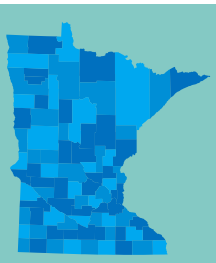
Volkswagen settlement

February 2020

Minnesota's Volkswagen Settlement Beneficiary Mitigation Plan Phase II (2020 - 2023) Appendices

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

MINNESOTA POLLUTION CONTROL AGENCY



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Appendices

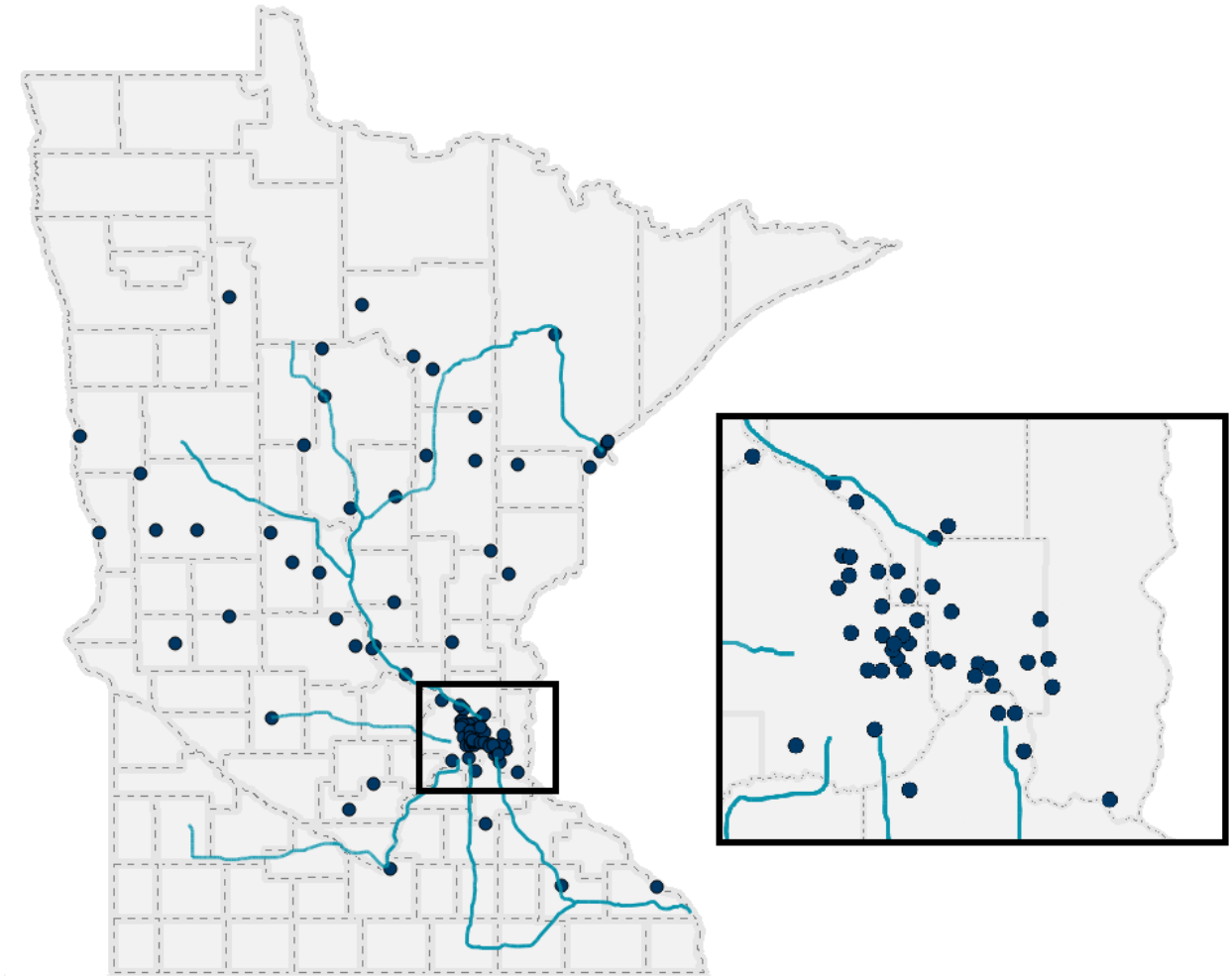
Appendix 1: Phase 1 summary

As we wrap up Phase 1 of the 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 funds have been awarded to replace 252 pieces of diesel equipment with less-polluting models, and to install 47 new EV charging stations across the state[1]. 