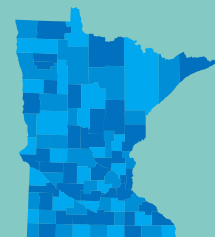


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Minnesota's Volkswagen Settlement Beneficiary Mitigation Plan Phase 3 (2024 - 2027)

Minnesota's plan for using funds from the national Volkswagen settlement.



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This report is available in alternative formats upon request, and online at www.pca.state.mn.us/vw.

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Contents

List of Tables	ii
List of Figures	ii
Executive summary	1
The settlement	1
Minnesota’s plan	1
Three phases	1
Phase 1 and Phase 2 summary	1
10-year goals	1
Six grant programs in Phase 3 (2024-2027)	2
Outreach and input	3
Minnesota’s Plan	4
Introduction	4
Purpose	4
Goals	4
Grant program plan	5
Phased funding	5
Phase 3 grants overview	5
Funding process	10
Phase 3 grant programs	10
Clean heavy-duty on-road vehicles grant program – 15% (\$2,100,000)	10
Clean heavy-duty off-road equipment grant program – 28.5% (\$3,990,000)	10
Clean heavy-duty off-road locomotive idle reduction grant program – 1.5% (\$210,000)	11
School bus (non-electric) grant program – 5% (\$700,000)	12
Electric school bus grant program – 15% (\$2,100,000)	13
Heavy-duty electric vehicle grant program – 20% (\$2,800,000)	14
Electric vehicle charging station grant program – 15% (\$2,100,000)	15
Core application criteria	16
Making funding accessible	17
10-year program goals	17
Achieve significant emissions reductions	18
Benefit all parts of the state	18
Help people and places disproportionately affected by air pollution	19
Reduce exposures to harmful air pollutants and maximize health benefits	20
Balance cost-effectiveness with other program goals	21

Economic benefits	21
Public input	22
Ongoing input.....	22

List of Tables

Table 1: Summary of Phase 3 grant programs.....	2
Table 2: Phase 3 grant programs and estimated emissions reductions	7
Table 3: DERA funding limits.....	11

List of Figures

Figure 1: Plan revision process	5
Figure 2: Phase 3 grant program funding allocations.....	6
Figure 3: Phase 3 estimated reductions by grant program (percent of total).....	8
Figure 4: Phase 3 grants will replace hundreds of vehicles across the state.....	9
Figure 5: Electric School Bus Pilot Grant Program	14
Figure 6: Planned DC Fast Charging stations after funding in Phase 1 and Phase 2	16
Figure 7: How Minnesota will invest VW settlement funds	19
Figure 8: Minnesota areas of concern for environmental justice	20

Executive summary

The settlement

In 2016, Volkswagen Corporation (VW) was caught violating air pollution standards for nitrogen oxides in its diesel cars and SUVs. Their vehicles were producing 30-40 times more pollution than allowed by law. The federal government took VW to court and in October 2017, the Department of Justice and VW signed a \$15 billion settlement. A portion of the settlement – \$2.9 billion – is shared among the U.S. states and tribes, based on the number of violating vehicles registered in each jurisdiction. Minnesota’s share is \$47 million. Governor Dayton designated the Minnesota Pollution Control Agency (MPCA) to manage the settlement funds, which will be spent over 10 years on projects to offset the excess pollution from the violating vehicles, clean up our air, and invest in a cleaner transportation future.

Minnesota’s plan

Three phases

Minnesota’s plan is structured in three phases, so the MPCA can seek additional input, incorporate lessons learned, consider new technologies, and make changes as needed along the way.

The three phases are:

- Phase 1: \$11.75 million (25% of initial funds) – 2018-2019
- Phase 2: \$23.5 million (50%) – 2020-2023
- Phase 3: \$14 million (remainder of all funds) – 2024-2027

This document covers Phase 3 of the plan, from 2024 through 2027. States are required to develop plans for using their settlement funds and submit them for approval to the Trustee managing the funds nationally.

Phase 1 and Phase 2 summary

Minnesota completed its second phase of the VW plan in late 2023. In Phase 2, we invested \$24 million to reduce air pollution in Minnesota through grant programs across five categories: school buses, transit buses and trucks (heavy-duty on-road vehicles), off-road equipment, heavy-duty electric vehicles, and electric vehicle (EV) infrastructure. We saw strong interest and received applications that exceeded grant amounts in all grant programs during Phase 2. To date, we funded the replacement of 475 older diesel vehicles and equipment with new versions that run on a variety of fuel types, including new diesels that meet stricter emission standards, propane, and electric alternatives. The MPCA also funded 103 new EV charging stations (206 charging plugs) throughout Minnesota.

The first two phases put us well on our way to achieving nearly all the 10-year goals outlined in the original plan. Specifically, we are on track to exceed most of our emissions reductions goals while making strides in maximizing health benefits, reducing exposure to air pollution, and ensuring Minnesotans across the state benefit from these investments. These results, along with public input, have informed our Phase 3 draft plan. For detailed Phase 1 and Phase 2 results, see Appendix 1.

10-year goals

The input MPCA received during the development of this Phase 3 plan confirmed that we should continue to strive for the 10-year goals we set in our original plan. The MPCA will continue to use the state’s settlement funds

to support a healthy environment for all Minnesotans and achieve significant emissions reductions across the state, especially in communities most vulnerable to the effects of vehicle pollution. Because 60% of the violating vehicles were registered in the Twin Cities metropolitan area and 40% were registered in Greater Minnesota, the funds will again be targeted using the same 60:40 ratio in Phase 3. We will continue to invest in communities disproportionately impacted by air pollution, both in the Twin Cities area and in Greater Minnesota. In developing the grant programs and selecting projects for funding, we will balance project costs with emissions reductions and other benefits.

Six grant programs in Phase 3 (2024-2027)

In Phase 3, MPCA will invest VW settlement funds through six grant program areas that will allow different vehicle and equipment types to be compared with each other through a competitive grant process. With these investments in 2024 through 2027, MPCA expects to reduce between 2,722 to 3,365 tons of nitrogen oxides (NO_x), 153 to 297 tons of fine particles (PM_{2.5}), and 32,264 to 63,338 tons of greenhouse gases (GHG).

Table 1: Summary of Phase 3 grant programs

Grant programs (2024-2027)	Settlement category	Eligible fuels (for new vehicle or equipment)	2024-2027 grants (Phase 3)	
			Targeted percent*	Targeted dollar amount
Clean heavy-duty on-road vehicles program	Transit buses, class 4-8 trucks	Diesel, propane, natural gas	15%	\$2,100,000
Clean heavy-duty off-road equipment program	Switcher locomotives, ferries, tugs, port cargo handling equipment, ocean-going vessel shore power, Diesel Emission Reduction Act (DERA)	Diesel, propane, natural gas, electric	30%	\$4,200,000
School bus replacement program	School buses	Diesel, propane, natural gas	5%	\$700,000
Electric school bus replacement program	Electric school buses	Electric	15%	\$2,100,000
Heavy-duty electric vehicle program	Transit buses, class 4-8 trucks, airport ground support equipment, forklifts	Electric	20%	\$2,800,000
Electric vehicle charging stations	Zero-emission vehicle infrastructure	Not applicable	15%	\$2,100,000
Total: \$14,000,000				

*Percentage of available Phase 3 settlement funds targeted at these activities for 2024-2027

The MPCA reserves the right to allocate funds as necessary to ensure all VW funds are invested prior to program expiration.

Outreach and input

The MPCA is committed to delivering a pollution reduction program that benefits all Minnesotans. To develop this Phase 3 plan, the agency sought input statewide throughout the summer of 2023 and into 2024. We shared results from our first six years of grant programs and posted information and data on our VW webpages. We held one stakeholder meeting, shared informational email bulletins, had an open survey hosted on Smart Comment, and sought input from the MPCA's Environmental Justice Advisory Group and Environmental Justice Advocates.

Public comments indicate that the efforts we began in Phase 1 and Phase 2 should continue:

- Reducing diesel emissions throughout the state, across a variety of vehicle types
- Investing in projects to reduce emissions in disproportionately impacted communities
- Funding EV charging stations and electric replacements for diesel vehicles and equipment
- Continuing to fund electric vehicles, when available
- Continuing to fund cleaner fuel alternatives to old, high emitting diesel vehicles
- Recognizing projects that are cost effective, where appropriate

Once the draft Phase 3 plan was released to the public in late 2023, the MPCA solicited input from the public and key stakeholders from across the state to ensure that the plan best reflected the comments and priorities we heard during this process. We held public meetings and accepted written comments until January 15, 2024. Details of this outreach effort can be found in Appendix 4.

Information gathered during the entire Plan development process is available at www.pca.state.mn.us/vw. We also encourage anyone interested in applying for grant funds to go to our website and sign up to receive email updates.

Minnesota's Plan

Minnesota's Beneficiary Mitigation Plan for submission to the Wilmington Trust of Wilmington, Delaware as required by the Environmental Mitigation Trust Agreement for State Beneficiaries as part of the Volkswagen Environmental Settlement.

Introduction

VWs tampered diesel vehicles have emitted an estimated 600 tons of excess air pollution in Minnesota. The MPCA is committed to ensuring that Minnesota's funding from the Volkswagen settlement – \$47 million over 10 years – is used to improve air quality in our state, especially for those most vulnerable to air pollution. Our goals are to mitigate the pollution from VW vehicles and reduce air pollution while moving Minnesota towards a cleaner transportation future.

Purpose

This document outlines Phase 3 of Minnesota's Beneficiary Mitigation Plan, a required step in the federal court settlement. To use settlement funds, states must specify how they propose to spend them in a plan submitted to the Trustee managing the funds for states. The federal settlement specifies the project types on which states can spend funds. However, within that structure, we can prioritize projects and initiatives that make the most sense for Minnesotans and reflect our state's priorities and goals. The plan must include:

- Minnesota's goals for the funds
- The types of vehicles and equipment Minnesota plans to replace with the funds
- How Minnesota will use the funds to benefit communities disproportionately impacted by air pollution
- Estimates of the emissions reductions that Minnesota expects to achieve with these funds

This plan for Phase 3 describes our continued focus on the 10-year goals for the program and our projected investments for the next four years (2024-2027).

Goals

Prior to Phase 1, MPCA solicited input from Minnesotans across the state to develop the long-term goals that would guide us over the 10 years of the program, and to inform our plan for spending the VW settlement funds. In 2019 and 2023, MPCA again solicited input from Minnesotans on how the VW settlement funds should be spent and whether our goals for the VW settlement program should change.

Based on this public feedback as well as program experience, MPCA will continue to use VW settlement funds to achieve significant emissions reductions across the state, especially in areas that have been most impacted by vehicle pollution. Looking at the number of violating VW vehicles registered in different parts of the state, we will continue to target 60% of the settlement funds in the Twin Cities metropolitan area and 40% in Greater Minnesota. We will continue to maximize emissions reductions in areas disproportionately impacted by air pollution across the state. We will continue to prioritize bringing health benefits to Minnesotans by reducing their exposures to vehicle-related air pollution and to balance these priorities with cost-effective management of the funds.

Grant program plan

The federal settlement outlines 10 specific activities on which states can use settlement funds. Most of the allowable projects involve replacing older heavy-duty diesel vehicles or equipment with new, cleaner vehicles or equipment. The new vehicles can use diesel or alternative fuels such as propane, compressed natural gas, electricity, or hydrogen fuel cells. To ensure effective replacement, the old engine, and in most cases the entire vehicle, must be destroyed. States can also spend up to 15% of their settlement funds on EV charging stations. See Appendix 2 for a summary of the Volkswagen settlement, and Appendix 8 for the precise descriptions of the types of vehicles and equipment replacements that can be funded under the terms of the settlement.

Using the input of Minnesotans, analysis of Phase 1 and Phase 2 project benefits, and staff expertise, MPCA developed this plan for the third phase of funding (2024-2027) from Minnesota’s \$47 million allocation from the VW settlement. All funds for the entire settlement must be spent or committed to projects by October 2, 2027. See Appendix 1 for detailed results from Phase 1 and Phase 2, and Appendix 4 for input received during our public engagement.

Phased funding

Minnesota’s \$47 million allocation will be invested over three phases. This phased approach allows the agency to:

- Build in transparency and involve the public in reviewing and revising the plan between phases
- Learn which projects work best in Minnesota, and modify our requests for proposals in subsequent phases to focus the most effective projects
- Identify areas in need of additional assistance as we seek out proposals
- Track constantly changing vehicle technology and invest in the most effective technology available

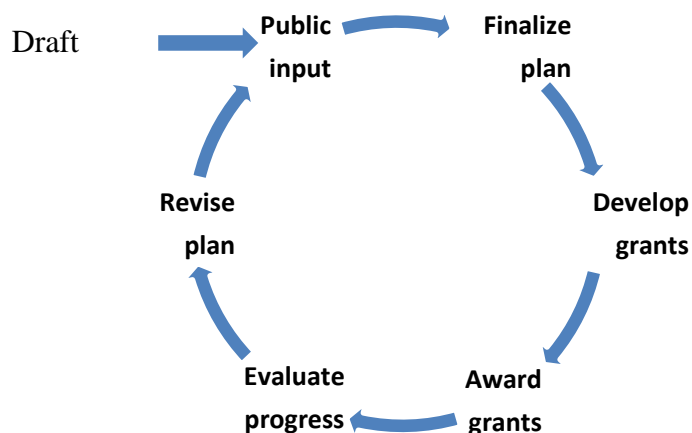
The three phases of funding are:

Phase 1: \$11.75 million (25% of overall funds) – 2018-2019: Smaller amount of money to learn and ramp up. We solicited input and reviewed program results after Phase 1.

Phase 2: \$23.5 million (50%) – 2020-2023: Most of the funds were spent during this phase, covered in this plan document. We developed the plan for Phase 2 after Phase 1 program review and public engagement. We repeated this public input and plan revision process in 2023, as we conclude Phase 2.

Phase 3: \$14 million (25+%) – 2024-2027: Remaining funds, including additional interest earned over the course of the program, will be allocated.

Figure 1: Plan revision process



Phase 3 grants overview

In Phase 3 (2024-2027), MPCA will invest the remainder of Minnesota’s funding, or \$14 million through six grant program areas. If additional funds from interest earned over the course of the program become available, they may be added to this total. Table 2 reflects our preferred investment scenario. Our ability to fund projects in each

category at the target levels will depend on the applications received and interest by vehicle and equipment owners. If we do not receive sufficient applications in a given category, we may shift funds between grant programs. We may also release additional request for proposals where necessary.

Figure 2: Phase 3 grant program funding allocations

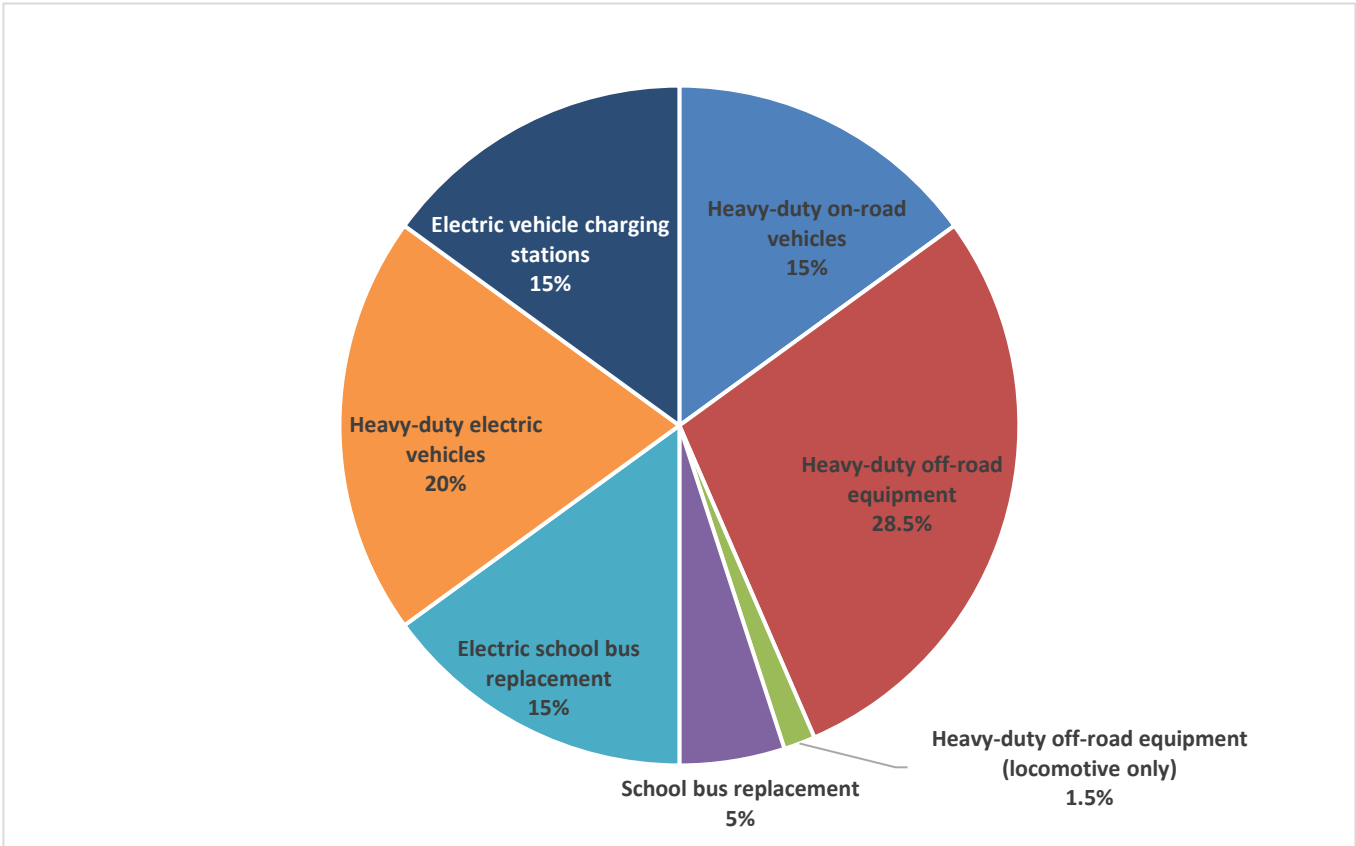


Table 2: Phase 3 grant programs and estimated emissions reductions

Grant programs (2024-2027)	Settlement category	Eligible fuels	2024-2027 grants (Phase 3)			
			Targeted percent*	Targeted dollar amount	Estimated number of projects**	Estimated emissions reductions (tons)***
Clean heavy-duty on-road vehicles program	Transit buses, class 4-8 trucks	Diesel, propane, natural gas	15%	\$2,100,000	42	NO _x : 150-204 PM _{2.5} : 7-11 GHGs: 2,217-15,431
Clean heavy-duty off-road equipment program	Switcher locomotives, ferries, tugs, port cargo handling equipment, ocean-going vessel shore power, DERA	Diesel, propane, natural gas, electric	28.5%	\$3,990,000	47	NO _x : 310-561 PM _{2.5} : 64-191 GHGs: 9,253-21,097
	Locomotive idle reduction technology		1.5%	\$210,000	12	NO _x : 2,193-2,484 PM _{2.5} : 79-90 GHGs: 10,889-12,336
School bus replacement program	School buses	Diesel, propane, natural gas	5%	\$700,000	34	NO _x : 13-15 PM _{2.5} : 0.65-0.84 GHGs: 929-1,207
Electric school bus replacement program	School buses	Electric	15%	\$2,100,000	7	NO _x : 3-6 PM _{2.5} : 0.07-0.44 GHGs: 740-1,230
Heavy-duty electric vehicle program	Transit buses, trucks, airport ground support equipment, forklifts	Electric	20%	\$2,800,000	11	NO _x : 52-93 PM _{2.5} : 2-5 GHGs: 3,511-7,314
Electric vehicle charging station program	Zero-emission vehicle infrastructure	Not applicable	15%	\$2,100,000	Fast chargers: 13	NO _x : 0.96 PM _{2.5} : 0.07 GHGs: 4,724
Total: \$14,000,000						NO _x : 2,722-3,365 PM _{2.5} : 153-297 GHGs: 32,264-63,338

