		DC
Technical	Department of Climate & Energy	Frederick County MD		MD
Technical	Energy Management	Loudoun County, VA		VA
Technical	Environment Commission	Rockville, MD		MD
Technical	Environmental and Energy Coordination	Fairfax County		VA
Technical	Environmental Programs	Laurel, MD		MD
Technical	Environmental Sustainability Council	Falls Church, VA		VA

Technical	[Public Works | City of Fairfax, VA](#)		VA
Technical	[Public Works | City of Takoma Park](#)		MD
Technical	[Vermont Energy Investment Corporation (VEIC)](#)	Provide high-impact energy solutions that are decarbonizing the world's buildings, transportation, and utility grids.	DC
Technical	[Virginia Clean Cities](#)	Advances air quality improvement, economic opportunity, and energy security through deployment of alternative fuel vehicles and infrastructure, education programs, and other petroleum reduction activities.	VA
Technical	[Virginia PACE Authority](#)	Offer a uniform, cost-effective and highly innovative C-PACE program platform that fosters greater economic development activity and promotes the Commonwealth's clean energy goals.	VA
Transportation / Urban Planning Agency	[Bike Loudoun](#)	Advocates for bicycling infrastructure and safety in Loudoun County, VA.	VA
Transportation / Urban Planning Agency	[D.C. Pedestrian Advisory Council](#)	Advises on policies and initiatives to improve pedestrian safety and infrastructure in Washington, DC.	DC
Transportation / Urban Planning Agency	[DC Sustainable Transportation](#)	Advocating for sustainable transportation options.	DC
Transportation / Urban Planning Agency	[Frederick Bicycle Coalition](#)	Promotes cycling and active transportation in Frederick, MD.	MD
Transportation / Urban Planning Agency	[Maryland Department of Transportation (MDOT)](#)	Collaborates on transportation and air quality initiatives.	MD
Transportation / Urban Planning Agency	[Pedestrian & Bicycle Information Center](#)	Provides resources and advocacy for pedestrian and bicycle safety and infrastructure.	Other
Transportation / Urban Planning Agency	[Transportation Management District](#)	Supports active transportation and sustainable commuting in Montgomery, MD.	MD
Transportation / Urban Planning Agency	[Virginia Department of Transportation (VDOT)](#)	Engages in transportation planning with air quality considerations.	VA

Appendix B Complete List of Recommended Actions

Strategy	Recommended Actions	Details and Considerations
Improve Air Quality Regulation	Advocate for stronger ambient air quality standards	Advocate for setting air quality standards based on cumulative risk assessments, not just individual pollutant thresholds.
Increase Public Outreach and Education	Facilitate Knowledge Sharing of Success Stories	Invite groups to share their approach, including Cheverly, DC EJ Coalition, DC Asthma Coalition, Empower DC, UMD Center for Community Engagement, Campaign to reduce lead exposure and asthma.
Reduce Emissions from Stationary Sources (Commercial & Industrial Facility)	Adopt and implement enhanced enforcement of sources of fugitive dust	- Increase enforcement of existing regulations. Focus enforcement in marginalized areas and/or high impact residential areas.
Reduce Emissions from Stationary Sources (Commercial & Industrial Facility)	Adopt and implement enhanced enforcement of sources of pollution	- Focus enforcement in marginalized areas - Narrow down enforcement method by sector
Reduce Emissions from Stationary Sources (Commercial & Industrial Facility)	Adopt Rule to Require Additional Controls at Stationary Point Sources	- Focus enforcement in marginalized areas and/or high impact residential areas
Reduce Vehicle Emissions	Retrofit Diesel Vehicles	- Consider focus on public fleets servicing marginalized high impact areas - Apply for DERA Grants
Reduce Vehicle Emissions	Transition Fleets to Zero-Emission Vehicles	Convert fleets (bus and publicly owned) to zero emission electric models to reduce air pollution
Reduce Vehicle Emissions	Promote Public Transportation	Increase greener public transportation options to reduce greenhouse gas emissions and improve air quality
Reduce Vehicle Emissions	Reduce Idling of Heavy-Duty Vehicles	- Consider creation of no-idling zones - Combine with fleet electrification '- Enhanced enforcement
Improve Air Quality Monitoring	Deploy hyper-local air quality monitors/stationary community monitoring networks.	- Air monitoring could be focused in Environmental Justice (EJ) areas for criterial pollutants that exceed NAAQS and/or for pollutants that do not exceed NAAQS (i.e. black carbon) - Develop method to select EJ Areas and deploy air quality monitors; develop quality control plan