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 22 EV fast-chargers will be installed. There are two Phase 1 grant rounds still in progress, but we anticipate heavy-duty electric replacements and the second round of clean heavy-duty off-road equipment replacements will be awarded in early 2020.

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. The tool is updated as each grant round is completed and data for that program becomes available.

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



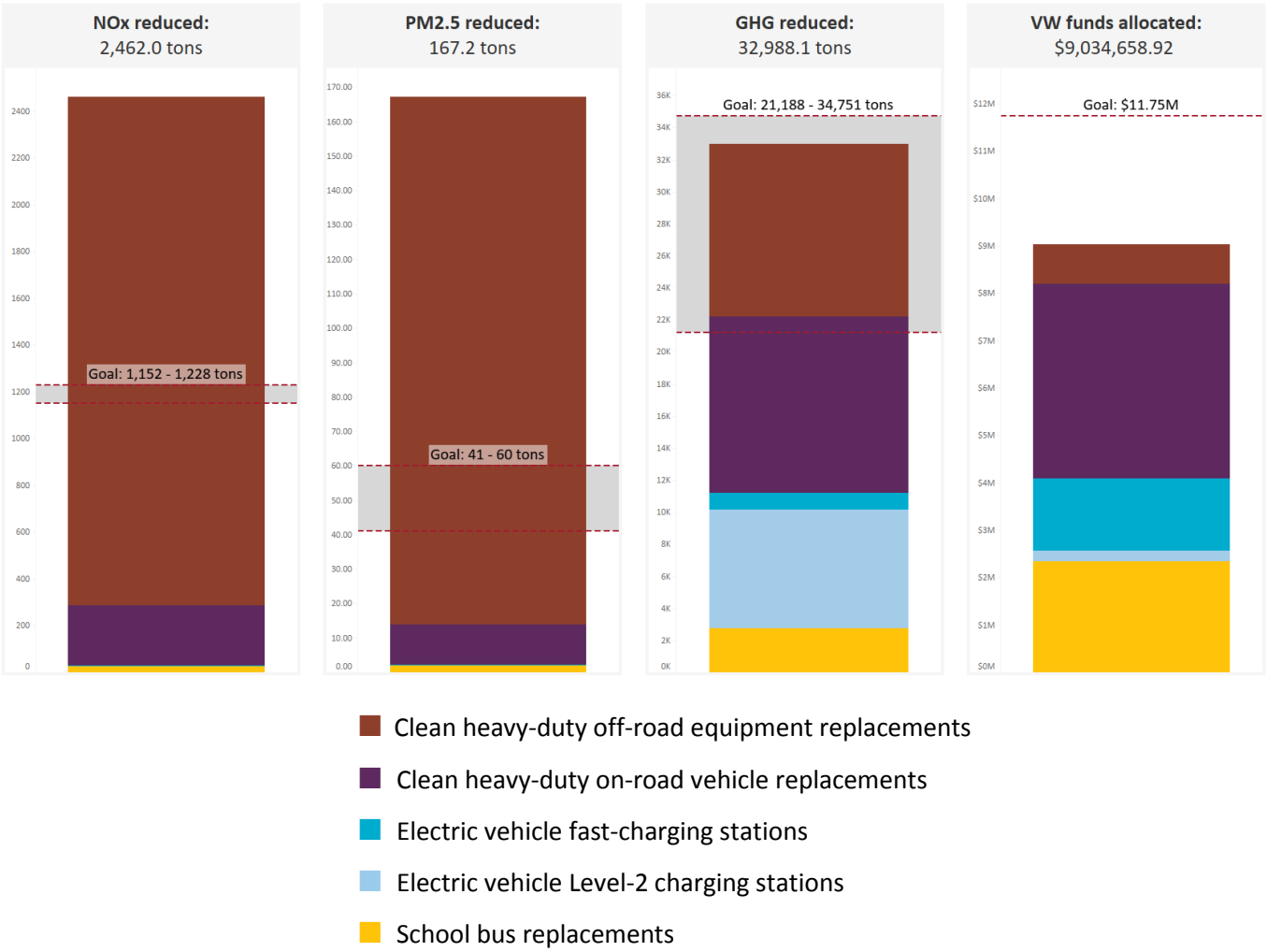
[1] The MPCA anticipates funding an additional 28-35 additional vehicle replacement projects by the end of Phase 1 through the heavy-duty electric vehicle grant program and a second round of clean heavy-duty off-road equipment grants.