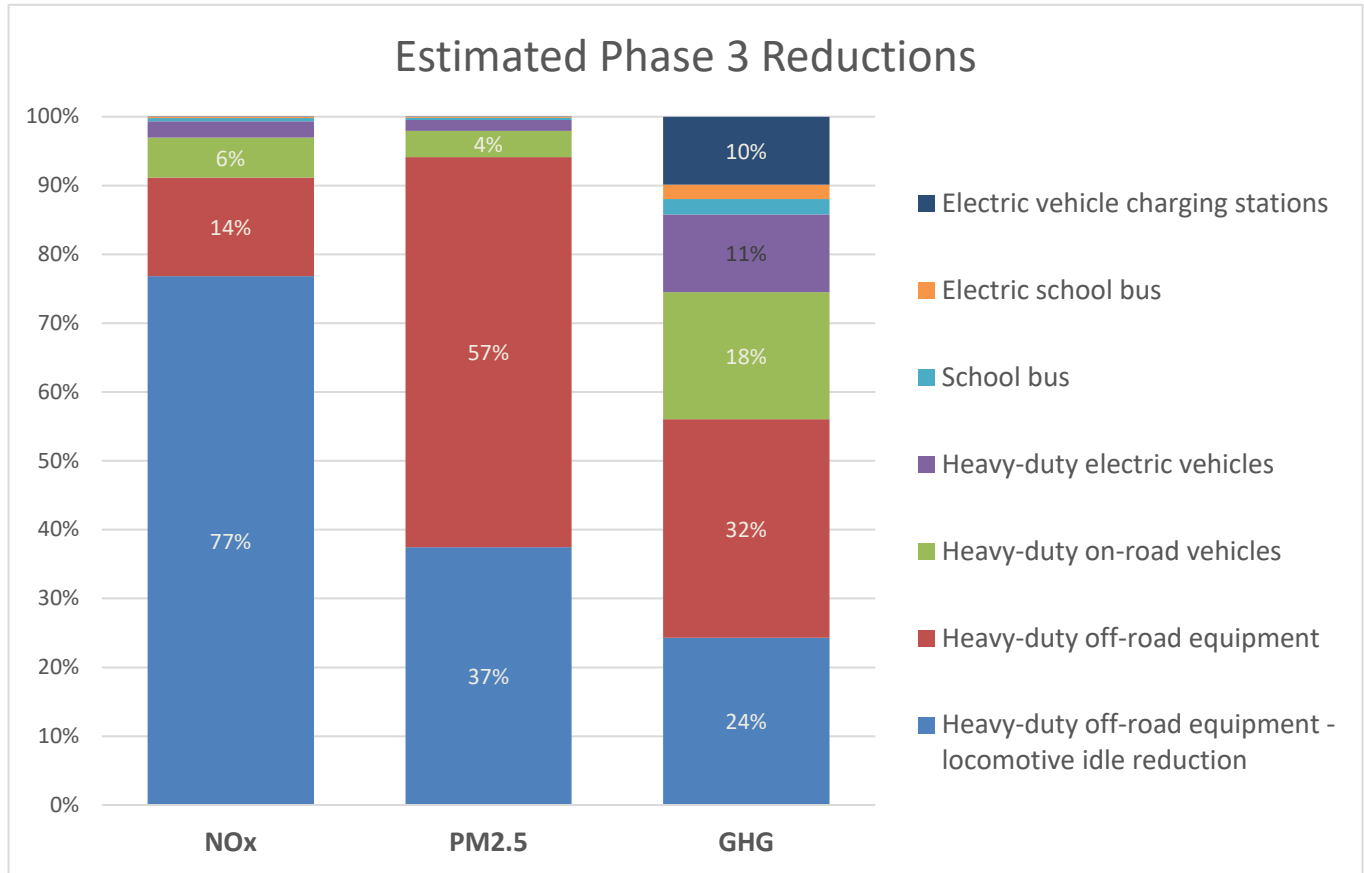
*Percentage of available settlement funds targeted at these activities for 2024-2027.

**Each category includes an estimated mix of eligible vehicles and equipment types. These estimates provide an idea of how many vehicles of each type could be funded in Phase 3 in order to make emissions calculations, but do not reflect a preference for any vehicle or fuel type or funding targets or allocations within each grant program. See Appendix 6 for

calculation methods.

***Emission benefits for projects funded in Phase 3 compared to emissions expected if the old vehicles were to continue to operate for their remaining useful life. Calculated for nitrogen oxides (NO_x), fine particles (PM_{2.5}), and greenhouse gases (GHGs). NO_x and PM_{2.5} emissions are calculated for tailpipe emissions only. GHG emissions benefits are calculated from well to wheel. See Appendix 6 for calculation methods.

Figure 3: Phase 3 estimated reductions by grant program (percent of total)



Phase 3 emissions reduction estimates show that a large majority -- 77% -- of the anticipated NO_x reductions will come from the locomotive idle-reduction grant program. Because of its high NO_x reducing potential, locomotive idle-reduction technology will be targeted specifically in Phase 3 to help meet the program wide goal of reducing 4,000 tons of NO_x emissions.

Figure 4: Phase 3 grants will replace hundreds of vehicles across the state.

Out with the old: \$14,000,000 for new clean vehicles

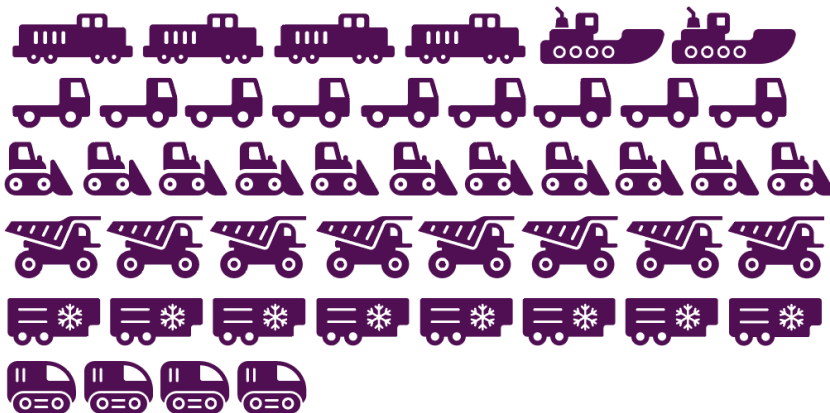
41 school buses 34 new diesel, propane, or natural gas



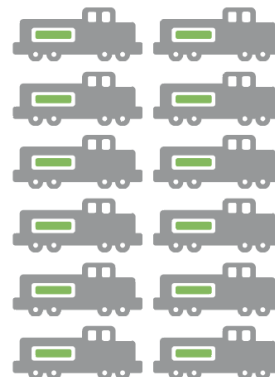
7 electric buses



47 heavy-duty off-road vehicles and equipment



12 Locomotive idle reduction technology retrofits



42 clean heavy-duty on-road vehicles



11 heavy-duty electric vehicles



13 new electric vehicle fast charging spots



Funding process

Projects will be funded through a competitive grant application process. The MPCA has developed a set of criteria for scoring projects and selecting those that best align with the program goals. The agency will continue to adapt and improve these criteria throughout Phase 3.

In most cases, the settlement requires that most of the funds for vehicle and equipment replacement be provided by equipment owners; the smaller portion of the total cost of the new vehicle will be covered by VW settlement funds (see next section for allowable matches). Eligible applicants are people and organizations who either own heavy-duty diesel vehicles and equipment or install EV charging infrastructure. Applicants may include, but are not limited to, local governments, tribes, school districts, state government agencies, metropolitan planning organizations, transit authorities, private businesses, and non-profit organizations.

As in Phase 1 and Phase 2, selected applicants will receive their funding as a reimbursement after the new equipment has been delivered and MPCA has received confirmation that their old equipment has been destroyed. Settlement funds cannot be used for vehicles, engines, or electric vehicle charging stations that are purchased before a grant agreement is signed between the owner and the MPCA. Additionally, under the clean heavy-duty off-road grant program, vehicle or equipment owners can work with third parties to submit aggregated applications for multiple vehicles owned by different organizations.

Phase 3 grant programs

Below are descriptions of the six grant programs the MPCA will administer during Phase 3.

Clean heavy-duty on-road vehicles grant program – 15% (\$2,100,000)

Estimated emissions reductions: NO_x: 150-204 tons; PM_{2.5}: 7-11 tons; GHGs 2,217-15,431 tons

There are approximately 200,000 heavy-duty diesel class 4-8 delivery trucks in Minnesota. Heavy-duty diesel trucks have an estimated lifespan of 25 years, making replacements of older trucks a very cost-effective investment in terms of total pollution reduced per dollar spent. This program will fund the replacement of transit buses and large and medium-sized (class 4-8) delivery trucks, granting up to 25% of the overall cost of the vehicle. The MPCA may use a maximum funding cap to reflect that vehicles in this category vary greatly in size and that some can cost 2-3 times more than others, yet emission reductions may not be greater. During project selection, we will score additional points for GHG reductions and consider higher cap amounts or grant percentages for hybrid, ultra-low NO_x compressed natural gas (CNG), and ultra-low NO_x propane engines which cost more than clean diesel engines but achieve greater emission reductions.

Eligibility: Public and private organizations with eligible diesel trucks and transit buses operating 75% or more of their miles in Minnesota. Eligible fuel types include diesel, propane, natural gas, and fuel/electric hybrid. Gasoline vehicles are not eligible for funding under the terms of the settlement.

Why heavy-duty on-road vehicles? This category represents the largest on-road opportunity for emissions reductions, including GHG reductions. The heavy-duty on-road category contains diesel equipment that emit the most nitrogen oxides in Minnesota, and also offers some of the most cost-effective vehicle replacements. Compared with school bus replacements, heavy-duty on-road projects achieve greater NO_x, PM_{2.5}, and GHG reductions, as delivery trucks and transit buses travel two to six times further per year than school buses, with an estimated lifespan of 10 years longer.

Clean heavy-duty off-road equipment grant program – 28.5% (\$3,990,000)

Estimated emissions reductions: NO_x: 310-561 tons; PM_{2.5}: 64-191 tons; GHGs: 9,253-21,097 tons

This program will fund the replacement or improvement of heavy-duty off-road equipment that is eligible under the DERA, such as marine engines, locomotives, trailer refrigeration units, terminal tractors, and off-road engines, and equipment or vehicles used in construction, handling of cargo, agriculture, mining, or energy production. On-road idle reduction and other eligible technology under DERA may also be eligible.

This program will fund projects up to the following levels, based on the matching levels allowed by DERA. Table 3 gives limits as of 2023, which are subject to change annually:

Table 3: DERA funding limits

Eligible Technologies	EPA Funding Limit	Mandatory Cost Share
Vehicle or Equipment Replacement with EPA Certified Engine	25%	75%
Vehicle or Equipment Replacement with Zero-tailpipe Emission Power Source	45%	55%
Engine Replacement with EPA Certified Engine	40%	60%
Engine Replacement with Zero-tailpipe Emission Power Source	60%	40%
EPA Verified Locomotive Idle Reduction Technologies	40%	60%
EPA Verified Exhaust After-treatment Retrofits	100%	0%

Note: DERA funding levels and equipment eligibility change every year. This program will follow the most recent rules as provided by the U.S. Environmental Protection Agency (EPA).

Eligibility: Public and private organizations across the state. Eligible fuel types include diesel, propane, natural gas, and electric. Gasoline equipment is not eligible for funding under the terms of the settlement. Groups of equipment owners may work with third parties to submit aggregated applications.

Aggregated applications: Aggregated applications/grant contractors are eligible under this program. Eligible contractors may request up to 10% for administrative costs above the grant amount requested per equipment with a maximum of up to \$10,000 per piece of awarded equipment.

Why heavy-duty off-road equipment? Among the equipment types eligible for VW settlement funding, heavy-duty off-road equipment can be some of the largest emitters of air pollution and provide the most cost-effective emissions reductions. Through MPCA’s experience with DERA and conversations with equipment owners, we know that many of these engines are rarely upgraded without financial incentive. There are many old diesels in this category in Minnesota that have no pollution controls at all.

Clean heavy-duty off-road locomotive idle reduction grant program – 1.5% (\$210,000)

Estimated emissions reductions: NO_x: 2,193-2,484 tons; PM_{2.5}: 79-90 tons; GHGs: 10,889-12,336 tons

This program will target funding SmartWay Verified List of Idling Reduction Technologies (IRTs) for Locomotives. Technologies could include Automatic Engine Shut-Down/Start-up Systems (AESS), Auxiliary Power Units/Gen Sets (APU/GS), Fuel Operated Heaters aka Direct Fired Heaters (FOH aka DFH), and Shore Connection Systems (SCS).

This program will fund projects up to 40% of the total cost of the Idle Reduction Technology.

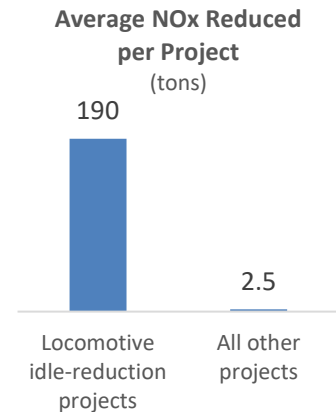
Eligibility: Public and private organizations across the state. Eligible fuel types include diesel, propane, natural gas, and electric. Gasoline equipment is not eligible for funding under the terms of the settlement. Groups of equipment owners may work with third parties to submit aggregated applications.

Aggregated applications: Aggregated applications/grant contractors are eligible under this program. Eligible contractors may request up to 10% for administrative costs above the grant amount requested per equipment with a maximum of up to \$10,000 per piece of awarded equipment.

Why locomotive idle reduction equipment? In Phase 1 of the Volkswagen Settlement plan, MPCA funded five locomotive idle-reduction projects that resulted in significant NO_x reductions. Cumulatively, the five projects reduced an estimated 952 tons of NO_x, an average of **190** tons per project. By comparison, the average NO_x reduction for all other projects that were funded is **2.5** tons.

In addition to the significant NO_x reductions, the locomotive idle-reduction projects are also the most cost-effective projects funded to date, with just **\$90** spent in grant funding per ton of NO_x reduced. By comparison, the total cost effectiveness for all other projects that were funded is **\$21,650** per ton of NO_x reduced.

Because of the high NO_x emissions reductions and cost effectiveness of these projects, we plan to target funding specifically for locomotive idle-reduction technologies to help meet our NO_x reductions goals. Under the assumption that we will be able to fund projects similar to those we funded in Phase 1, we estimate that with \$210,000 in funding, we will be able to achieve between 2,193-2,484 tons of NO_x emissions reductions in Phase 3. This would result in achieving our goal of reducing 4,000 tons of NO_x! Because these projects yield high reductions, the MPCA may shift additional funds to these projects.



Locomotive idle-reduction technology such as Auxiliary Power Units (APU) and Automatic Engine Shutdown/Start up (AESS) allow locomotives to reduce time spent idling, thus reducing fuel consumption and emissions. APUs act as a small engine, warming and circulating coolant and oil, allowing the main locomotive to shut down while retaining the ability to restart immediately. (Pictured right) An APU installed on one of the five locomotive grant projects funded.

School bus (non-electric) grant program – 5% (\$700,000)

Estimated emissions reductions: NO_x: 13-15tons; PM_{2.5}: 0.65-0.84 tons; GHGs: 929-1,207 tons

This program will provide grants for the replacement of eligible Class 4-8 school buses up to \$15,000 each, or \$20,000 each for operators serving school districts where 40% of students are eligible for free or reduced-cost lunch. The MPCA will provide a list of districts eligible for additional funding.

Eligibility: All Minnesota school bus operators, both public and private. Eligible replacement fuel types include diesel, propane, and natural gas. Gasoline vehicles are not eligible for funding under the terms of the settlement.

Bus owners intending to replace their diesel bus with an electric school bus are eligible to apply under the electric school bus grant program.

Why school buses? During the MPCA public engagement efforts, prioritizing projects that reduce pollution exposures for children and replacing aging school buses emerged as a main theme. During the first two phases of the VW program, Minnesota invested more than \$3 million into clean school buses, along with more than \$5 million into electric school buses. These investments have reduced diesel exhaust exposure to thousands of children throughout Minnesota, and this investment into school bus replacement in Phase 3 will enhance the overall air quality in all areas of the state.

Electric school bus grant program – 15% (\$2,100,000)

Estimated emissions reductions: NO_x:3-6 tons; PM_{2.5}:0.07-0.44 tons; GHGs: 740-1,230 tons

This program will provide grants for the purchase of new electric school buses to replace older, Class 4-8, diesel school buses. Funding electric buses was the most common comment received throughout the comment period.

Using a portion of the funds in Phase 2, the MPCA created a pilot project to fund a limited number of electric school buses throughout Minnesota. Data collected from the pilot project will provide information on the electric vehicle technology for school buses and their practical application across Minnesota. Investment and implementation of new technology can present financial risk and variables that MPCA would like to learn about and report on to increase interest in future electric school bus grant opportunities.

Taking into consideration the data from the pilot project, as well as the information we learn from the variety of new federal and state electric school bus programs, the MPCA intends to release another RFP in Phase 3 for electric school bus adoption in Minnesota. The maximum grant amount will be 50-95% of the cost of a new electric bus. The exact amount will be determined after we have analyzed the data from our pilot project. The agency intends to offer increased grant amounts for school districts with 40% of students eligible for free or reduced-cost lunch.