		- Obtain federal funding for hyper-local air quality monitoring program and staffing
Improve Air Quality Monitoring	Deploy mobile air quality monitors to get better resolution on hot spots	Already being done, evaluate how to expand monitoring network
Improve Air Quality Regulation	Develop new local voluntary bundle measures	- Develop groups of optional air quality control strategies to meet specific pollution reduction targets as part of the State Implementation Plan (SIP)
Improve Air Quality Regulation	Incorporate EJ in State Implementation Plans	Consider how to include EJ considerations in Attainment or Maintenance SIPs
Increase Public Outreach and Education	Educate the Public on Data Center Control Measures and Consider Additional Control Measures	Acquire increased transparency from data centers about their efforts to implement clean energy solutions
Promote Land Use Planning in Support of Air Quality Improvement	Evaluate how to address local land use zoning for new and existing pollutions sources. Address non-conforming use or permit issues	- Coordinate with local governments - Engage with the Planning Directors and Sustainability Directors
Promote Land Use Planning in Support of Air Quality Improvement	Limit highway expansion projects in areas disproportionally impacted by poor air quality, consider how to address existing roadways	Seek federal grants to address existing roadway impacts on communities
Reduce Emissions from Stationary Sources (Commercial & Industrial Facility)	Reduce Air Pollution from Data Center Generators	Address public health concerns related to air quality and diesel backup generators used at data centers
Reduce Emissions from Stationary Sources (Commercial & Industrial Facility)	Increase Jurisdictional Control	- Increase advocacy at the state and local levels to acquire more control despite Dillon's Rule -Target ability to affect stricter building codes and air quality initiatives
Foster Stronger Partnerships	Partner with health departments	-Study correlations between health impacts and poor air quality -Combine efforts between the health departments and advocacy groups to educate on impacts of poor air quality
Foster Stronger Partnerships	Foster expanded partnerships on hyper-local air monitoring	Expand hyper-local monitoring partnerships
Improve Air Quality Monitoring	Develop a Community Monitoring Support Center	May require funding or new partnership

Improve Air Quality Monitoring	Develop guide for hyper-local monitoring	- Consider EPA's existing resources (https://www.epa.gov/participatory-science)
Improve Air Quality Regulation	Evaluate non-NAAQS air pollutants	Consider how to address air pollutants that are not on the NAAQS list
Improve Air Quality Regulation	Freeze Permitting	Direct environmental agencies to halt the issuance of permits for new facilities or expansions that would increase air pollution.
Increase Public Outreach and Education	Develop guide for local emission inventory	Provide technical support to local groups wishing to conduct local emission inventories
Increase Public Outreach and Education	Maintain and up to date background memo on air monitoring technology and uses	An initial memo has been developed; this strategy would be to keep this document updated.
Increase Public Outreach and Education	Increase Public Outreach and Education on Air Quality	- Emphasize education about the sources of air pollution - Consider a youth-centered education program on air quality and its impacts - Leverage experts in national media to breakdown complex issues
Promote Land Use Planning in Support of Air Quality Improvement	Decrease the amount of impervious surfaces to reduce heat islands and air pollutant concentrations	-Increase tree canopy
Reduce Vehicle Emissions	Reduce Vehicle Miles Traveled for Public Transportation	Use smaller buses for routes that are less frequented to limit unnecessary emissions