Emission reductions

Projects funded in Phase 1 targeted specific reductions in three pollutant categories, with an overall goal of reducing between 1,152 – 1,228 tons of NO_X, 41 – 60 tons of $PM_{2.5}$, and 21,188 – 34,751 tons of GHGs.

Even with two grant rounds left to be completed in Phase 1, MPCA has met its Phase 1 emission reduction goals for all three pollutants. We anticipate exceeding our Phase 1 GHG reductions goal with the completion of the remaining Phase 1 heavy-duty electric and clean heavy-duty off-road grant programs. A significant amount of reductions were achieved through the first round of clean heavy-duty off-road equipment projects. On their own, the 16 projects funded through the heavy-duty off-road program achieved not just our Phase 1 emission reduction goals for NO_X and $PM_{2.5}$, but also exceeded our 10-year goal of reducing 150 tons of $PM_{2.5}$. Figure 2 shows the reductions achieved compared to the Phase 1 goals. Table 5 summarizes the funded projects and amount of each pollutant reduced by each grant program to date.

Figure 2: Estimated emissions reductions achieved in Phase 1[2]



[2] 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 grant programs and emissions reductions (as of October 2019)

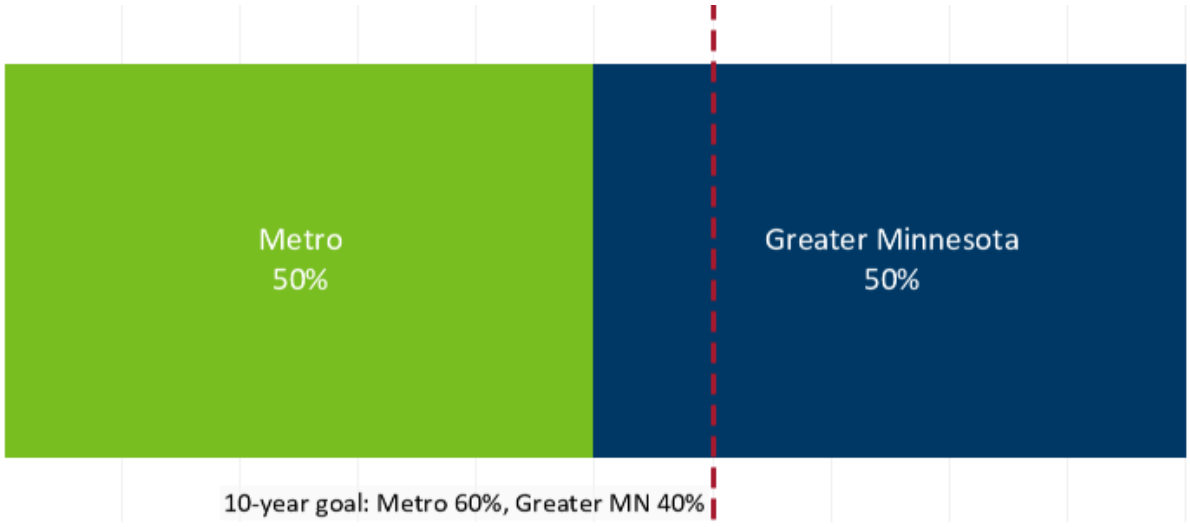
Grant programs (2018-2019)	Number of projects	Emissions reductions (tons)			Settlement funds allocated
		NO_X	$PM_{2.5}$	GHGs	
School bus replacements	111 replacements (60 diesel, 51 propane)	27.28	2.07	2,748.14	$2,345,000
Clean heavy-duty on-road vehicles	125 replacements (7 electric, 1 CNG, 117 diesel)	256.89	11.75	11,002.06	$4,112,500.00
Clean heavy-duty off-road equipment year 1 (year 2 in early 2020)	Year 1 - 16 (2 electric replacements, 6 diesel replacements, 8 locomotive idle-reduction) *Year 2 - TBD*	Year 1 - 2,175.83 *Year 2 - TBD*	Year 1 - 153.34 *Year 2 - TBD*	Year 1 - 10,767.1 *Year 2 – TBD*	$1,762,500*
Heavy-duty electric vehicles (early 2020)	*TBD*	*TBD*	*TBD*	*TBD*	$1,762,500
Electric vehicle fast-charging stations	22 (along 4 major highway corridors)	0.26	0.01	1,059.78	$1,528,938.76
Electric vehicle Level 2 charging stations	25 dual port charging station	1.72	0.08	7,411.00	$217,252.16
Total: emission reductions and dollar amounts of completed programs	**299 (252 vehicle/equipment replacements, 47 EV chargers)**	**2,462.0**	**167.2**	**32,988.1**	**$9,034,658.92**