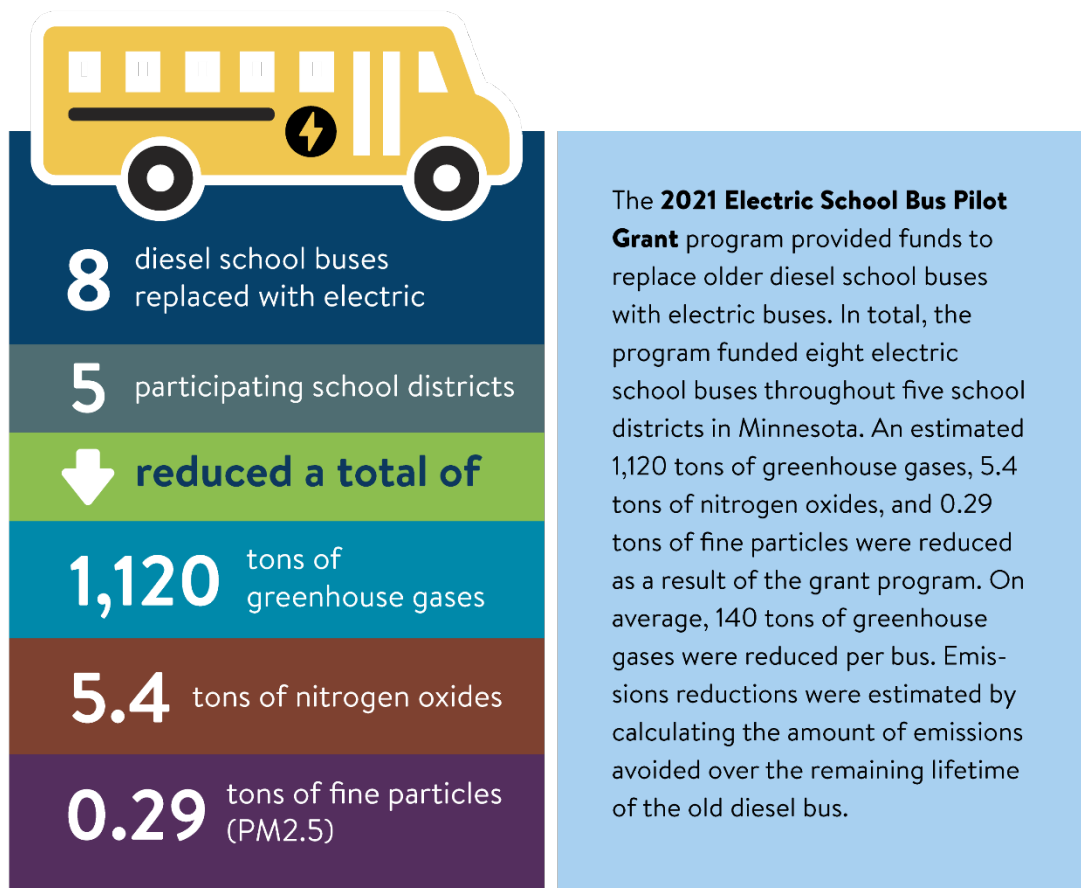
Eligibility: All Minnesota school bus operators, both public and private. Vehicle owners must replace a diesel bus with an electric bus.

Why electric school buses? During our previous public engagement, we received many comments encouraging more dedicated funding for electric school buses. The purchase price of an electric bus is considerably higher than that of a diesel one. However, compared to diesel units, electric buses can achieve operational savings in both maintenance and fuel costs over the life of the vehicle. They also generate fewer GHG emissions and other pollutants, making them a good choice for the environment and for children's health. Figure 5 summarizes the estimated emissions reductions achieved from our Phase 2 Electric School Bus Pilot Grant Program.

The MPCA recognizes and values the positive long-term, transformational results from funding an emerging clean technology. We also wish to balance that view with the awareness and understanding that the technology is still developing and improving as more data, especially on the operational side, is generated and made available.

The travel range of electric buses is increasing but may present potential challenges for rural and other high-mileage route areas. The Phase 2 Minnesota pilot project as well as electric school bus programs from other cold-weather states like Michigan, Massachusetts, and Vermont have provided much-needed information on electric school bus implementation, including operator training needs, cost-effectiveness, and geographical considerations. The MPCA will continue using results from these programs as data become available to help hone and improve our grant opportunities for electric buses. Future electric school bus requests for proposals may encourage partnerships with local utilities and other interested parties to help fund the adoption of electric buses.

Figure 5: Electric School Bus Pilot Grant Program



Heavy-duty electric vehicle grant program – 20% (\$2,800,000)

Estimated emissions reductions: NO_x: 52-93 tons; PM_{2.5}: 2-5 tons; GHGs: 3,511-7,314 tons

This program provides funds for electric alternatives to heavy-duty vehicles and equipment. We anticipate particular interest in replacing transit buses and shuttles, delivery trucks, and airport ground support equipment. Heavy-duty EVs are newer technology and significantly more expensive than other diesel alternatives; organizations may therefore need more financial assistance to begin to adopt EV technology. With a larger investment in Phase 2, this grant program will provide a greater opportunity for our state to adopt and explore this technology.

Eligibility: Public and private organizations across the state. All heavy-duty vehicles (except school buses) and equipment eligible for replacement with an electric alternative are eligible to apply for funding. Airport ground support equipment and forklifts will also be considered in this category, as they are only eligible for electric replacements under the terms of the settlement. Vehicle or equipment replacements must be all-electric.

Why heavy-duty electric vehicles? Support for more EVs was the most common comment we received during our public engagement. Public transit providers, trucking companies, and Minnesotans across the state all said the MPCA should invest in this technology. EVs have no tailpipe emissions and support Minnesota’s Next Generation Energy Act goals for reducing greenhouse gas emissions. Public input and survey results from Minnesota Department of Transportation’s “Pathways to Decarbonizing Transportation in Minnesota” 2019 report

demonstrated strong support for electric trucks and buses (as well as passenger vehicles) to meet the low-carbon goals for Minnesota's transportation sector.

Electric vehicle charging station grant program – 15% (\$2,100,000)

Estimated emissions reductions: NO_x: 0.96 tons; PM_{2.5}: 0.07 tons; GHGs: 4,724 tons

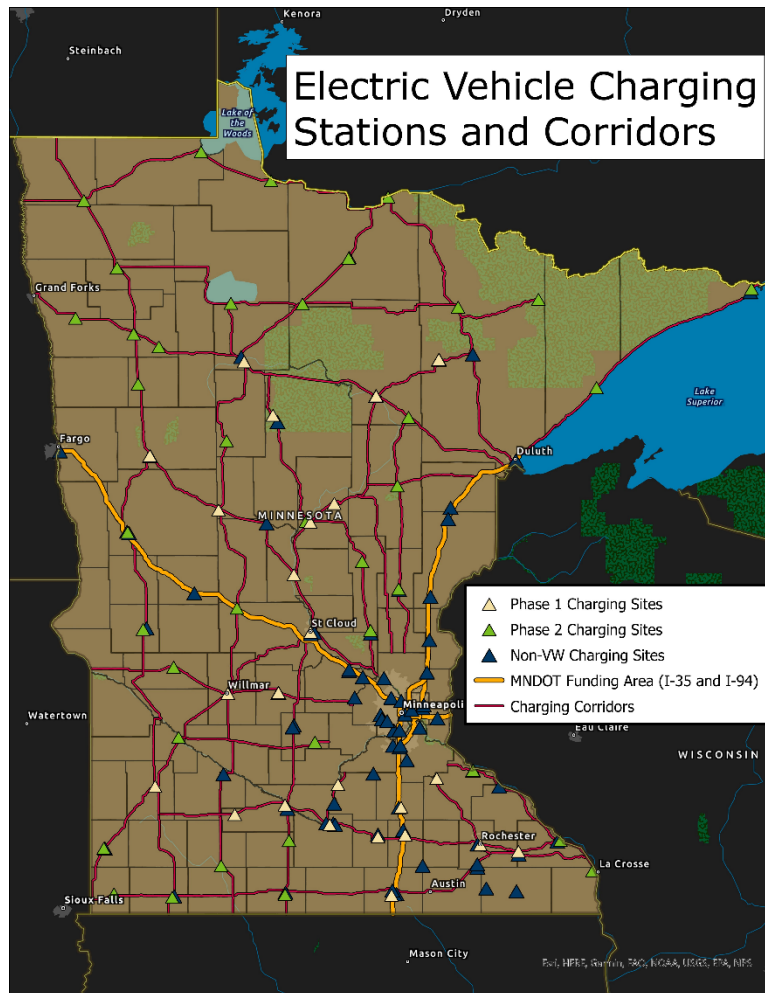
Minnesota will spend the funds in this grant program on EV direct current (DC) fast-charging stations along highway corridors in Greater Minnesota for public use. Approximately ninety percent (\$2.1 million dollars) will be spent on an estimated 13 new DC fast-charging locations, reimbursed up to 80% of total eligible project costs or up to \$150,000 per 150-kilowatt (kW) charging station installation. In order to build a statewide EV charging network across Minnesota, MPCA has identified preliminary roadways for funding (see Figure 6). Some locations have been proposed for installation of a DC fast-charging station while others are left open for selection by the grant recipient. These pre-selected locations are not mandatory as they were in Phase 1 but are merely possibilities based on traffic volume and location in proximity to existing and proposed EV charging stations. This flexibility is designed to create a complete EV charging network across Minnesota. These roadways will be grouped into corridors similarly to Phase 1. Applicants will be required to apply for installation of the entire corridor with multiple DC fast charging stations. The MPCA will consider the location of newly installed DC fast-charging stations when writing the request for proposals in an attempt to avoid duplication.

Eligibility: Applicants will be required to apply for installation of the entire corridor, including DC fast charging stations on multiple roadways. Grantees building fast-charging stations along corridors shall install them at approximately 15- to 70-mile increments along identified roadways approximately two miles or less from the exit. Fast-charging stations must provide a minimum of 150 kW. The MPCA may require the installation to include adequate electrical conduit at each station for future upgrades up to 350 kW and space for extending the parking pad. To maximize emission reductions, we will encourage charging stations to be powered by electricity generated from renewable sources (wind, solar) through either a utility renewable energy program or by purchasing renewable energy credits.

Why electric vehicle charging stations? Support for more EVs was the most common comment we received during our public engagement. Minnesotans strongly advocated for using the maximum amount allowed for EV charging stations (15%) under the terms of the settlement. Survey and comment data indicate support for a fast-charging network across the state to expand EV access for all Minnesotans and reduce range anxiety. Based on public comments received, MPCA plans to continue to install 150 kW chargers with necessary conduits for future upgrades along highway corridors. Funding 150 kW chargers will allow Minnesota to extend our fast-charging network more rapidly than if we were to require higher-cost chargers. 150kW charging also aligns with current vehicle technology.

Stakeholders also told us that fast-charging is harder to finance without subsidy; slower Level 2 chargers are lower cost and easier to fund without assistance.

Figure 6: Planned DC Fast Charging stations after funding in Phase 1 and Phase 2



The MPCA had identified preliminary roadways for funding in Phase 1 and Phase 2. The MPCA did not award funding for any DC fast-charging stations within the seven-county Twin Cities metro area due to the present publicly available options for charging.

Core application criteria

During Phase 3, as in Phase 1 and Phase 2, our 10-year goals will guide the application and project selection process. The process will consider the location of each replacement vehicle to meet our 60% Twin Cities metropolitan area and 40% Greater Minnesota investment goals, as well as our goals to invest in vulnerable communities. Each program's application process may have specific criteria based on the purpose of the program, but we plan to include the following core criteria in all applications for diesel replacement projects.

- Emissions reduction: Reducing NO_x, PM_{2.5}, and GHG
- Cost-per-ton: Cost-effectiveness of NO_x reductions based on cost paid with VW funds (not total project cost). Additionally, GHG reductions may be used to evaluate cost-effectiveness of certain projects
- Vulnerable populations: Vehicles and equipment operating in areas of concern for environmental justice, based on the MPCA's mapping tool

- Air quality and health: Reducing emissions in areas of higher expected levels of air pollution associated with diesel emissions as identified using MPCA’s air pollution modeling tool and Minnesota Department of Health (MDH) data on rates of health conditions exacerbated by air pollutants found in diesel emissions

Most of the EV charging stations will be installed along highway corridors throughout Greater Minnesota. For EV charging infrastructure, other core criteria are:

- Cost effectiveness for fast-charging
- Renewable energy: Powering charging stations with electricity generated from renewable sources (wind, solar) through either a utility renewable energy program, by purchasing renewable energy credits, or on-site generation
- Vulnerable populations: Level 2 charging stations operating in areas of concern for environmental justice, based on the MPCA’s mapping tool
- Air quality and health: Level 2 charging stations operating in areas of higher expected levels of air pollution as identified using MPCA’s air pollution modeling tool and MDH data on rates of health conditions exacerbated by air pollutants found in diesel emissions

Additional criteria may be included in each application. Each grant Request for Proposal (RFP) will provide more detailed scoring. The MPCA may modify the mechanisms for ranking these criteria based on experience in project selection and application review from Phase 1 projects. These modifications will allow us to meet the long-term goals of the VW program.

Making funding accessible

The MPCA will continue to promote opportunities to apply for funds broadly, especially in rural communities and communities disproportionately impacted by air pollution. We have developed user-friendly applications so that vehicle and equipment owners are able to fill out the forms themselves without help from professional grant writers. We also surveyed potential applicants about their experience with the application process in order to continue to make improvements.

The MPCA is committed to working within the state’s grant processes to create application processes that balance our need for information with the needs of applicants. We will continue to provide opportunities to ask questions about the funding applications, publicly share answers to those questions, and host meetings and webinars about funding opportunities. The purpose of these efforts is to lower the barriers to access these funds and help all Minnesotans with eligible projects understand the process, and especially to help people and organizations without experience in applying for state funds. We will continue to seek input from applicants and potential applicants on how to improve the process.

10-year program goals

Prior to Phase 1, MPCA solicited input from Minnesotans across the state to develop the long-term goals that would guide us over the 10 years of the program. More recent input from Minnesotans confirmed that these program goals should not change in Phase 3. Our aim is to use the funds to bring the most benefits to the state and most effectively manage the settlement funds.

We are committed to transparency and making our data accessible to the public. The agency developed an online interactive data tool that measures and tracks progress towards our program goals. Visit www.pca.state.mn.us/vwprogress to explore the data.

Achieve significant emissions reductions

Projects funded will target specific reductions in three categories:

- NO_x: 4,000 tons
- PM_{2.5}: 150 tons
- GHG: 100,000 tons

What Minnesotans told us: During public meetings throughout the first two phases of the VW program, we heard the need to continue reducing emissions from diesel sources by replacing vehicles and equipment with cleaner options. Given the progress toward achieving NO_x emission reductions in Phase 1 and Phase 2, MPCA should continue to consider PM_{2.5} and GHG reductions in addition to NO_x. Fine particles from diesel pollution are the main driver of health risks from breathing outdoor air in Minnesota. Reducing GHG emissions reduces the state's contribution to climate change and helps us meet Minnesota's emissions reductions goals.

Benefit all parts of the state

- 60% of the funds will be invested in the Twin Cities metropolitan area
- 40% of the funds will be invested in Greater Minnesota

Because 60% of the violating vehicles were registered in the Twin Cities metropolitan area and 40% were registered in Greater Minnesota, the funds will be targeted using the same 60:40 ratio over the course of the 10-year program (2018-2027).

What Minnesotans told us: There was strong feedback throughout the state that projects should be funded both in the Twin Cities metropolitan area and in Greater Minnesota.

In Greater Minnesota, Minnesotans told us they were interested in using EVs, but concerned about the lack of EV charging facilities connecting highways between Greater Minnesota cities that were not part of the Phase 1 or Phase 2 corridors. They were also concerned about the lack of charging stations in some areas. For school buses, there were concerns about the feasibility of new technology in Greater Minnesota.

In the Twin Cities, residents shared concerns about school buses, and the need to replace more of them with newer technology vehicles, especially electric buses. They also discussed wanting to use EVs but felt concerned that without charging opportunities across the state, they would not be able to travel outside of the metropolitan area.

Help people and places disproportionately affected by air pollution

Over the course of Minnesota’s 10-year VW program (2018-2027), at least 40% of the funds will be invested in areas disproportionately affected by air pollution in Minnesota. Half of this, or at least 20% of the overall funds, will go to such areas in the Twin Cities metro, and the other half (20% of overall funds) to such areas in Greater Minnesota.

The VW settlement directs states to consider the potential impact of the projects they fund on areas that “bear a disproportionate share of the air pollution burden within its jurisdiction.” The MPCA considers areas disproportionately impacted by air pollution to be areas of concern for environmental justice.

The criteria that define environmental justice areas have changed over the course of the VW program. New projects funded through the VW program have reflected our best understanding of the MPCA’s environmental justice criteria available at the time. The current four criteria used to identify environmental areas are:

- Census tracts where more than 40% of residents are people of color or American Indians
- Census tracts where 35% or more of households have an income of less than 200% of the federal poverty level
- Tribal lands
- At least 40% of people have limited English proficiency

The MPCA considers environmental justice in the scoring criteria for selecting projects for funding when possible. Combining this demographic information with diesel exhaust exposure and health data can help identify overburdened communities.

What Minnesotans told us: During our public outreach efforts, Minnesotans asked the MPCA to emphasize projects benefiting air quality in areas with greater health effects from air pollution. Some communities not only experience higher levels of pollution, but also may not have the amenities, resources, and conditions to support healthy living. We are working with a variety of stakeholders and state, local, national, and tribal government partners to address disparities in air pollution exposure and related health effects with the VW settlement funds. We worked to meaningfully involve communities of color and low-income communities during the development and will continue to seek deeper engagement in the implementation of this plan.

The agency’s Environmental Justice Advisory Group participated in stakeholder meetings, provided advice on engagement, and recommended ways to incorporate these concerns into our plan.