**Approximately half was allocated in year 1; the remaining funds will be allocated in year 2.*

Statewide benefits

Of all the funds awarded so far, 50% have been invested in the Twin Cities metro area, and 50% 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 299 projects funded so far, 113 are in Greater Minnesota, where they will reduce 2,286 tons of NO_x and 156 tons of $PM_{2.5}$ vehicle operation emissions. The other 186 funded projects in the metro area will reduce 176 tons of NO_x and 12 tons of $PM_{2.5}$ vehicle operation emissions there.

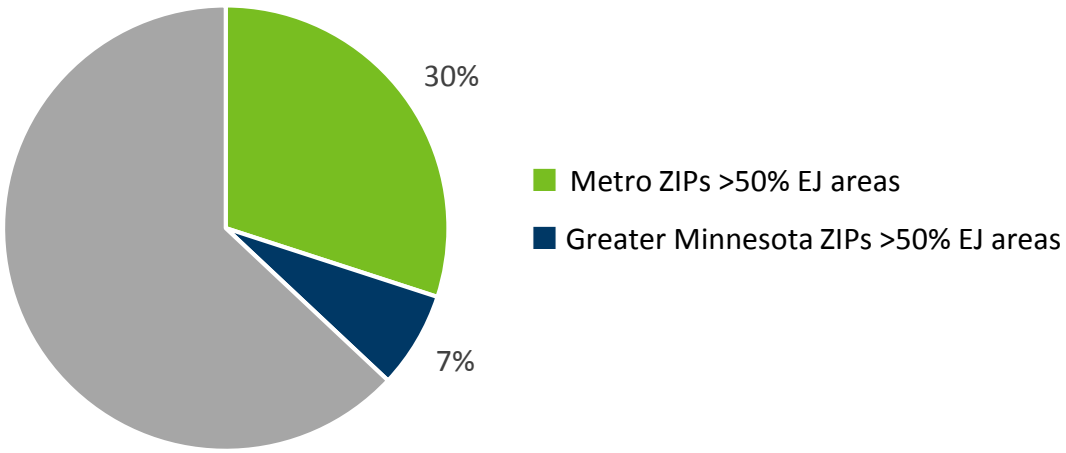
Helping people and places disproportionately affected by air pollution

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 where their equipment will operate. 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.

Of all the funds awarded so far in Phase 1, 30% of them were invested in areas disproportionately affected by air pollution in the Twin Cities metro area and 7% 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. We are exceeding our goal in the metro area, but have a ways to go to meet our goal in Greater Minnesota. The amount that we fell short toward this goal in Greater Minnesota in Phase 1 will be made up with Phase 2 funds.

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



Over the projects' lifetimes, Phase 1 projects in environmental justice areas will help to reduce 78 tons of NO_x and 6 tons of $PM_{2.5}$ in metro areas disproportionately impacted by air pollution, and 15 tons of NO_x and 0.74 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.

Over the course of their lifetimes, Phase 1 projects will reduce 106 tons of NO_x and 8 tons of $PM_{2.5}$ vehicle operation emissions in areas of relatively higher modeled air pollutant burden, 1,541 tons of NO_x and 127 tons of $PM_{2.5}$ in areas of moderate burden, and 814 tons of NO_x and 32 tons of $PM_{2.5}$ emissions in areas of relatively low burden.

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.

Over the course of their lifetimes, Phase 1 projects will reduce 50 tons of NO_x and 5 tons of $PM_{2.5}$ emissions in areas with higher health burden, 1,757 tons of NO_x and 69 tons of $PM_{2.5}$ in areas with moderate health burden, and 655 tons of NO_x and 93 tons of $PM_{2.5}$ emissions in areas of lower health burden.

Table 2: Summary of Phase 1 reduced exposure and health benefits

	Phase 1 total	In areas of modeled air quality pollutant burden			In areas with health burden		
		High	Moderate	Low*	High	Moderate	Low*
Funded projects	**299**	134	101	64	97	100	102
NO_x reductions achieved (tons)	**2,462.0**	106.16	1,541.9	813.9	50.0	1,756.7	655.3
NO_x reductions, % of total	**100%**	4%	63%	33%	2%	71%	27%
$PM_{2.5}$ reductions achieved (tons)	**167.2**	8.1	126.89	32.3	5.1	69.2	93.0
$PM_{2.5}$ reductions, % of total	**100%**	5%	76%	19%	3%	41%	56%

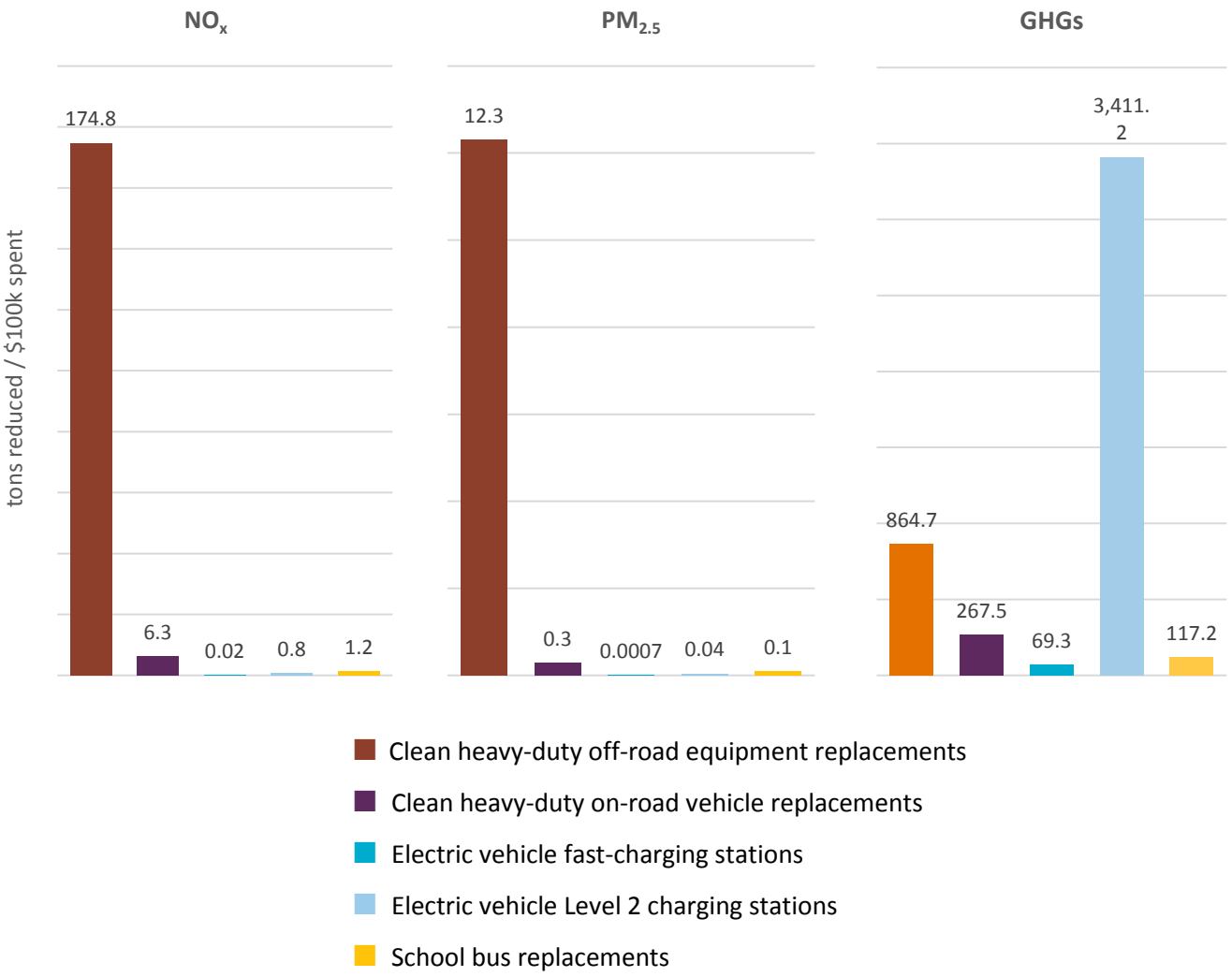
**Includes 22 EV fast-chargers, whose exact installation location is not yet known. Their reduced exposure and health benefits will be reevaluated when their locations along the EV charging corridors are known.*