Figure 7: How Minnesota will invest VW settlement funds

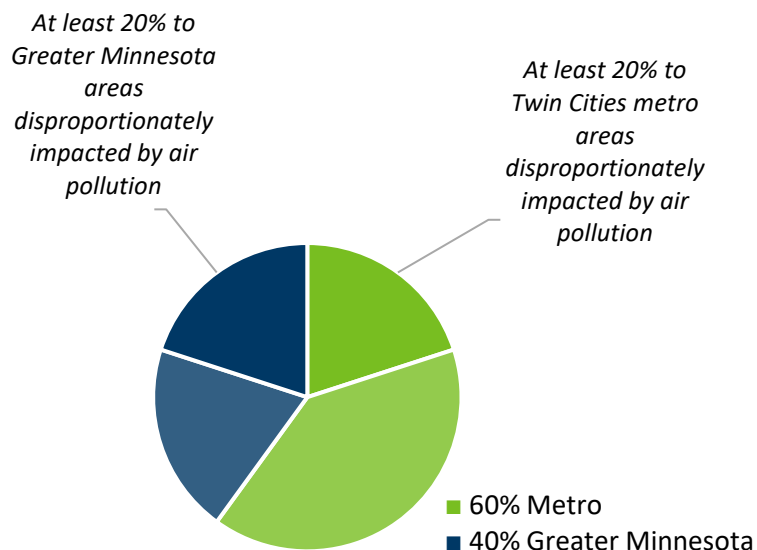
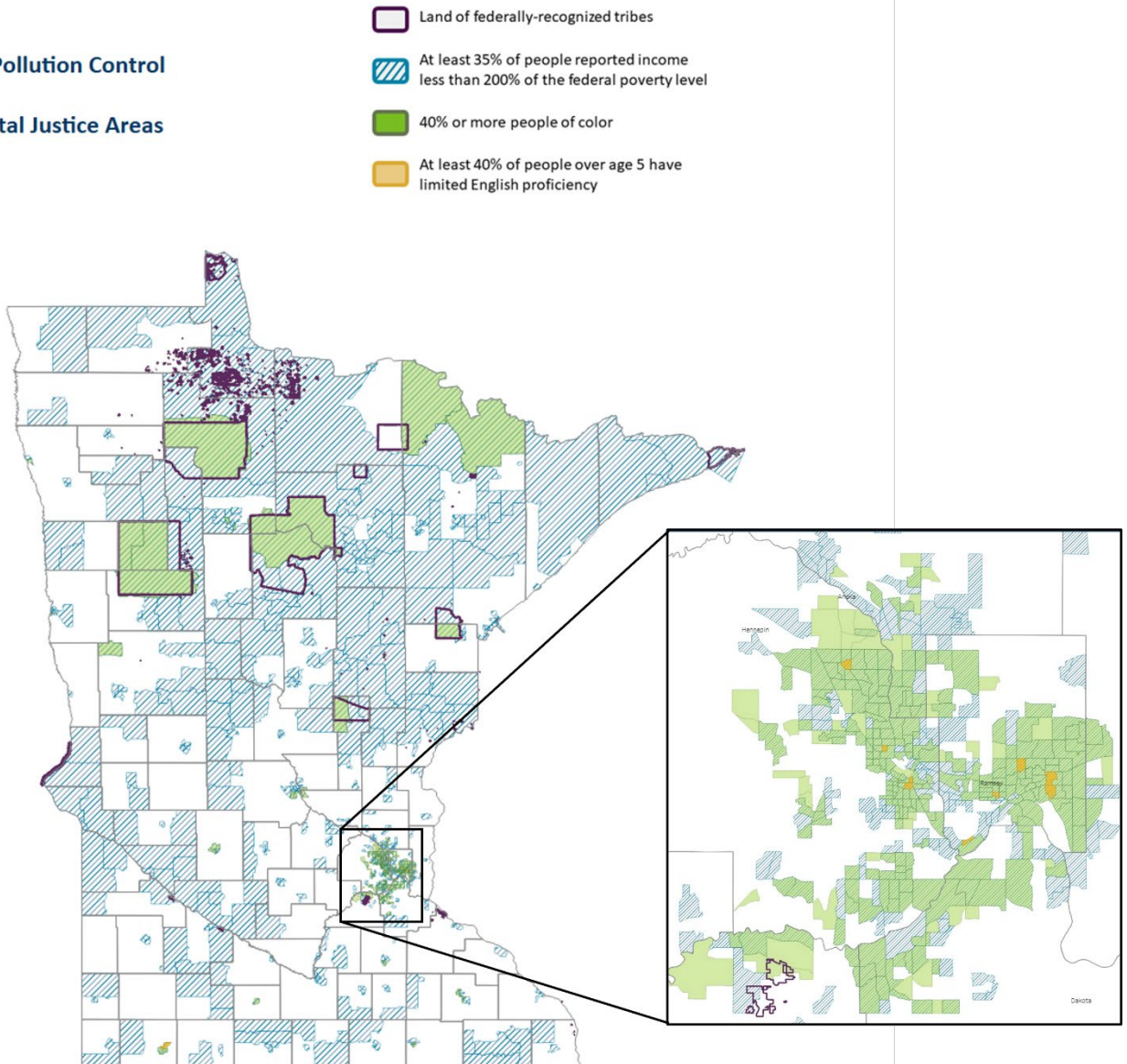


Figure 8: Minnesota areas of concern for environmental justice

Minnesota Pollution Control Agency
Environmental Justice Areas



An [interactive version of this map](#) is available on the MPCA's website.

Reduce exposures to harmful air pollutants and maximize health benefits

The MPCA will continue to use air quality modeling and health data to consider public health in choosing projects to fund. Agency modeling indicates that diesel exhaust is a primary driver of health risks from outdoor air pollution in the state. We use modeled air concentrations of NO_x and PM_{2.5} to score submitted projects based on where a vehicle replacement or EV charging station will operate. We also score projects using MDH data on the prevalence of certain air pollution-related health outcomes in the area where a project will operate, such as asthma-related hospitalizations. In Phase 3, we will continue to work with MDH on the public health scoring criteria used to select projects to fund.

What Minnesotans told us: Many in our public meetings said we should focus on reducing people’s exposures to diesel pollution and target funding in areas where people experience disproportionate levels of health outcomes related to air pollution.

Balance cost-effectiveness with other program goals

The MPCA will require applicants, including governments, to match settlement funds towards the cost of new vehicles. Cost-effectiveness will also be considered in project selection. We will strive to leverage other funding opportunities when possible.

What Minnesotans told us: We heard that we should continue striving to operate a cost-effective program that focuses on achieving real emissions reductions. Minnesotans also told us that we should achieve other important benefits with these funds. For instance, Minnesotans want funds to be used to replace school buses, which are important for reducing children’s exposures to air pollution; however, school buses do not emit as much overall pollution as some other vehicles, such as trucks. While school bus replacements might not be the most cost-effective funding option, the opportunity to reduce exposures to children—a population particularly vulnerable to the effects of air pollution—makes them an important investment option. Therefore, cost effectiveness will be balanced with our other important goals.

Economic benefits

The VW settlement will not only benefit our air quality, but also our economy. Phase 3 projects will invest an anticipated \$5.6 million in Greater Minnesota and \$8.4 million in the Twin Cities metropolitan area and have far-reaching benefits beyond how the settlement funds are spent.

The reduction of vehicle emissions resulting from Phase 3 spending should contribute to improved air quality and related health outcomes, including fewer:

- Asthma attacks
- Respiratory symptoms
- Work-loss days
- Hospital admissions for respiratory and cardiovascular issues
- Non-fatal heart attacks
- Premature deaths

According to the EPA’s 2018 report “Technical Support Document Estimating the Benefit per Ton of Reducing PM_{2.5},” each dollar invested in clean diesel projects generates between \$11 and \$30 in public health benefits.

These investments also mean jobs for Minnesotans. New Flyer manufactures transit buses at their facility in St. Cloud, producing clean electric, hybrid, diesel, and CNG buses used around the region. Replacing engines in large equipment such as boats, locomotives, and construction equipment can take weeks or months of labor; a project may require between \$60,000 and \$200,000 to employ mechanics with the appropriate skills. In addition, companies in Minnesota such as ZEF Energy, ChargePoint, Werner Electric, and Hunt Electric install, operate, and maintain EV charging stations.

The MPCA’s previous experience with the DERA demonstrated that heavy-duty vehicle replacements both reduce communities’ exposures to harmful diesel pollution and benefit industries that rely on heavy equipment. Vehicle efficiency improvements reduce maintenance and operation costs for grant recipients, who can then invest the savings elsewhere. For instance, a 2016 DERA grant replaced two school buses in St. Louis County, which reduced

emissions from those buses by 95% and saved the school district more than \$21,000 a year in maintenance and fuel costs.

EVs have lower fuel and maintenance costs than traditional models over the life of the vehicles. In addition, EV prices are decreasing, and the used market is expanding, making them an affordable choice for more people. Installing more charging stations around the state will make EVs even more accessible to all Minnesotans. Restaurants, shops, and tourist destinations will benefit from hosting charging stations when EV drivers eat, shop, or explore while they wait for their cars to charge up.

Public input

The MPCA sought public input early in the process to help develop our plan, and we have made every effort to create a plan for Phase 3 that reflects the input and needs of Minnesotans. There were additional opportunities for public review, comment and input built into the process as we finalized this plan.

The MPCA's VW settlement website (www.pca.state.mn.us/vw) offers details of the settlement, information on public meetings and other ways that were available to provide input, and data on the progress toward our 10-year goals. For more on our public engagement and what we heard, see Appendices 4 and 5.

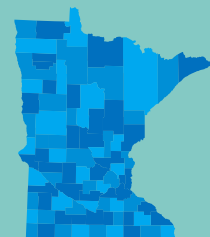
Ongoing input

We will continue to engage with the public during the entirety of this program. We intend to solicit ideas and improve the program as we learn more about what is working in Minnesota. We will use our public website, email lists, and social media to keep the public informed of any projects and processes that may be of interest to them, as well as to receive ideas and suggestions to help improve the program.

February 2024

Minnesota's Volkswagen Settlement Beneficiary Mitigation Plan Phase 3 (2024 - 2027) Appendices

Minnesota's plan for using funds from the national Volkswagen settlement.



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This report is available in alternative formats upon request, and online at www.pca.state.mn.us/vw.

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Appendices

Appendices	2
Appendix 1: Phase 1 and Phase 2 summary	3
Emission reductions.....	4
Statewide benefits.....	5
Helping people and places disproportionately affected by air pollution	6
Reducing exposure to harmful air pollutants and maximizing health benefits	7
Balancing cost effectiveness with other goals.....	8
Appendix 2: Background on the Volkswagen settlement	10
The violation	10
Impacts of the violation.....	10
The settlement.....	11
Eligible vehicle and equipment types.....	11
Appendix 3: Air quality in Minnesota	13
Vehicles and air pollution	13
Disproportionate burdens of air pollution.....	16
Appendix 4: Public and stakeholder engagement	17
Public meetings	17
Written comments.....	17
Stakeholder meetings.....	17
Tribal engagement.....	18
Presentations and open-door policy	18
Online opportunities	18
Public Outreach Summary.....	19
Appendix 5: What matters to Minnesotans	21
General themes	21
Pollutants of concern.....	21
Appendix 6: Emission reduction calculation methods	23
Vehicle and equipment replacements.....	23
Electric vehicle charging stations.....	24
Appendix 7: Glossary of terms	25
Appendix 8: Eligible mitigation actions and expenditures	26
Volkswagen Settlement Appendix D-2	26

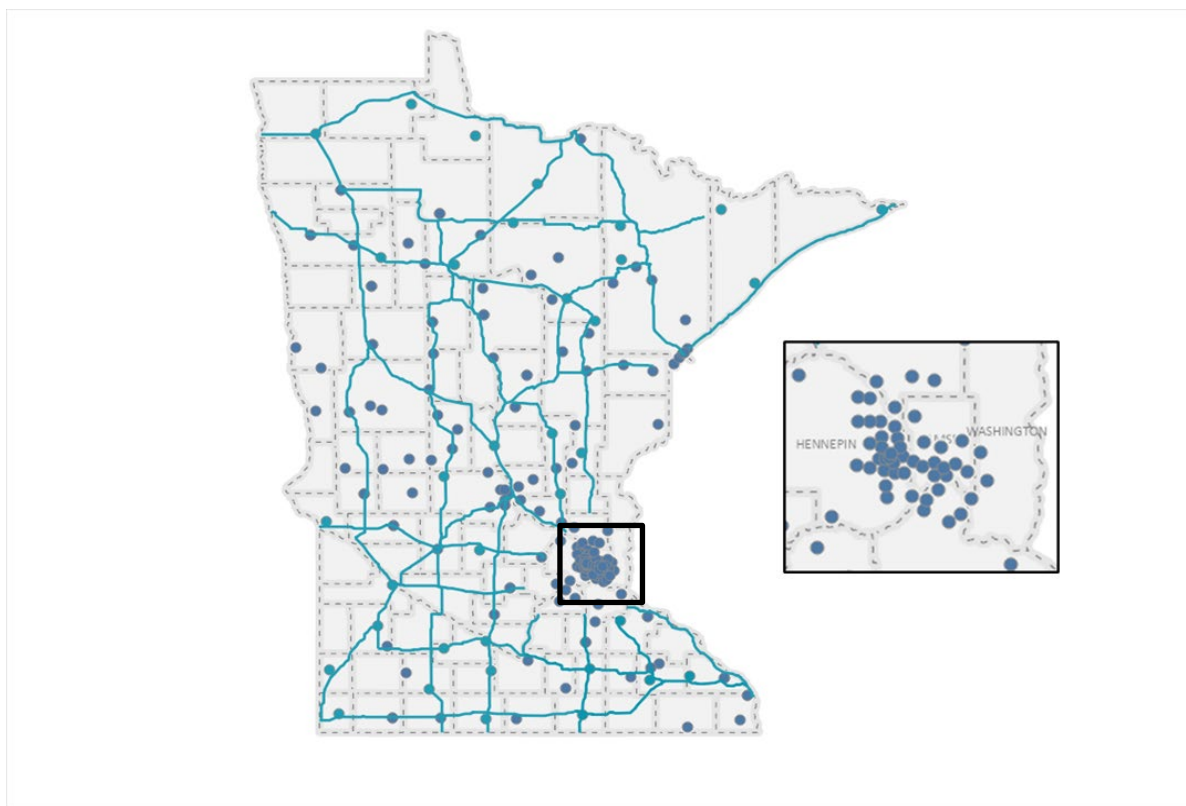
Appendix 1: Phase 1 and Phase 2 summary

As we wrap up Phase 2 of the Volkswagen (VW) settlement program, we are evaluating data collected from each grant program and our overall progress in meeting the 10-year goals developed to guide the program and its investments.

So far, Phase 1 and Phase 2 funds have been awarded to replace 475 pieces of diesel equipment with less-polluting models, and to install 103 new electric vehicle (EV) charging stations across the state¹. Figure 1 shows the locations of these funded projects by their primary ZIP codes of operation, and also shows the major roadway corridors along which 60 EV fast chargers will be installed. There are four Phase 2 grant rounds still in progress: Electric Vehicle Level 2 Charging Stations, Clean Heavy-Duty On-Road Equipment, Electric School Bus, and Clean Heavy-Duty Off-Road Equipment. For reporting and forecasting purposes, we have provided estimates of anticipated results from these programs.

We are committed to transparency and making our data accessible to the public. Visit www.pca.state.mn.us/vwprogress to explore our interactive data tool and view progress toward our program goals.

Figure 1: Phase 1 and Phase 2 funded project locations and EV charging station highway corridors.

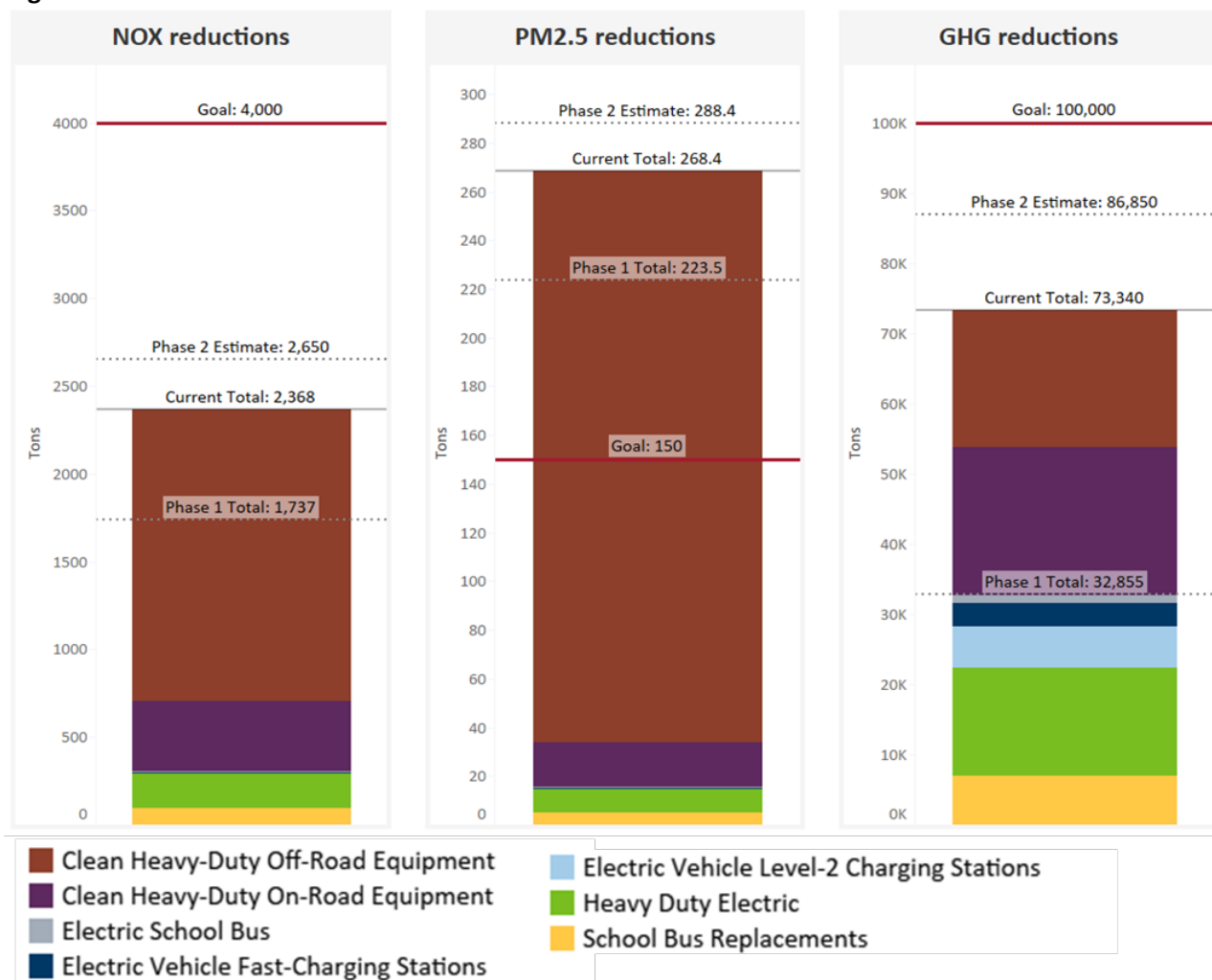


¹ The MPCA anticipates funding an additional 48 vehicle replacement projects and 88 EV charging stations by the end of Phase 2 through the four remaining grant programs that have yet to be fully allocated.

Emission reductions

Figure 2 shows the cumulative emissions reductions achieved from Phase 1 and Phase 2 projects compared to the 10-year program goals. The graph also identifies expected reduction estimate totals from the four Phase 2 grant rounds that have yet to be completed. Total reductions (including the estimates from the incomplete grant rounds) for nitrogen oxides (NO_x) are a little over halfway to the goal of 4,000 tons, fine particulates (PM_{2.5}) reductions have far exceeded the goal of 150 tons, and greenhouse gases (GHG) reductions are 87% of the way to the goal of 100,000 tons. NO_x reductions have been smaller in Phase 2 compared to Phase 1 (1,737 tons and 913 tons, respectively). This is largely due to the fact that there were five locomotive idle-reduction projects in Phase 1 with significantly high NO_x reductions and no idle-reduction projects in Phase 2. Table 1 summarizes the funded projects and amount of each pollutant reduced by each grant program to date.

Figure 2: Emissions reductions totals*



*Reported reductions in NO_x and PM_{2.5} are those from vehicle operation (tailpipe) emissions, while reductions in GHGs are those from well-to-wheels (upstream and vehicle operation) emissions. Vehicle operation emissions of PM_{2.5} come from fuel combustion and tire and brake wear (TBW). Well-to-wheels emissions are useful for comparing the full lifecycle GHG emissions from different fuels, while vehicle operation emissions are useful for comparing local effects of NO_x and PM_{2.5}.

Table 1: Summary of Phase 1-2 grant programs and emissions reductions (as of September 2023*)

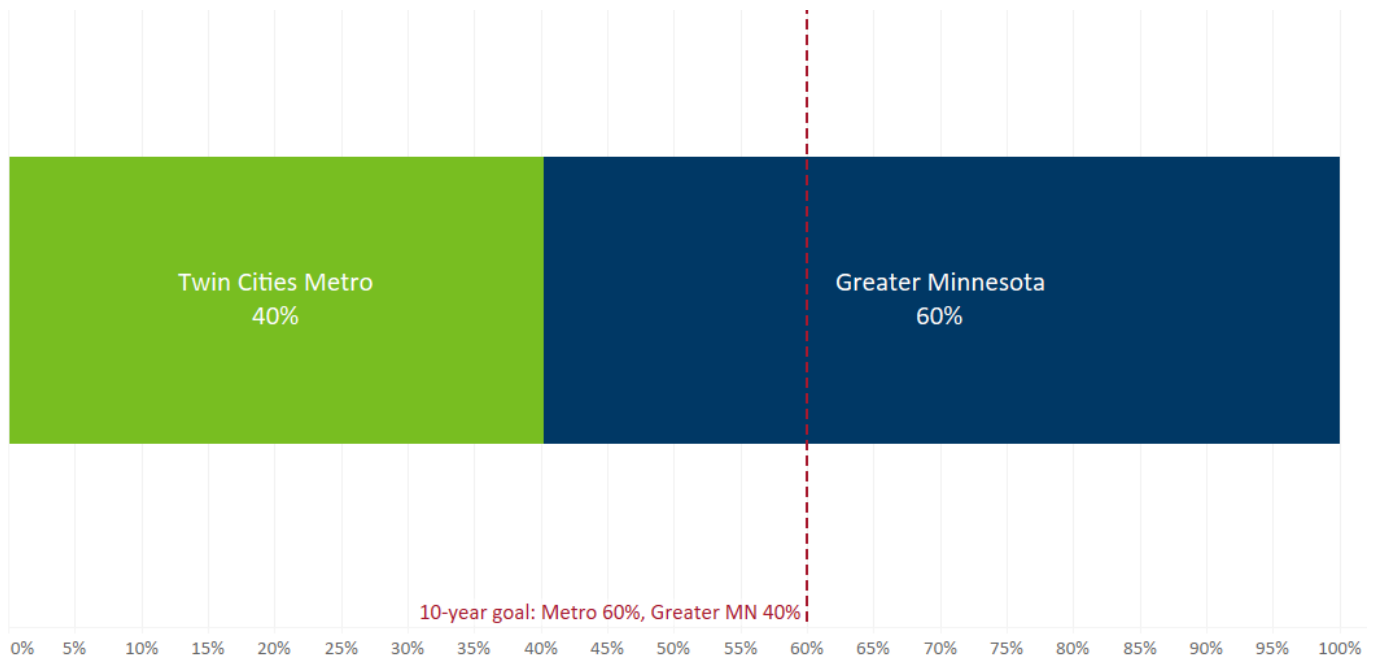
Grant programs (2018--2023)	Number of projects	Emissions reductions (tons)			Settlement funds allocated
		NO _x	PM _{2.5}	GHGs	
Clean heavy-duty on-road vehicles*	157 replacements (8 electric, 4 CNG, 145 diesel)	398.26	18.31	21,027.79	\$5,445,425
Clean heavy-duty off-road equipment*	51 projects (40 diesel, 6 electric, 5 locomotive idle reduction)	1,664.21	234.76	19,630.89	\$4,311,743
School bus replacements	227 replacements (139 diesel, 88 propane)	93.16	4.94	7,050.92	\$4,637,300
Electric school bus*	8 electric	5.44	0.29	1,120.10	\$2,434,278
Heavy-duty electric vehicles	32	205.11	10.04	15,255.09	\$7,280,062
Electric vehicle fast- charging stations	60 (along 11 major highway corridors)	0.78	0.03	3,312.76	\$4,405,539
Electric vehicle Level 2 charging stations*	43 dual port charging stations	1.38	0.06	5,942.42	\$355,534
Total: emission reductions and dollar amounts of completed programs	578 (475 vehicle / equipment replacements, 103 EV chargers)	2,368	268.4	73,340	\$28,869,881

*Excludes data from in-progress Phase 2 grant rounds

Statewide benefits

Of all the funds awarded so far, 40% have been invested in the Twin Cities metro area, and 60% of the funds have been invested in Greater Minnesota. The overall 10-year program goal is to invest 60% in the metro area and 40% in Greater Minnesota.

Figure 3: Percent of funds awarded, by location.



Of the 578 projects funded so far, 292 are in Greater Minnesota, where they will reduce 1,885 tons of NO_x and 229 tons of PM_{2.5} vehicle operation emissions. The other 286 funded projects in the metro area will reduce 483 tons of NO_x and 39 tons of PM_{2.5} vehicle operation emissions.

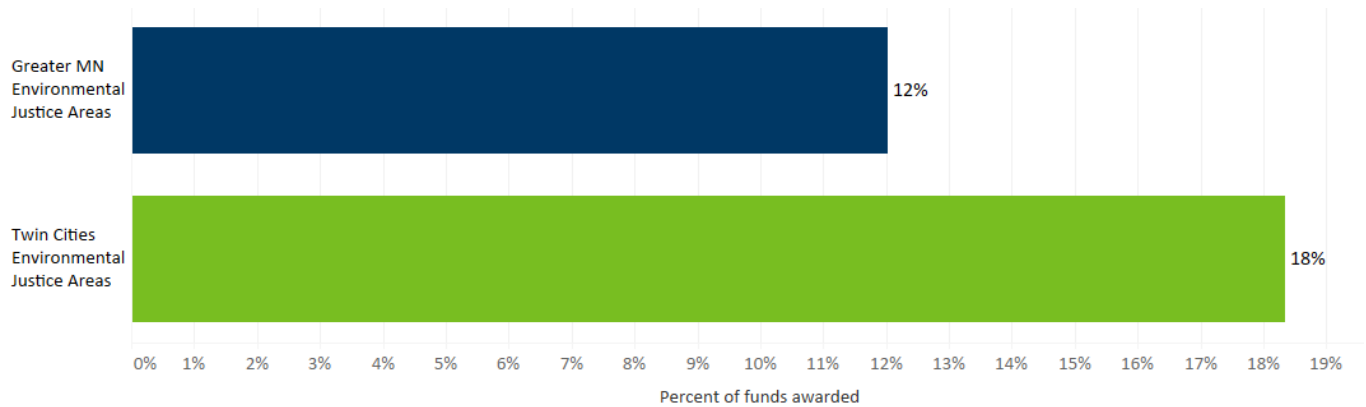
Helping people and places disproportionately affected by air pollution

The MPCA modeling shows that low-income people and people of color are at greater risk from air pollution. Environmental justice means that pollution does not harm one group of people more than another, that all Minnesotans benefits from the same level of environmental protection, and that everyone has equal opportunity to participate in decisions that may affect their environmental health.

As part of the grant application process, applicants report the ZIP code (for on-road vehicles) or address (for off-road and electric vehicle charging stations) of where their equipment will operate. For on-road vehicle grant programs, the MPCA scores a project for environmental justice benefits based on what percent of the project's ZIP code is made up of areas of concern for environmental justice. Funds awarded to projects that will operate in ZIP codes with 50% or more environmental justice areas are counted toward our goal. Funds awarded to projects that will operate in ZIP codes of less than 50% environmental justice areas are not counted toward our goal. For off-road equipment and electric vehicle charging station grant programs, the MPCA scores a project for environmental justice benefits based on whether the address of where the equipment operates is within 1 mile (for off-road equipment) or 0.5 miles (for charging stations) of an area of concern for environmental justice. Only projects within these distances of an area of concern for environmental justice will count toward our goal.

Of all the funds awarded so far in Phase 1 and Phase 2, 18% of them were invested in areas disproportionately affected by air pollution in the Twin Cities metro area and 12% were invested in such areas in Greater Minnesota. Our goal is to invest 20% of total funds in areas of concern for environmental justice in the Twin Cities metro area, and 20% in such areas in Greater Minnesota.

Figure 4: Percent of Phase 1-2 funds invested in ZIP codes made up of at least 50% environmental justice areas.



Phase 1 and Phase 2 projects in environmental justice areas will help to reduce 135 tons of NO_x and 11 tons of PM_{2.5} in metro areas disproportionately impacted by air pollution, and 86 tons of NO_x and 6 tons of PM_{2.5} in such areas in Greater Minnesota.

Reducing exposure to harmful air pollutants and maximizing health benefits

Reduced exposure

The MPCA uses modeled air concentrations of NO_x and PM_{2.5} to score applications based on the ZIP code where a vehicle replacement or EV charging station will operate. Models indicate that these primary pollutants from diesel exhaust pose significant health risks from outdoor air pollution in Minnesota. Projects located in areas of higher concentrations of NO_x and PM_{2.5} received a higher score in this category.

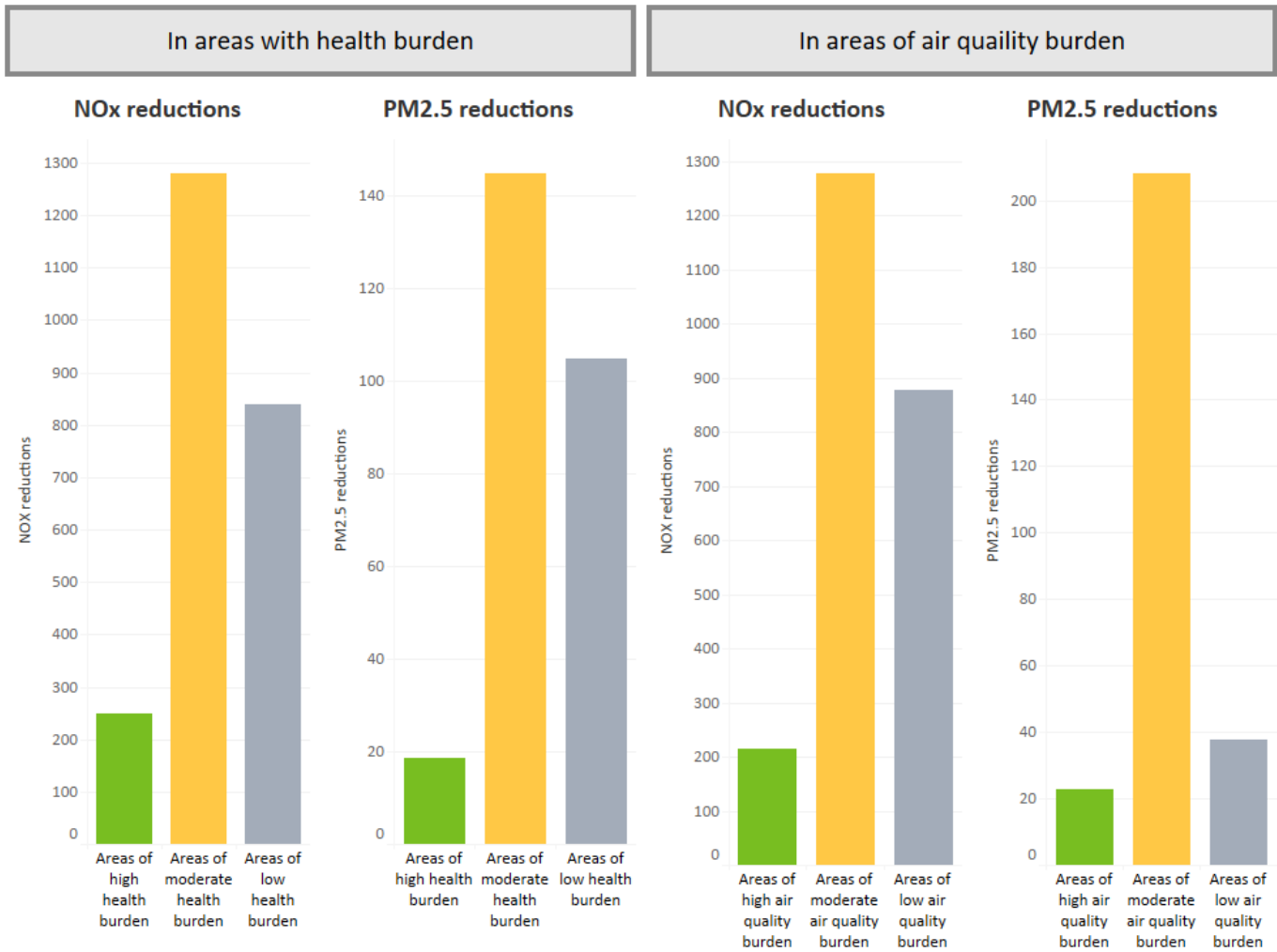
In areas of moderate to high modeled air pollutant burden, Phase 1 and Phase 2 projects are estimated to reduce 1,490 tons of NO_x and 231 tons of PM_{2.5} vehicle operation emissions.

Health benefits

The MPCA also scores applications using Minnesota Department of Health (MDH) data on rates of asthma emergency department visits, heart attacks, premature births, and obesity to identify areas of the state where these health conditions are more prevalent. Air pollution can influence health in many ways, and these conditions represent how exposure to vehicle emissions can trigger or worsen health impacts. Projects that operate in ZIP codes with higher rates of these health conditions received a higher score in this category.

In areas with moderate to high health burden, Phase 1 and Phase 2 projects are estimated to reduce 1,530 tons of NO_x and 163 tons of PM_{2.5} emissions.

Figure 5: Phase 1-2 reduced exposure and health benefits.

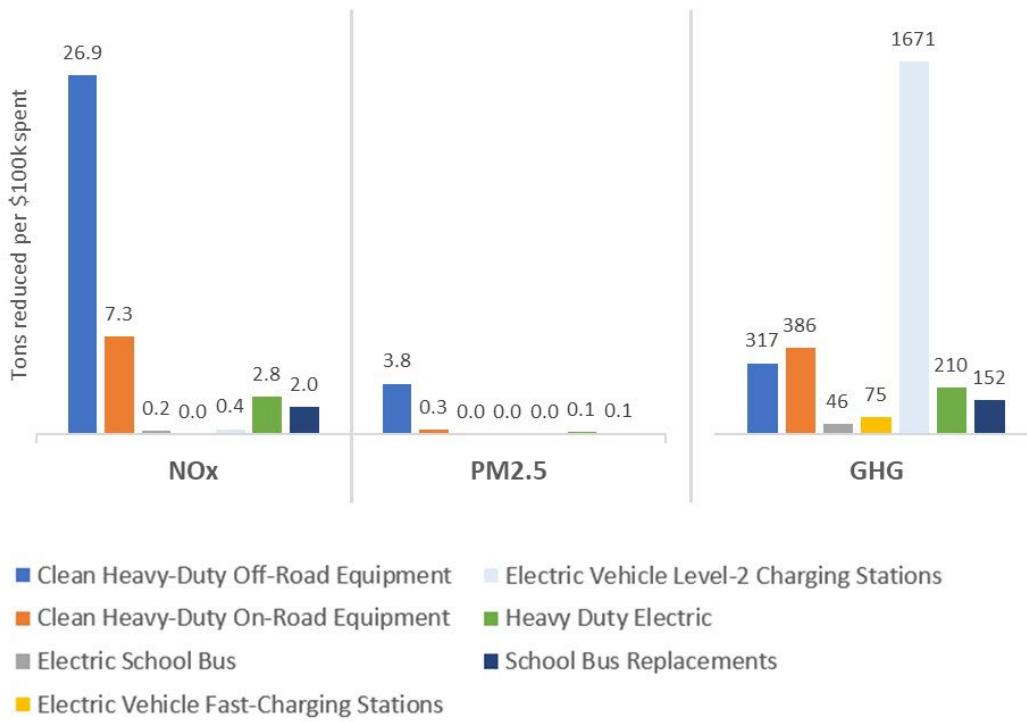


Balancing cost effectiveness with other goals

The MPCA has heard consistently that we should strive to operate a cost-effective program that focuses on achieving real emissions reductions as intended by the settlement, and that we should also achieve other important benefits with the funds. Cost-effectiveness is considered and scored during project evaluations among a variety of other factors.

Figure 6 shows the overall cost-effectiveness of each grant program in reducing each of the three pollutants in Phase 1 and 2. The cost-effectiveness of off-road equipment replacements includes additional grant funds leveraged from the EPA’s Diesel Equipment Replacement Act (DERA). These additional funds allowed the off-road program to fund more projects than would be possible with settlement funds alone.

Figure 6: Cost-effectiveness of emissions reductions by grant program (tons reduced per \$100k spent)



Appendix 2: Background on the Volkswagen settlement

The violation

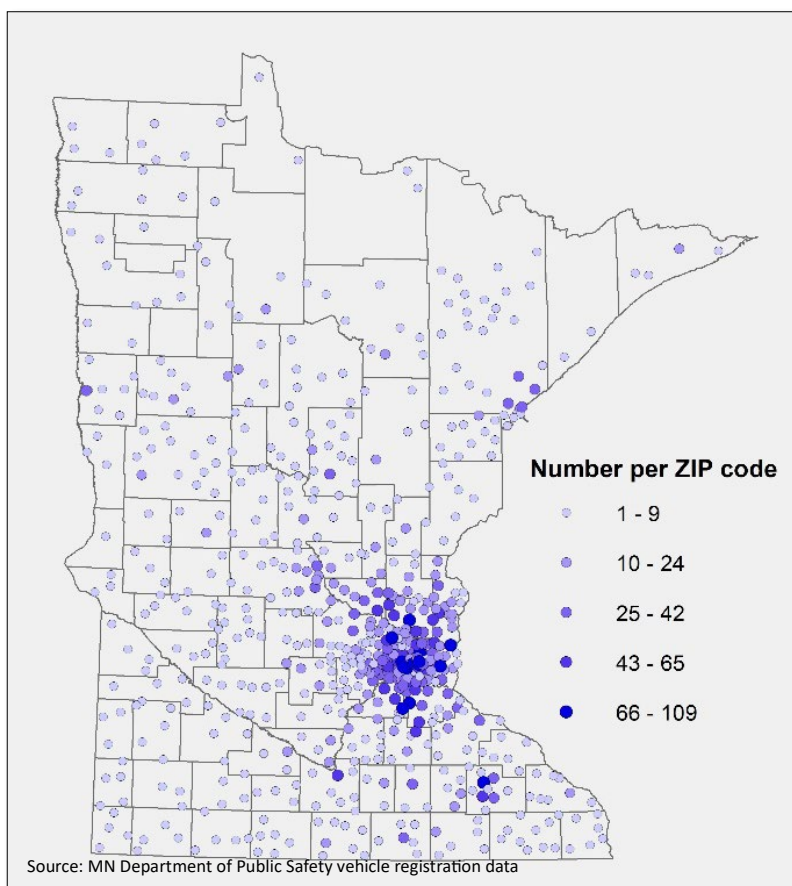
In 2015, the federal government announced it had discovered that VW was violating Clean Air Act emission standards for nitrogen oxides (NO_x) in its model year 2009-2016 diesel cars and sport utility vehicles and cheating on emissions tests to hide the violations. The violating vehicles contained software that would turn on the NO_x emissions controls under standard testing conditions but would then switch them off during normal driving. This software made it look like the VW vehicles were complying with the emissions standards, when they were not. VW chose to cheat because they had not developed the necessary technology to achieve both the fuel efficiency they desired, and the emission control levels they were legally obligated to achieve. The VW diesel engines were found to be emitting more than 30 times the allowable quantity of NO_x under the tailpipe NO_x emissions standards over a seven-year period.