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 5 shows the overall cost-effectiveness of each grant program in reducing each of the three pollutants in Phase 1. 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 5: Cost-effectiveness of emissions reductions by grant program (tons reduced per $100k spent)



Appendix 2: Background on the Volkswagen settlement

The violation

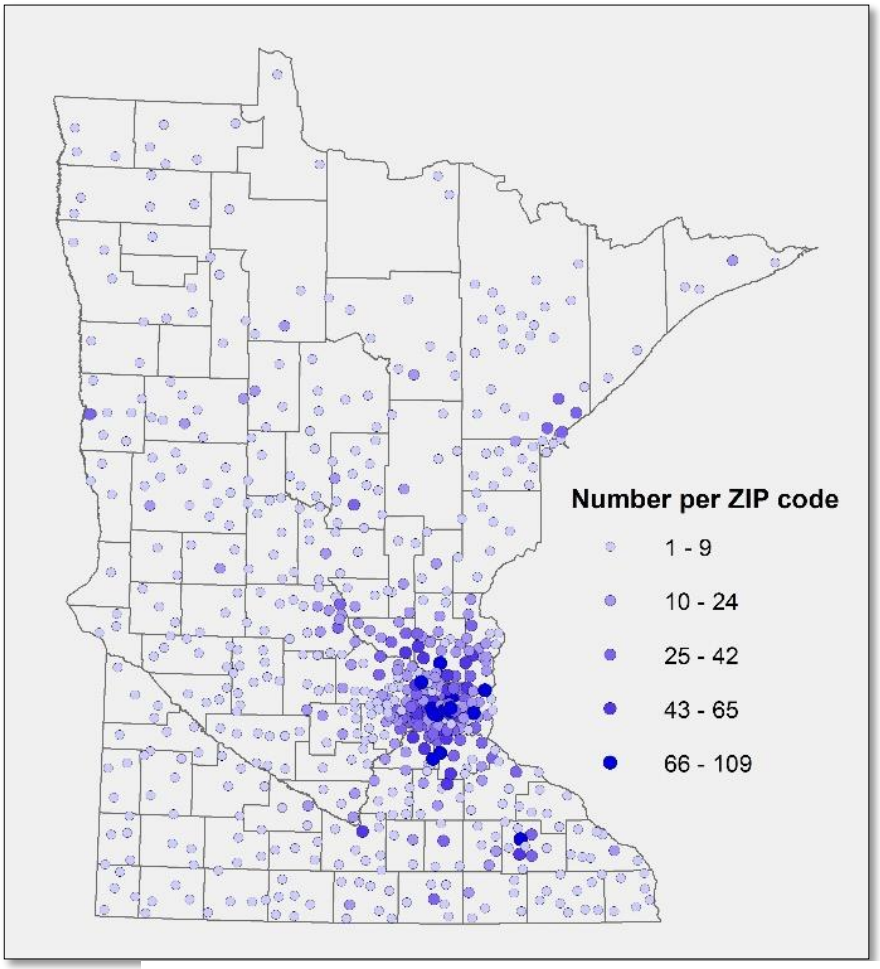
In 2015, the federal government announced it had discovered that Volkswagen (VW) was violating Clean Air Act emission standards for nitrogen oxides (NO_X) in its model year 2009-2016 diesel cars and sport utility vehicles and cheating on emissions tests to hide the violations. The violating vehicles 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 6: Violating VW diesel vehicles registered in Minnesota