Impacts of the violation

Nationwide, VW sold approximately 580,000 violating vehicles and about 9,300 of those were sold in Minnesota. Approximately 60% of these vehicles were registered in the Minneapolis-St. Paul metropolitan area and 40% were registered in Greater Minnesota. The MPCA estimates that the violating vehicles in Minnesota have already emitted and will continue to emit approximately 600 tons of excess NO_x pollution over their lifetime.

NO_x can cause lung irritation and reduce the ability to fight off respiratory infections. Beyond its direct health effects, NO_x is a major component of ground-level ozone (also known as smog), which can trigger respiratory and lung problems such as asthma and bronchitis. Ozone is a pollutant of concern for Minnesota because of its health impacts and also because monitored concentrations of ozone in the state are close to, while not currently exceeding, federal air quality standards. NO_x also reacts with other chemicals to contribute to acid rain, reduced visibility, and nutrient pollution in water.

Figure 7: Violating VW diesel vehicles registered in Minnesota.



The settlement

The federal government took VW to court, and they reached a settlement, finalized and signed by all parties on October 2, 2017. The settlement requires VW to pay \$2.9 billion over 10 years into an environmental mitigation trust for states, tribes, and Puerto Rico. These funds are to be used to mitigate the excess emissions caused by these violating vehicles. States will receive funds based on the number of violating vehicles they have registered in their borders. The money for states will be placed into a trust fund and managed by Wilmington Trust of Wilmington Delaware. Minnesota will receive \$47 million of these funds.

The settlement also allocates \$55 million for federally recognized tribes. The 11 federally recognized tribes within Minnesota's borders are eligible to apply for a portion of this funding. The MPCA is working to support the local tribes in their application process and will collaborate as possible to bring air quality benefits to all Minnesotans. Local tribes are also eligible to apply for funding from the state.

The settlement also requires VW to set aside \$10 billion to repurchase and/or repair the violating cars and SUVs. VW must also spend \$2 billion nationwide on developing electric vehicle (EV) charging stations. Both of these programs are managed by VW and are not addressed in Minnesota's state plan.

Eligible vehicle and equipment types

Settlement funds are designated for mitigation efforts to reduce NO_x. The settlement outlines a very specific list of vehicle and equipment types that are potentially eligible for replacement funding through this program. Most eligible project types would replace or retrofit an old, heavy-duty diesel vehicle or piece of equipment, or replace an old engine with a new engine in the original equipment body. An old diesel vehicle can be replaced with new diesel technology or other fuel technologies, such as electricity, propane, or natural gas. The old equipment must be scrapped. The funds would pay for part of the overall cost of these projects and the project proposer would need to fund a portion of the project as well.

The settlement focuses on replacing old diesel equipment with new equipment because heavy-duty technology has seen a revolution in recent years. Old diesel trucks and other heavy-duty equipment emit significantly larger amounts of NO_x and other pollutants compared with modern technology. Therefore, replacing old diesel equipment with modern equipment can significantly reduce emissions of harmful pollutants into our air.

Figure 8: Improvements in heavy-duty diesel vehicle technology.

One old truck can pollute more than 30 new diesel trucks

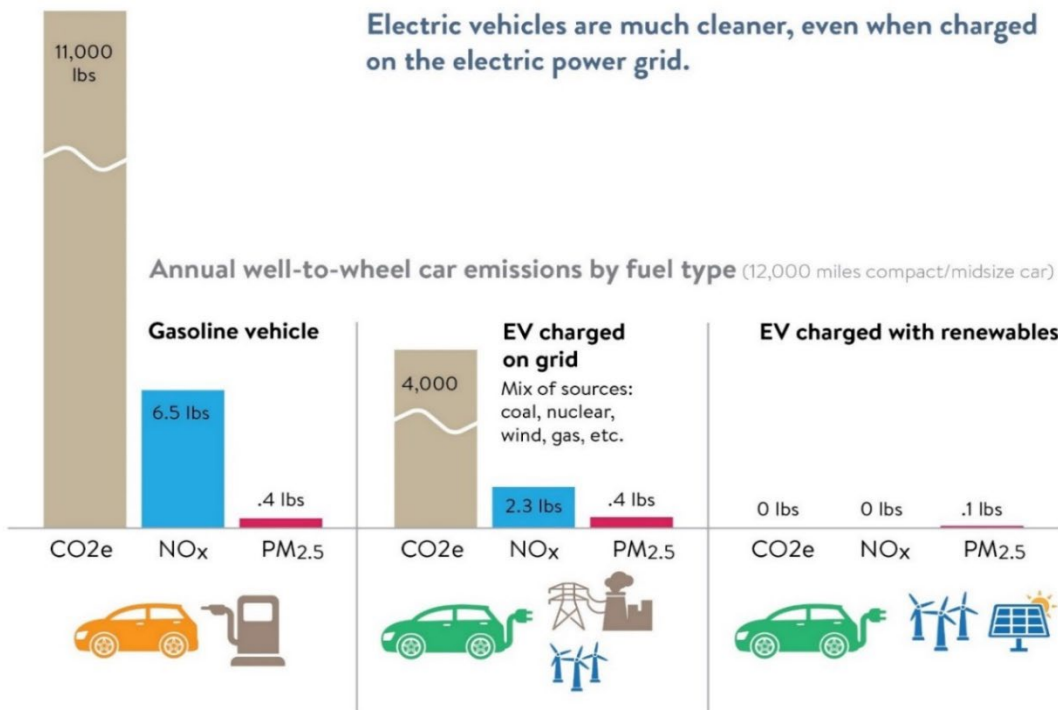
Depending on factors such as the age of the truck, how far it travels, and how much it idles, one old diesel truck can produce as much particle pollution as 25-50 modern trucks under the same operating conditions.



Source: EPA's Diesel Emissions Quantifier

The settlement also allows for up to 15% of the funds to be spent on EV charging stations. The settlement allows this because EVs have zero tailpipe emissions, and fewer overall emissions compared with gasoline-powered cars. This is especially true if EVs are charged with renewable energy, such as wind or solar.

Figure 9: Emissions from EVs and gasoline vehicles in Minnesota



Source: MOVES2014a and 2014 EPA National Emissions Inventory Database

A full list of vehicle and equipment types eligible for replacement, with the precise descriptions provided in the settlement, is included in Appendix 10. The settlement does not allow states to spend funds on anything beyond this list of approved vehicle and equipment types. Therefore, no funds can be spent on projects such as replacing light-duty cars or trucks. No funds can be spent on infrastructure for alternative fuels except EV charging.

Appendix 3: Air quality in Minnesota

Overall, air quality in Minnesota has been improving over the past 20 years and Minnesotans expect the air to be clean, clear, and healthy for all to breathe. Minnesota currently meets all National Ambient Air Quality Standards for common pollutants that are considered harmful to public health and the environment. However, scientific research has found no evidence of safe thresholds below which health impacts should be assumed to be zero. Even moderate and low levels of air pollution can have meaningful impacts on people's health.

Diesel pollution contributes to both ground-level ozone formation and fine particle concentrations in our air, two pollutants of most concern in Minnesota. In a joint 2015 report on the health impacts of air pollution, MPCA and MDH found that ground-level ozone and fine particle air pollution contribute to about 2,000 deaths, 400 hospitalizations for respiratory and cardiovascular problems, and 600 emergency-room visits every year in the Twin Cities metro area. In a similar 2019 report, the agencies found these pollutants contribute to up to 4,000 deaths, over 500 hospitalizations, and over 800 emergency-room visits annually across the entire state.²

The studies also indicate that everyone's health can be affected by air pollution, but some sub-populations are more vulnerable than others, including lower-income Minnesotans, people of color, elderly people, children with asthma, and people with lower access to quality health care and health insurance. Improvements in air quality at any level can provide significant public health benefits.

Vehicles and air pollution

Diesel vehicles emit a variety of pollutants. Three of the pollutants of primary concern from diesel vehicles are:

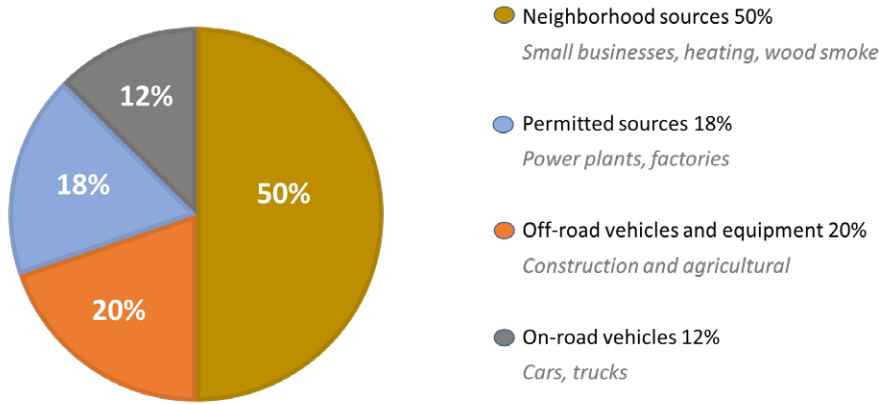
- **Nitrogen oxides (NO_x):** This pollutant contributes to the formation of ground-level ozone. It causes lung irritation and can diminish the body's ability to fight respiratory infections. Violating VWs emitted excess quantities of NO_x into the air.
- **Fine particles (PM_{2.5}):** This pollutant is associated with the most health risks from diesel exhaust, including increased risk of heart attacks, asthma attacks, and other respiratory issues. Diesel fine particles are also likely carcinogens, or cancer-causing substances.
- **Greenhouse gases (GHGs):** These pollutants warm our planet and cause climate change.

On-road vehicles make up approximately a quarter of all air pollution emissions in Minnesota.

Off-road vehicles and equipment, which includes, among other things, construction and other heavy-duty equipment, account for another 20% of overall emissions in the state.

² MDH, MPCA, "Life and Breath: How air pollution affects health in Minnesota", 2019; MDH, MPCA, "Life and Breath: How air pollution affects health in the Twin Cities", 2015; available at: <http://www.pca.state.mn.us/air/life-and-breath-report>.

Figure 10: Air pollution sources by type in Minnesota, 2020



Aggregate emissions NO_x, SO₂, VOC, PM_{2.5}
Source: MPCA 2020 Emissions Inventory

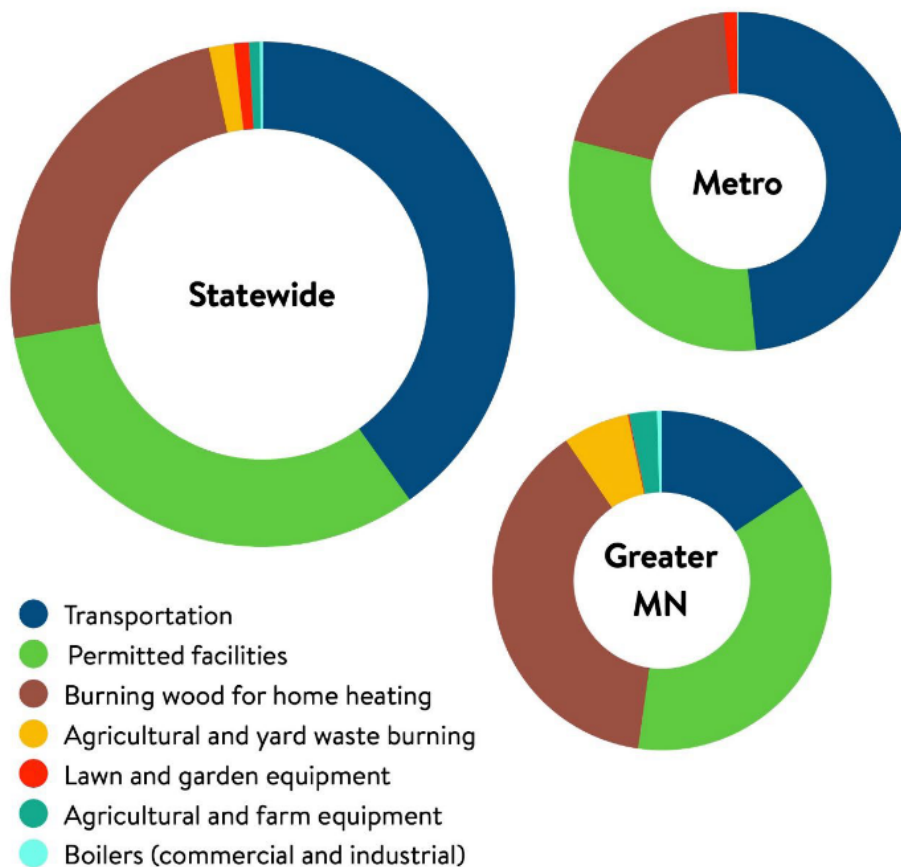
Air Pollution Sources

When we compare the sources that contribute to air pollution risk, three sources dominate: transportation (includes traffic, planes and airport equipment, railyards and trains, commercial boats and ships, and recreational vehicles and boats), permitted facilities, and burning wood for home heating. These three sources are so dominant that two out of every three Minnesota residents live in an area where these three sources are the top contributors to air pollution risks.

Comparisons of source contributions to air pollution risk statewide, in the Twin Cities metro, and in Greater Minnesota. The sources that contribute the most to air pollution risk are transportation, permitted facilities, and burning wood for home heating. Transportation has a notably outsized contribution in the Twin Cities metro area compared to Greater Minnesota.

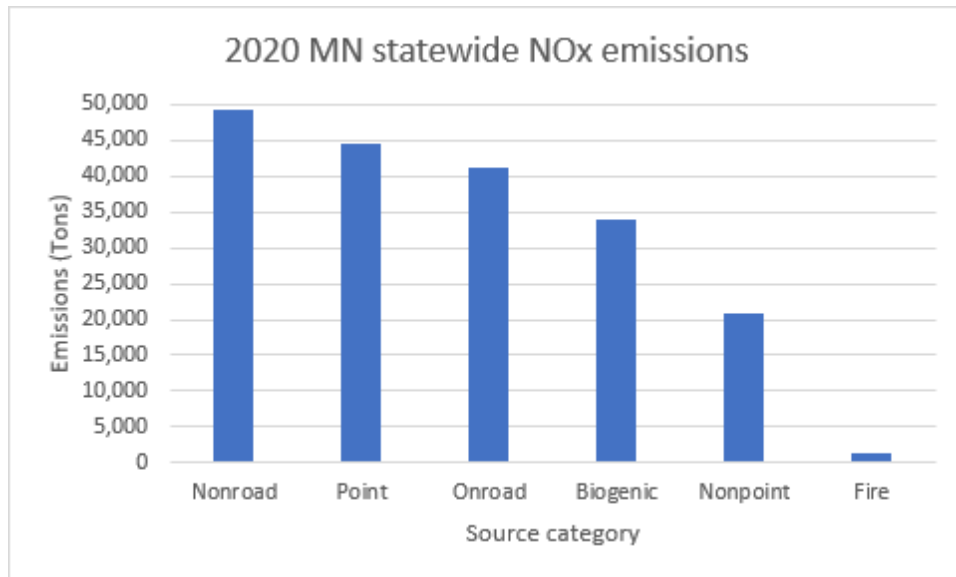
Figure 11. Air pollution risk sources

Air pollution risk sources in Minnesota



In Minnesota, on-road and off-road vehicles are the largest source of NO_x pollution.

Figure 12: NO_x emissions by source type in Minnesota, 2014 (Source: Minnesota 2020 emissions inventory)



The MPCA models health risks associated with air pollution to better understand the sources of exposure and to prioritize our work. The MPCA modeling indicates that diesel exhaust is a primary driver of risk from outdoor air

pollution in our state. Figure 13 shows the health risks associated with diesel exhaust in Minnesota. Health risks from diesel exhaust are higher close to roadways.

This map shows relative health risks for diesel exhaust from all vehicle categories. The darker brown colors indicate higher relative risk compared with the lighter green areas.

Heavy traffic and busy roads are significant and widespread sources of pollution in our communities.

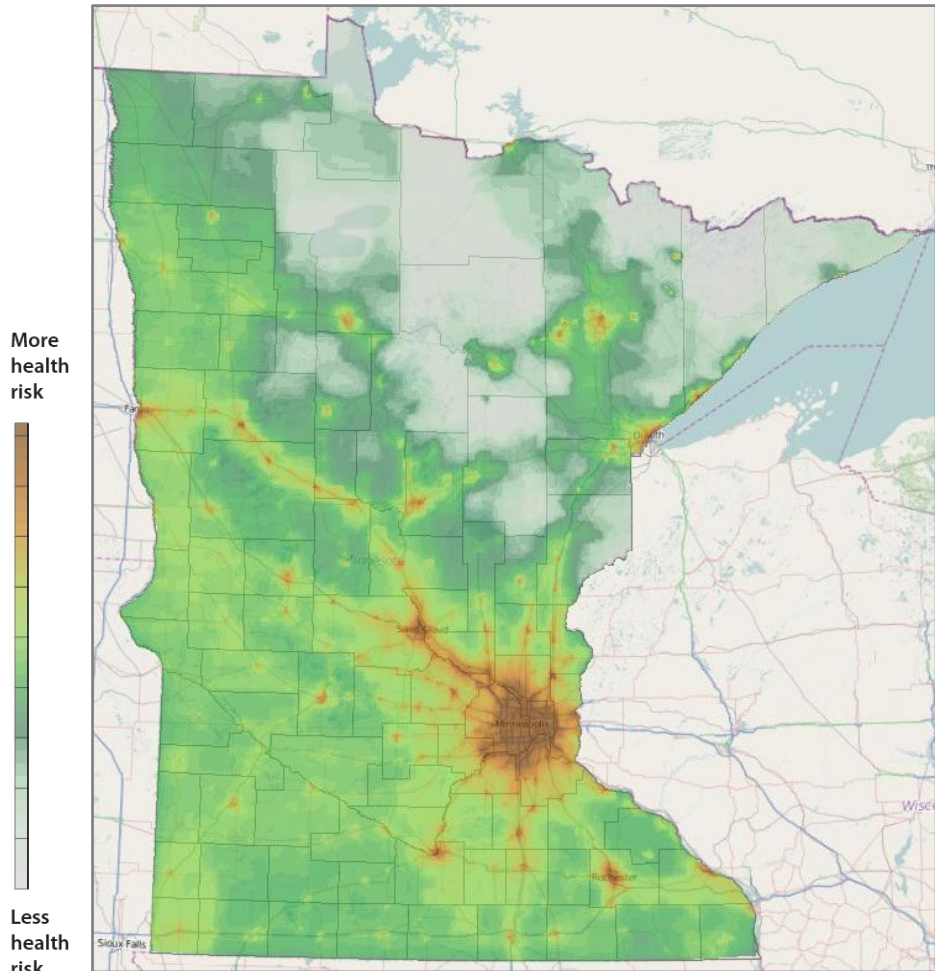
Disproportionate burdens of air pollution

Our most vulnerable populations often suffer a disproportionate burden of health impacts from vehicle emissions. The MPCA research shows that higher concentrations of harmful air pollutants occur within 300 meters of busy roadways. A 2015 study by MPCA researchers found that while people of color and lower income

individuals tend to own fewer vehicles, do less driving, and use public transit more often than other groups, they are also exposed to higher levels of traffic-related pollution. This is because busy roadways—and associated air pollution—often run through communities of color and lower income communities. Many of these communities bear a disproportionate burden of traffic-related health impacts even as they contribute less to vehicle pollution overall than other groups.

The MPCA partners with MDH to better understand the health effects of air pollution on Minnesotans. Our research, published in the Life and Breath Reports (2015, 2019, 2022) found that air pollution continues to disproportionately impact some groups over others. The highest estimated rates of air pollution-related death and disease are found in neighborhoods with the largest percentage of Black, Indigenous and People of Color (BIPOC), low-income and uninsured residents, and people who live with a disability.

Figure 13: Health risks from diesel exhaust (all source categories)



Source: MPCA's MNrisks statewide air pollution risk model. Explore interactive maps on our website (<https://www.pca.state.mn.us/air/mnrisk-pollutant-priorities>).

Appendix 4: Public and stakeholder engagement

The MPCA is committed to using the VW settlement funds in ways that reflect the needs, interests, and input from Minnesotans across the state. We strive to have an open and transparent planning process that includes input from a wide range of Minnesota’s residents. We have actively sought public and stakeholder input to inform this plan and will continue to offer additional opportunities to ensure Minnesotans are heard throughout the 10-year period of the settlement program.

Public meetings

Throughout Phase 1 and 2, the MPCA held public meetings, published our plans online, and solicited comments for each project under the VW program. The MPCA staff provided information and results from our Phase 1 and 2 grant programs to a variety of environmental, citizen, business and industry groups, answered questions, and encouraged participants to provide input on what matters most to them as we look toward Phase 3.

After receiving and reviewing input in person, through web surveys, and in written comments, we took the key issues we heard were important to people and drafted a Phase 3 plan.

The draft Phase 3 plan was released to the public in late 2023 for additional comment. The MPCA solicited input from the public and key stakeholders from across the state to ensure that the plan best reflected the comments and priorities we heard during this process.

Written comments

The MPCA shares information about the settlement and the opportunity to comment on the MPCA’s VW webpage (www.pca.state.mn.us/vw); by emailing those who have subscribed to MPCA’s Volkswagen settlement email list (1,305 members), clean diesel grant opportunities email list (1,514 members), environmental justice email list (4,674 members), and the “Air Mail” air quality regulatory and technical news email list (2,248 members); and by sharing on social media, among other outreach methods.

Throughout Phase 1 and 2, the MPCA received comment letters from the general public and other stakeholders regarding the VW program. Staff reviewed all comments and categorized them based on their content. Key themes included supporting electrification and EVs, considering alternative fuels including propane and natural gas, and promoting environmental justice and health benefits.

Stakeholder meetings

The MPCA also held one stakeholder meeting with interested groups over the summer of 2023. This meeting was open to any person or organization wanting to participate, but most attendees either had related technical expertise or an interest in diving into details of the settlement and grant program planning. Information about the meeting was posted on the MPCA’s website and shared with the VW settlement email list. The participants represented a variety of interests, including:

- Utility companies
- Bus dealers
- School bus operators
- Local governments
- Propane and natural gas industry
- Electric equipment industry
- Businesses
- Trade associations
- Electric vehicle advocates
- Environmental organizations/non-profits

The purpose of this meeting was for MPCA staff to listen and learn from stakeholders about their industries, areas of expertise and what is important to them, and for stakeholders to learn from each other and MPCA staff. Topics discussed at these meetings included:

- Summary of the settlement and eligible project types
- Data and results of Minnesota’s Phase 1 and 2 projects
- Discussion of goals for Minnesota’s program
- Discussion of criteria used to select projects

At all meetings, participants were encouraged to discuss key issues, share their priorities, and provide input on what should be considered in Minnesota’s plan. All agendas, meeting notes, and presentations are included on the MPCA’s VW settlement website.

Tribal engagement

Tribes in Minnesota have access to National Tribal VW Settlement Funds. The MPCA has been working with local Tribes to support them in their applications and will continue to support their work. The MPCA will continue to look for opportunities for collaboration where our interests in reducing diesel pollution align during the implementation of this program.

Presentations and open-door policy

The MPCA has a standing, open offer to attend any group’s meeting or event to discuss the VW settlement, listen to members, and receive input. We also have an open-door policy where any person or group may request a meeting to discuss the settlement and provide input.

The MPCA staff have presented to:

- MPCA’s Environmental Justice Advisory Group
- Clean Air Minnesota
- South Central Minnesota Clean Energy Council
- Minnesota Municipal Utilities Association
- American Lung Association of Minnesota

Organizations that have met with MPCA staff have included:

- Metro Transit
- Department of Veterans Affairs
- Public Utilities Commission
- Department of Commerce
- Metropolitan Council
- Minnesota Department of Health
- American Lung Association of Minnesota

Online opportunities

The MPCA developed user-friendly webpages to share information on the settlement and gather input. Our website is meant to serve as an “online public meeting” where members of the public and the stakeholder group can access information even if they are unable to participate in the in-person meetings. For transparency, our website includes all the data shared at our public meetings in interactive data tools and presentation materials.

We have used an online survey to offer additional opportunities for the public to provide input in a faster, more convenient way. We also used social media including “X”, Instagram, and Facebook to share information about public meetings, open comment periods, grant opportunities, and the settlement in general.

Table 2: Stakeholder meeting participants

Name	Description
Aggregate and Ready Mix Association of Minnesota	Association
Minnesota Propane Association	Association
Minnesota Trucking Association	Association
Hoglund Bus Company	Business
Pan-O-Gold	Business
Orange EV	Business
Minnesota Technical Assistance Program	Business assistance provider
HourCar	Car sharing non-profit
Saint Paul Port Authority	Economic development agency
Great River Energy	Electric utility
Xcel Energy	Electric utility
Minnesota Plug-In EV Owners Circle	EV advocacy group
ChargePoint	EV charging operator
ZEF Energy	EV charging operator
City of Edina	Municipality
City of Saint Paul	Municipality
American Lung Association in Minnesota	Non-profit organization
Environmental Initiative	Non-profit organization
Fresh Energy	Non-profit organization
Great Plains Institute	Non-profit organization
MN350	Non-profit organization
Metro Transit	Public transportation operator
Chaska School District	School district
Minnesota Department of Administration	State agency or department
Minnesota Department of Commerce	State agency or department
Minnesota Department of Health	State agency or department
Minnesota Department of Transportation	State agency or department
Minnesota Department of Veteran Affairs	State agency or department
Minnesota Office of Enterprise Sustainability	State agency or department
Minnesota Public Utilities Commission	State agency or department

Public Outreach Summary

Overall, the MPCA held one stakeholder meeting, shared informational email bulletins, had an open survey hosted on Smart Comment, and sought input from the MPCA’s Environmental Justice Advisory Group and Environmental Justice Advocates.

After receiving and reviewing input in person, through web surveys, and in written comments, we took the key issues we heard were important to people and drafted a Phase 3 plan.

Several trends in feedback emerged and are also summarized in Appendix 5. Many respondents believed we should only be funding electric vehicles and charging infrastructure. Some were adamantly opposed to electric vehicles. Some represented specific industries (propane, firetrucks, busing) and were advocating for their specific area to be funded. Many specific comments related to the funding breakdown presented unrealistic goals under the VW Consent Decree, like only funding electric infrastructure, or only funding new diesel vehicles. We took this feedback from mixed perspectives as a good sign that our continued strategy to fund a variety of projects, from electric to cleaner diesel, is still the right way forward for Phase 3.

Several key issues included:

- Reducing diesel emissions throughout the state, across a variety of vehicle types
- Investing in projects to reduce emissions in disproportionately impacted communities
- Funding EV charging stations and electric replacements for diesel vehicles and equipment
- Continuing to fund electric vehicles, when available
- Continuing to fund cleaner fuel alternatives to old, high emitting diesel vehicles
- Recognizing projects that are cost effective, where appropriate

Appendix 5: What matters to Minnesotans

The MPCA sought to understand the priorities of Minnesotans and incorporate those priorities into the draft plan. This section summarizes key ideas and recommendations we heard throughout Phase 1 and 2. This information was used to help create our Phase 3 state plan draft.

General themes

In the development of the Phase 3 plan, MPCA received input through a variety of meetings, public comment periods, and meeting survey tools. In general, themes have been similar to what we heard in our Phase 1 and 2 outreach efforts. Some of the principal priorities Minnesotans expressed were:

- Achieve significant emissions reductions
- Do so cost effectively
- Include both Greater Minnesota and the Twin Cities metropolitan area
- Look to the long-term future of Minnesota's transportation sector
- Consider many vehicle and equipment types
- Consider many fuel types
- Advance environmental justice
- Reduce exposures and support public health
- Protect vulnerable populations, such as children and the elderly
- Reduce emissions of greenhouse gases
- Support the growth of electric vehicles
- Achieve and report measurable results

Pollutants of concern

During Phase 2 planning, due to the recognized progress made on the NO_x and PM emissions reduction goals in Phase 1, meeting participants (including general public, stakeholders, environmental groups, etc.) asked for an increased focus on GHG emission reductions, while retaining NO_x reductions as intended by the settlement. With Phase 2 NO_x reductions falling short of our projections and GHG reductions already nearing our goal, Phase 3 is designed with renewed focus on NO_x reductions in order to meet our goal. Public feedback for Phase 3 planning has supported this strategy.

Alternative fuels

At many meetings throughout Phase 1 and 2, participants expressed an interest in electric buses and advancing Minnesota's transportation sector towards alternative fuels, and electric buses in particular. Participants shared information on the advantages of fuels such as propane, natural gas, and electric in terms of lower emissions and reduced maintenance and operating costs.

Participants included people who have first-hand experience using various equipment of alternative fuel types in different operating conditions. Those without experience using alternative fuel types want the option to start using them but expressed that not all are ready to make the switch yet.

Electric school buses

In public meetings, there was interest in directing funds to help purchase electric school buses in Minnesota. In recent months, there have been a number of electric school bus grant programs from the federal government which has resulted in much more awareness of the environmental advantages of school bus electrification.

Fast-charging and Level 2 EV charging across the state

Many Minnesotans said they would like to see continued investment in EV charging stations across the state, at the maximum level allowed by the settlement (15% of total funds). Both EV users and people who would like to use an EV expressed particular interest in continuing to build on the efforts from Phase 1 and 2 to expand the network of fast-charging stations along highways, to allow all Minnesotans to travel around the state by EV.

In Greater Minnesota, participants were especially interested in highway corridors that connect Greater Minnesota cities, not just corridors that connect to the Twin Cities. Both EV users and people who would like to use an EV all over the state encouraged us to provide the infrastructure needed to reduce range anxiety.

Eligible project types

When asked which fuel types should be encouraged when replacing heavy-duty vehicles and equipment, Phase 2 survey respondents preferred electric (74%) to other alternative fuels (13%), not prioritizing (11%), and diesel replacements (3%).

When asked about tradeoffs between the amount of funds available and quantity of projects, survey respondents favored partly funding more projects (62.8%) over fully funding fewer projects (37.2%).

These opinions are some of the primary reasons that the Phase 3 plan includes so many vehicle electrification projects for the remainder of the funds.

Electric vehicles

The MPCA has asked Minnesotans what types of EV charging stations would be most useful to them or have the greatest impact when considering whether to make the switch to an EV. Increasing the number and availability of DC Fast Chargers throughout Minnesota is the primary goal of many EV owners and potential owners. EV ownership groups, both in Minnesota and nationally, are working to increase the availability of DC Fast chargers throughout Minnesota as well as the rest of the country.

Appendix 6: Emission reduction calculation methods

Vehicle and equipment replacements

The MPCA used emissions reduction data from funded Phase 1 and Phase 2 (2018-2023) project averages to estimate the emissions reductions that it expects to achieve in Phase 3 (2024-2027). A probable range of reductions was calculated to reflect the variability in emissions benefits from funded projects.

Phase 3 emissions reductions estimates

The MPCA calculates the emissions benefit of a submitted project proposal using one of several tools. For on-road vehicles, MPCA uses the Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Tool from Argonne National Laboratory. The tool calculates a vehicle's annual and lifetime emissions based on the vehicle's type, model year, annual mileage, annual fuel usage, and remaining years of useful life. The general approach to estimate a project's emission reductions with this tool is to calculate the difference between the remaining lifetime emissions of the vehicle to be replaced and those of the new vehicle over the same number of years. For off-road equipment, MPCA uses EPA's Diesel Emissions Quantifier (DEQ) tool. DEQ uses similar specifications to AFLEET about the old and new piece of equipment to calculate the annual and lifetime emissions reductions.

Details about a replacement project, like the annual mileage, or the old vehicle's model year, has an effect on a project's estimated emissions benefit. In Phase 1 and Phase 2, these particular details varied greatly among projects submitted and awarded funding. We anticipate that Phase 3 project proposals will also have a wide variety of characteristics related to their operation and location, so we used average reduction amounts from funded Phase 1 and Phase 2 projects to estimate the reductions that will be achieved from funded Phase 2 projects.

To start, MPCA estimated the approximate number of projects that will be funded in each grant program in Phase 3. This was calculated by taking 90% of the total funds allocated to a grant category (10% of the funds are allocated for administrative costs as allowed by the Consent Decree) and dividing by the average original award amount from previous projects for the grant category. For example, \$2.1 million is allocated for electric school bus replacements in Phase 3, and the average award amount for electric buses in Phase 1 and 2 is \$268,545. After taking 90% of \$2.1M and dividing by this average amount, we can expect to fund about 7 electric bus replacements in Phase 3.

The estimated total reduction achieved was then calculated for each grant category and pollutant by multiplying the number of expected projects by the average reductions achieved per project in Phase 1 and Phase 2. To account for the variability of reduction amounts in previous projects, a margin of error was calculated to provide a 95% confidence interval.

Historic data used for Phase 3 emissions reduction estimates excludes three in-progress grant rounds from Phase 2 (Electric Vehicle Level 2 Charging Stations, Electric School Bus, and Clean Heavy-Duty Off-Road Equipment).

Electric vehicle charging stations

We estimated the cost of single connection charging ports based on Department of Energy data³ for direct current (DC) fast chargers.

Grants were estimated at \$150,000 for dual-port DC fast chargers. Cost estimates come from previously funded 150kW stations in Minnesota as well as programs from other states.

This grant amount estimate was then used to estimate emissions reductions for DC fast chargers. With an average award amount of \$150,000 (and subtracting 10% for administrative costs), we can expect to fund approximately 13 dual-port charging stations (26 ports total).

To calculate emissions reductions for the 26 ports, we used the Argonne National Laboratory's AFLEET CFI Emissions Tool that was designed for the Federal Highway Administration's (FHWA) Charging and Fueling Infrastructure Discretionary Grant Program (CFI Program). The emission reduction estimates were generated using the standard assumptions in the tool and assumed the default moderate utilization.

To estimate lifetime emissions reductions of these investments, we multiplied the annual emissions benefits by a conservatively estimated 10-year life of the charging stations.

³ DOE (2015) Costs associated with non-residential electric vehicle supply equipment.
https://www.afdc.energy.gov/uploads/publication/evse_cost_report_2015.pdf

Appendix 7: Glossary of terms

The following are definitions of some of the terms and phrases as they are used in Minnesota's state plan.

- **Disproportionately impacted:** Communities that are exposed to higher levels of pollution than the rest of the population and/or are more vulnerable to the health impacts of this pollution. The MPCA uses population statistics to look at communities that have higher proportions of lower-income households or people of color. These populations have been shown to be more burdened by air pollution than other communities are.
- **Electric vehicle infrastructure:** Stations used for charging electric cars and other vehicles. These stations are like gas stations for EVs. They supply electricity, and people can plug their car in to the equipment to charge the vehicle battery.
- **Issuing grants:** The MPCA will select projects for funding based on a competitive process. The selected projects will receive funding in the form of a grant. Unlike loans, grants do not require payback of funds.
- **Mitigation:** Reduce or clean up.
- **Soliciting proposals:** The MPCA will share information about how to apply for funding through the settlement.
- **Stakeholder:** People and organizations particularly interested in the VW settlement. Especially people and groups that have experience with various aspects of the settlement, such as heavy-duty vehicles and equipment, alternative fuels, EVs, and health impacts of vehicle pollution.
- **Trustee:** The organization that manages the funds for all the states and tribes. The Department of Justice selected Wilmington Trust of Wilmington, Delaware to manage the funds for the VW settlement. VW puts money into accounts managed by Wilmington Trust who then makes sure the funds are used for their intended purpose. States and tribes will select projects and request the funds from Wilmington Trust to pay for those projects.

Appendix 8: Eligible mitigation actions and expenditures

Volkswagen Settlement Appendix D-2

1. Class 8 Local Freight Trucks and Port Drayage Trucks (Eligible Large Trucks)

- a. Eligible Large Trucks include 1992-2009 engine model year Class 8 Local Freight or Drayage. For Beneficiaries that have State regulations that already require upgrades to 1992-2009 engine model year trucks at the time of the proposed Eligible Mitigation Action, Eligible Large Trucks shall also include 2010-2012 engine model year Class 8 Local Freight or Drayage.
- b. Eligible Large Trucks must be Scrapped.
- c. Eligible Large Trucks may be Repowered with any new diesel or Alternate Fueled engine or All-Electric engine or may be replaced with any new diesel or Alternate Fueled or All-Electric vehicle, with the engine model year in which the Eligible Large Trucks Mitigation Action occurs or one engine model year prior.
- d. For Non-Government Owned Eligible Class 8 Local Freight Trucks, Beneficiaries may only draw funds from the Trust in the amount of:
 1. Up to 40% of the cost of a Repower with a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) engine, including the costs of installation of such engine.
 2. Up to 25% of the cost of a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) vehicle.
 3. Up to 75% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
 4. Up to 75% of the cost of a new All-Electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.
- e. For Non-Government Owned Eligible Drayage Trucks, Beneficiaries may only draw funds from the Trust in the amount of:
 1. Up to 40% of the cost of a Repower with a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) engine, including the costs of installation of such engine.
 2. Up to 50% of the cost of a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) vehicle.
 3. Up to 75% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
 4. Up to 75% of the cost of a new all-electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.

- f. For Government Owned Eligible Class 8 Large Trucks, Beneficiaries may draw funds from the Trust in the amount of:
 - 1. Up to 100% of the cost of a Repower with a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) engine, including the costs of installation of such engine.
 - 2. Up to 100% of the cost of a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) vehicle.
 - 3. Up to 100% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
 - 4. Up to 100% of the cost of a new All-Electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.