Source: MN Department of Public Safety vehicle registration

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.

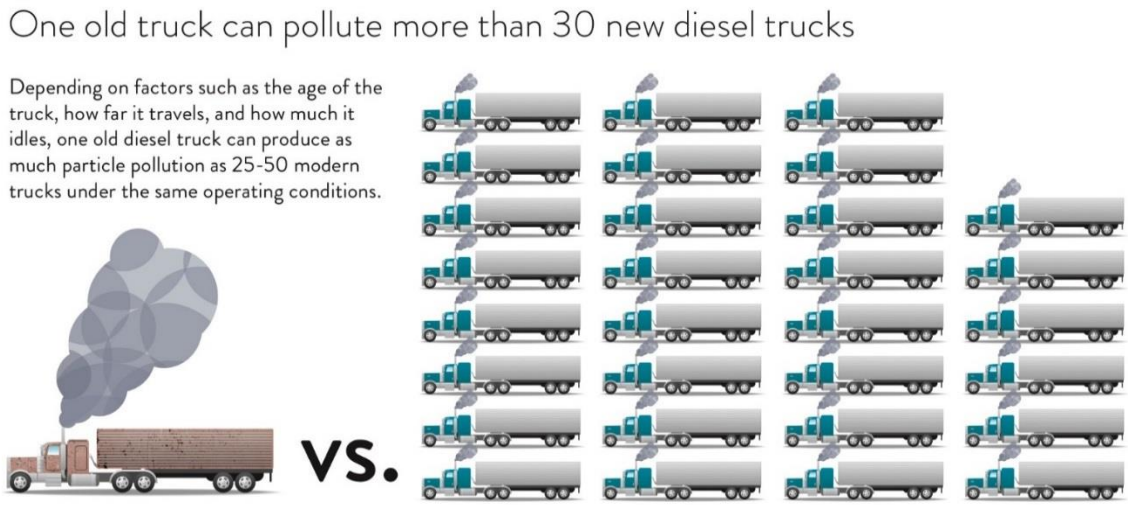
The settlement also requires VW to set aside $10 billion to repurchase and/or repair the violating cars and SUVs. VW must also spend $2 billion nationwide on developing electric vehicle (EV) charging stations. Both of these programs are managed by VW and are not addressed in Minnesota's state plan.

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.