2. Class 4-8 School Bus, Shuttle Bus, or Transit Bus (Eligible Buses)

- a. Eligible Buses include 2009 engine model year or older class 4-8 school buses, shuttle buses, or transit buses. For Beneficiaries that have State regulations that already require upgrades to 1992-2009 engine model year buses at the time of the proposed Eligible Mitigation Action, Eligible Buses shall also include 2010- 2012 engine model year class 4-8 school buses, shuttle buses, or transit buses.
- b. Eligible Buses must be Scrapped.
- c. Eligible Buses may be Repowered with any new diesel or Alternate Fueled or All-Electric engine or may be replaced with any new diesel or Alternate Fueled or All-Electric vehicle, with the engine model year in which the Eligible Bus Mitigation Action occurs or one engine model year prior.
- d. For Non-Government Owned Buses, Beneficiaries may draw funds from the Trust in the amount of:
 - 1. Up to 40% of the cost of a Repower with a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) engine, including the costs of installation of such engine.
 - 2. Up to 25% of the cost of a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) vehicle.
 - 3. Up to 75% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
 - 4. Up to 75% of the cost of a new All-Electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.
- e. For Government Owned Eligible Buses, and Privately Owned School Buses Under Contract with a Public School District, Beneficiaries may draw funds from the Trust in the amount of:
 - 1. Up to 100% of the cost of a Repower with a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) engine, including the costs of installation of such engine.
 - 2. Up to 100% of the cost of a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) vehicle.
 - 3. Up to 100% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
 - 4. Up to 100% of the cost of a new All-Electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.

3. Freight Switchers

- a. Eligible Freight Switchers include pre-Tier 4 switcher locomotives that operate 1000 or more hours per year.
- b. Eligible Freight Switchers must be Scrapped.

- c. Eligible Freight Switchers may be Repowered with any new diesel or Alternate Fueled or All-Electric engine(s) (including Generator Sets), or may be replaced with any new diesel or Alternate Fueled or All-Electric (including Generator Sets) Freight Switcher, that is certified to meet the applicable EPA emissions standards (or other more stringent equivalent State standard) as published in the CFR for the engine model year in which the Eligible Freight Switcher Mitigation Action occurs.
- d. For Non-Government Owned Freight Switchers, Beneficiaries may draw funds from the Trust in the amount of :
 - 1. Up to 40% of the cost of a Repower with a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) engine(s) or Generator Sets, including the costs of installation of such engine(s)
 - 2. Up to 25% of the cost of a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) Freight Switcher.
 - 3. Up to 75% of the cost of a Repower with a new All-Electric engine(s), including the costs of installation of such engine(s), and charging infrastructure associated with the new All-Electric engine(s).
 - 4. Up to 75% of the cost of a new All-Electric Freight Switcher, including charging infrastructure associated with the new All-Electric Freight Switcher.
- e. For Government Owned Eligible Freight Switchers, Beneficiaries may draw funds from the Trust in the amount of:
 - 1. Up to 100% of the cost of a Repower with a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) engine(s) or Generator Sets, including the costs of installation of such engine(s).
 - 2. Up to 100% of the cost of a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) Freight Switcher.
 - 3. Up to 100% of the cost of a Repower with a new All-Electric engine(s), including the costs of installation of such engine(s), and charging infrastructure associated with the new All-Electric engine(s).
 - 4. Up to 100% of the cost of a new All-Electric Freight Switcher, including charging infrastructure associated with the new All-Electric Freight Switcher.

4. Ferries/Tugs

- a. Eligible Ferries and/or Tugs include unregulated, Tier 1, or Tier 2 marine engines.
- b. Eligible Ferry and/or Tug engines that are replaced must be Scrapped.
- c. Eligible Ferries and/or Tugs may be Repowered with any new Tier 3 or Tier 4 diesel or Alternate Fueled engines, or with All-Electric engines, or may be upgraded with an EPA Certified Remanufacture System or an EPA Verified Engine Upgrade.
- d. For Non-Government Owned Eligible Ferries and/or Tugs, Beneficiaries may only draw funds from the Trust in the amount of:
 - 1. Up to 40% of the cost of a Repower with a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) engine(s), including the costs of installation of such engine(s).
 - 2. Up to 75% of the cost of a Repower with a new All-Electric engine(s), including the costs of installation of such engine(s), and charging infrastructure associated with the new All-Electric engine(s).
- e. For Government Owned Eligible Ferries and/or Tugs, Beneficiaries may draw funds from the Trust in the amount of:
 - 1. Up to 100% of the cost of a Repower with a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) engine(s), including the costs of installation of such engine(s).
 - 2. Up to 100% of the cost of a Repower with a new All-Electric engine(s), including the costs of installation of such engine(s), and charging infrastructure associated with the new All-Electric engine(s).

5. Ocean Going Vessels (OGV) Shorepower

- a. Eligible Marine Shorepower includes systems that enable a compatible vessel's main and auxiliary engines to remain off while the vessel is at berth. Components of such systems eligible for reimbursement are limited to cables, cable management systems, shore power coupler systems, distribution control systems, and power distribution. Marine shore power systems must comply with international shore power design standards (ISO/IEC/IEEE 80005-1-2012 High Voltage Shore Connection Systems or the IEC/PAS 80005-3:2014 Low Voltage Shore Connection Systems) and should be supplied with power sourced from the local utility grid. Eligible Marine Shorepower includes equipment for vessels that operate within the Great Lakes.
- b. For Non-Government Owned Marine Shorepower, Beneficiaries may only draw funds from the Trust in the amount of up to 25% for the costs associated with the shore-side system, including cables, cable management systems, shore power coupler systems, distribution control systems, installation, and power distribution components.
- c. For Government Owned Marine Shorepower, Beneficiaries may draw funds from the Trust in the amount of up to 100% for the costs associated with the shore-side system, including cables, cable management systems, shore power coupler systems, distribution control systems, installation, and power distribution components.

6. Class 4-7 Local Freight Trucks (Medium Trucks)

- a. Eligible Medium Trucks include 1992-2009 engine model year class 4-7 Local Freight trucks, and for Beneficiaries that have State regulations that already require upgrades to 1992-2009 engine model year trucks at the time of the proposed Eligible Mitigation Action, Eligible Trucks shall also include 2010- 2012 engine model year class 4-7 Local Freight trucks.
- b. Eligible Medium Trucks must be Scrapped.
- c. Eligible Medium Trucks may be Repowered with any new diesel or Alternate Fueled or All-Electric engine or may be replaced with any new diesel or Alternate Fueled or All-Electric vehicle, with the engine model year in which the Eligible Medium Trucks Mitigation Action occurs or one engine model year prior.
- d. For Non-Government Owned Eligible Medium Trucks, Beneficiaries may draw funds from the Trust in the amount of:
 1. Up to 40% of the cost of a Repower with a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) engine, including the costs of installation of such engine.
 2. Up to 25% of the cost of a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) vehicle.
 3. Up to 75% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
 4. Up to 75% of the cost of a new All-Electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.
- e. For Government Owned Eligible Medium Trucks, Beneficiaries may draw funds from the Trust in the amount of:
 1. Up to 100% of the cost of a Repower with a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) engine, including the costs of installation of such engine.
 2. Up to 100% of the cost of a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) vehicle.
 3. Up to 100% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
 4. Up to 100% of the cost of a new All-Electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.

7. Airport Ground Support Equipment

- a. Eligible Airport Ground Support Equipment includes:
 - 1. Tier 0, Tier 1, or Tier 2 diesel powered airport ground support equipment; and
 - 2. Uncertified, or certified to 3 g/bhp-hr or higher emissions, spark ignition engine powered airport ground support equipment.
- b. Eligible Airport Ground Support Equipment must be Scrapped.
- c. Eligible Airport Ground Support Equipment may be Repowered with an All- Electric engine or may be replaced with the same Airport Ground Support Equipment in an All-Electric form.
- d. For Non-Government Owned Eligible Airport Ground Support Equipment, Beneficiaries may only draw funds from the Trust in the amount of:
 - 1. Up to 75% of the cost of a Repower with a new All-Electric engine, including costs of installation of such engine, and charging infrastructure associated with such new All-Electric engine.
 - 2. Up to 75% of the cost of a new All-Electric Airport Ground Support Equipment, including charging infrastructure associated with such new All-Electric Airport Ground Support Equipment.
- e. For Government Owned Eligible Airport Ground Support Equipment, Beneficiaries may draw funds from the Trust in the amount of:
 - 1. Up to 100% of the cost of a Repower with a new All-Electric engine, including costs of installation of such engine, and charging infrastructure associated with such new All-Electric engine.
 - 2. Up to 100% of the cost of a new All-Electric Airport Ground Support Equipment, including charging infrastructure associated with such new All-Electric Airport Ground Support Equipment.

8. Forklifts and Port Cargo Handling Equipment

- a. Eligible Forklifts includes forklifts with greater than 8000 pounds lift capacity.
- b. Eligible Forklifts and Port Cargo Handling Equipment must be Scrapped.
- c. Eligible Forklifts and Port Cargo Handling Equipment may be Repowered with an All-Electric engine or may be replaced with the same equipment in an All-Electric form.
- d. For Non-Government Owned Eligible Forklifts and Port Cargo Handling Equipment, Beneficiaries may draw funds from the Trust in the amount of:
 - 1. Up to 75% of the cost of a Repower with a new All-Electric engine, including costs of installation of such engine, and charging infrastructure associated with such new All-Electric engine.
 - 2. Up to 75% of the cost of a new All-Electric Forklift or Port Cargo Handling Equipment, including charging infrastructure associated with such new All-Electric Forklift or Port Cargo Handling Equipment.
- e. For Government Owned Eligible Forklifts and Port Cargo Handling Equipment, Beneficiaries may draw funds from the Trust in the amount of:
 - 1. Up to 100% of the cost of a Repower with a new All-Electric engine, including costs of installation of such engine, and charging infrastructure associated with such new All-Electric engine.
 - 2. Up to 100% of the cost of a new All-Electric Forklift or Port Cargo Handling Equipment, including charging infrastructure associated with such new All-Electric Forklift or Port Cargo Handling Equipment.

9. Light Duty Zero Emission Vehicle Supply Equipment

Each Beneficiary may use up to fifteen percent (15%) of its allocation of Trust Funds on the costs necessary for, and directly connected to, the acquisition, installation, operation and maintenance of new light duty zero emission vehicle supply equipment for projects as specified below. Provided, however, that Trust Funds shall

not be made available or used to purchase or rent real-estate, other capital costs (e.g., construction of buildings, parking facilities, etc.) or general maintenance (i.e., maintenance other than of the Supply Equipment).

- a. Light duty electric vehicle supply equipment includes Level 1, Level 2 or fast-charging equipment (or analogous successor technologies) that is located in a public place, workplace, or multi-unit dwelling and is not consumer light duty electric vehicle supply equipment (i.e., not located at a private residential dwelling that is not a multi-unit dwelling).
- b. Light duty hydrogen fuel cell vehicle supply equipment includes hydrogen dispensing equipment capable of dispensing hydrogen at a pressure of 70 megapascals (MPa) (or analogous successor technologies) that is located in a public place.
- c. Subject to the 15% limitation above, each Beneficiary may draw funds from the Trust in the amount of:
 1. Up to 100% of the cost to purchase, install and maintain eligible light duty electric vehicle supply equipment that will be available to the public at a Government Owned Property.
 2. Up to 80% of the cost to purchase, install and maintain eligible light duty electric vehicle supply equipment that will be available to the public at a Non-Government Owned Property.
 3. Up to 60% of the cost to purchase, install and maintain eligible light duty electric vehicle supply equipment that is available at a workplace but not to the general public.
 4. Up to 60% of the cost to purchase, install and maintain eligible light duty electric vehicle supply equipment that is available at a multi-unit dwelling but not to the general public.
 5. Up to 33% of the cost to purchase, install and maintain eligible light duty hydrogen fuel cell vehicle supply equipment capable of dispensing at least 250 kg/day that will be available to the public.
 6. Up to 25% of the cost to purchase, install and maintain eligible light duty hydrogen fuel cell vehicle supply equipment capable of dispensing at least 100 kg/day that will be available to the public.

10. Diesel Emission Reduction Act (DERA) Option

Beneficiaries may use Trust Funds for their non-federal voluntary match, pursuant to Title VII, Subtitle G, Section 793 of the DERA Program in the Energy Policy Act of 2005 (codified at 42 U.S.C. § 16133), or Section 792 (codified at 42 U.S.C. § 16132) in the case of Tribes, thereby allowing Beneficiaries to use such Trust Funds for actions not specifically enumerated in this Appendix D-2, but otherwise eligible under DERA pursuant to all DERA guidance documents available through the EPA. Trust Funds shall not be used to meet the non-federal mandatory cost share requirements, as defined in applicable DERA program guidance, of any DERA grant.

11. Eligible Mitigation Action Administrative Expenditures

For any Eligible Mitigation Action, Beneficiaries may use Trust Funds for actual administrative expenditures (described below) associated with implementing such Eligible Mitigation Action, but not to exceed 15% of the total cost of such Eligible Mitigation Action. The 15% cap includes the aggregated amount of eligible administrative expenditures incurred by the Beneficiary and any third-party contractor(s).

- a. Personnel including costs of employee salaries and wages, but not consultants.
- b. Fringe Benefits including costs of employee fringe benefits such as health insurance, FICA, retirement, life insurance, and payroll taxes.
- c. Travel including costs of Mitigation Action-related travel by program staff, but does not include consultant travel.

- d. Supplies including tangible property purchased in support of the Mitigation Action that will be expensed on the Statement of Activities, such as educational publications, office supplies, etc. Identify general categories of supplies and their Mitigation Action costs.
- e. Contractual including all contracted services and goods except for those charged under other categories such as supplies, construction, etc. Contracts for evaluation and consulting services and contracts with sub-recipient organizations are included.
- f. Construction including costs associated with ordinary or normal rearrangement and alteration of facilities.
- g. Other costs including insurance, professional services, occupancy and equipment leases, printing and publication, training, indirect costs, and accounting.

Definitions/Glossary of Terms

“Airport Ground Support Equipment” shall mean vehicles and equipment used at an airport to service aircraft between flights.

“All-Electric” shall mean powered exclusively by electricity provided by a battery, fuel cell, or the grid.

“Alternate Fueled” shall mean an engine, or a vehicle or piece of equipment which is powered by an engine, which uses a fuel different from or in addition to gasoline fuel or diesel fuel (e.g., CNG, propane, diesel-electric Hybrid).

“Certified Remanufacture System or Verified Engine Upgrade” shall mean engine upgrades certified or verified by EPA or CARB to achieve a reduction in emissions.

“Class 4-7 Local Freight Trucks (Medium Trucks)” shall mean trucks, including commercial trucks, used to deliver cargo and freight (e.g., courier services, delivery trucks, box trucks moving freight, waste haulers, dump trucks, concrete mixers) with a Gross Vehicle Weight Rating (GVWR) between 14,001 and 33,000 lbs.

“Class 4-8 School Bus, Shuttle Bus, or Transit Bus (Buses)” shall mean vehicles with a Gross Vehicle Weight Rating (GVWR) greater than 14,001 lbs. used for transporting people. See definition for School Bus below.

“Class 8 Local Freight, and Port Drayage Trucks (Eligible Large Trucks)” shall mean trucks with a Gross Vehicle Weight Rating (GVWR) greater than 33,000 lbs. used for port drayage and/or freight/cargo delivery (including waste haulers, dump trucks, concrete mixers).

“CNG” shall mean Compressed Natural Gas.

“Drayage Trucks” shall mean trucks hauling cargo to and from ports and intermodal rail yards.

“Forklift” shall mean nonroad equipment used to lift and move materials short distances; generally, includes tines to lift objects. Eligible types of forklifts include reach stackers, side loaders, and top loaders.

“Freight Switcher” shall mean a locomotive that moves rail cars around a rail yard as compared to a line-haul engine that move freight long distances.

“Generator Set” shall mean a switcher locomotive equipped with multiple engines that can turn off one or more engines to reduce emissions and save fuel depending on the load it is moving.

“Government” shall mean a State or local government agency (including a school district, municipality, city, county, special district, transit district, joint powers authority, or port authority, owning fleets purchased with government funds), and a tribal government or native village. The term ‘State’ means the several States, the District of Columbia, and the Commonwealth of Puerto Rico.

“Gross Vehicle Weight Rating (GVWR)” shall mean the maximum weight of the vehicle, as specified by the manufacturer. GVWR includes total vehicle weight plus fluids, passengers, and cargo.

Class 1: < 6000 lb.

Class 2: 6001-10,000 lb.

Class 3: 10,001-14,000 lb.

Class 4: 14,001-16,000 lb.

Class 5: 16,001-19,500 lb.

Class 6: 19,501-26,000 lb.

Class 7: 26,001-33,000 lb.

Class 8: > 33,001 lb.

“Hybrid” shall mean a vehicle that combines an internal combustion engine with a battery and electric motor.

“Infrastructure” shall mean the equipment used to enable the use of electric powered vehicles (e.g., electric vehicle charging station).

“Intermodal Rail Yard” shall mean a rail facility in which cargo is transferred from drayage truck to train or vice-versa.

“Port Cargo Handling Equipment” shall mean rubber-tired gantry cranes, straddle carriers, shuttle carriers, and terminal tractors, including yard hostlers and yard tractors that operate within ports.

“Plug-in Hybrid Electric Vehicle (PHEV)” shall mean a vehicle that is similar to a Hybrid but is equipped with a larger, more advanced battery that allows the vehicle to be plugged in and recharged in addition to refueling with gasoline. This larger battery allows the car to be driven on a combination of electric and gasoline fuels.

“Repower” shall mean to replace an existing engine with a newer, cleaner engine or power source that is certified by EPA and, if applicable, CARB, to meet a more stringent set of engine emission standards. Repower includes, but is not limited to, diesel engine replacement with an engine certified for use with diesel or a clean alternate fuel, diesel engine replacement with an electric power source (grid, battery), diesel engine replacement with a fuel cell, diesel engine replacement with an electric generator(s) (genset), diesel engine upgrades in Ferries/Tugs with an EPA Certified Remanufacture System, and/or diesel engine upgrades in Ferries/Tugs with an EPA Verified Engine Upgrade. All-Electric and fuel cell Repowers do not require EPA or CARB certification.

“School Bus” shall mean a Class 4-8 bus sold or introduced into interstate commerce for purposes that include carrying students to and from school or related events. May be Type A-D.

“Scrapped” shall mean to render inoperable and available for recycle, and, at a minimum, to specifically cut a 3-inch hole in the engine block for all engines. If any Eligible Vehicle will be replaced as part of an Eligible project, scrapped shall also include the disabling of the chassis by cutting the vehicle’s frame rails completely in half.

“Tier 0, 1, 2, 3, 4” shall refer to corresponding EPA engine emission classifications for nonroad, locomotive and marine engines.

“Tugs” shall mean dedicated vessels that push or pull other vessels in ports, harbors, and inland waterways (e.g., tugboats and towboats).

“Zero Emission Vehicle (ZEV)” shall mean a vehicle that produces no emissions from the on-board source of power (e.g., All-Electric or hydrogen fuel cell vehicles).