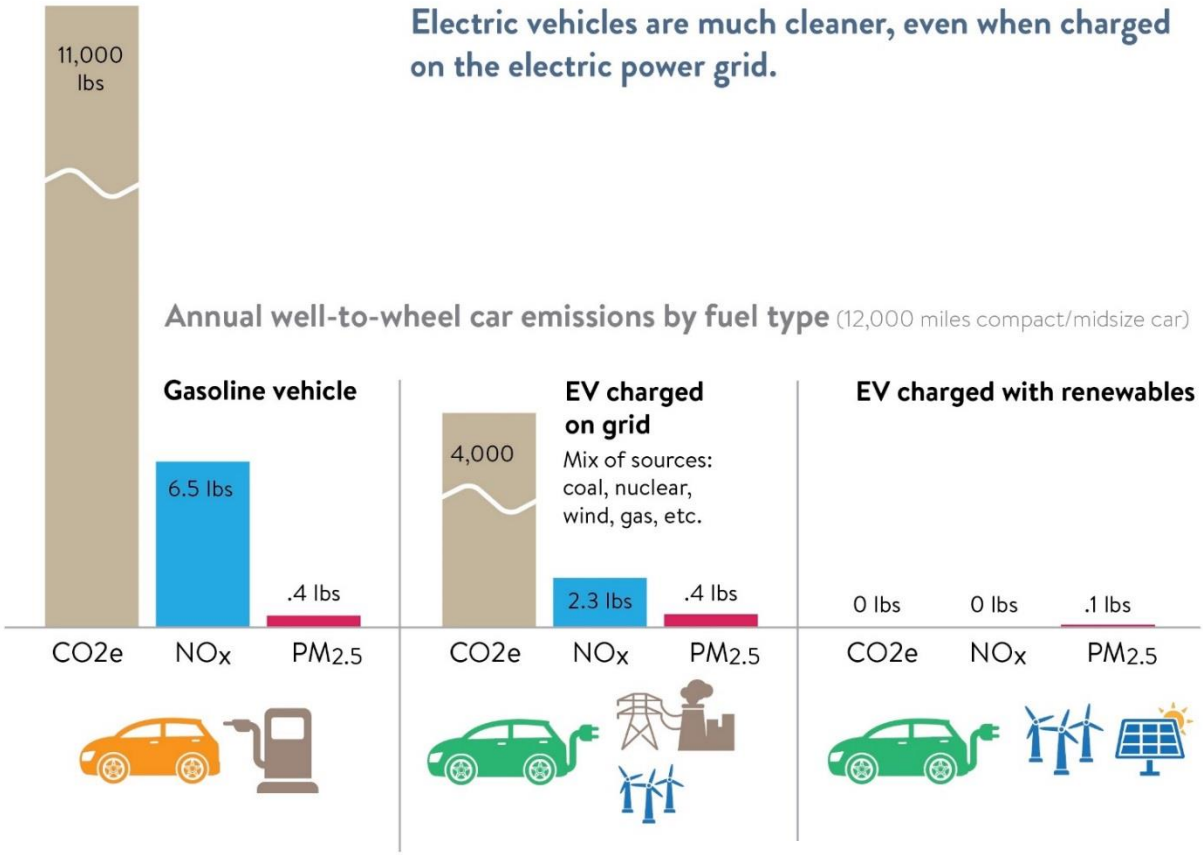
Figure 7: Improvements in heavy-duty diesel vehicle technology



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 8: 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.[3]

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

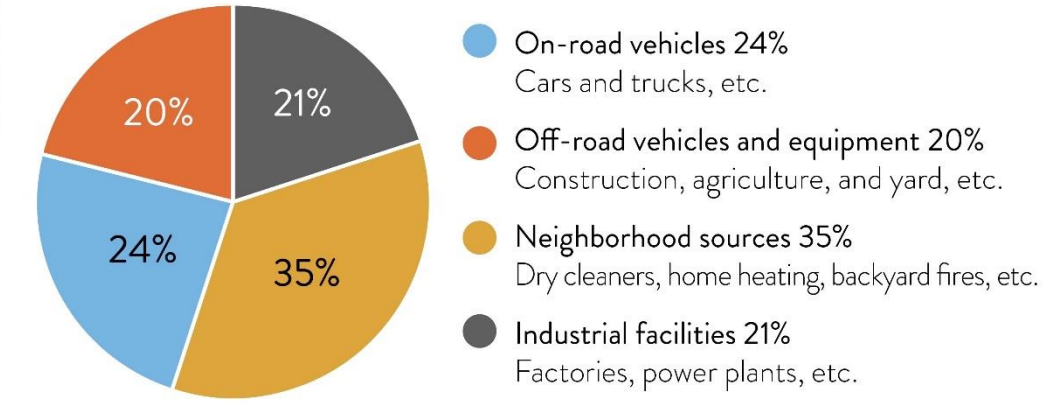
Diesel vehicles emit a variety of pollutants. Three of the pollutants of primary concern from diesel vehicles are:

- **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.

Figure 9: Air pollution by source type in Minnesota, 2014

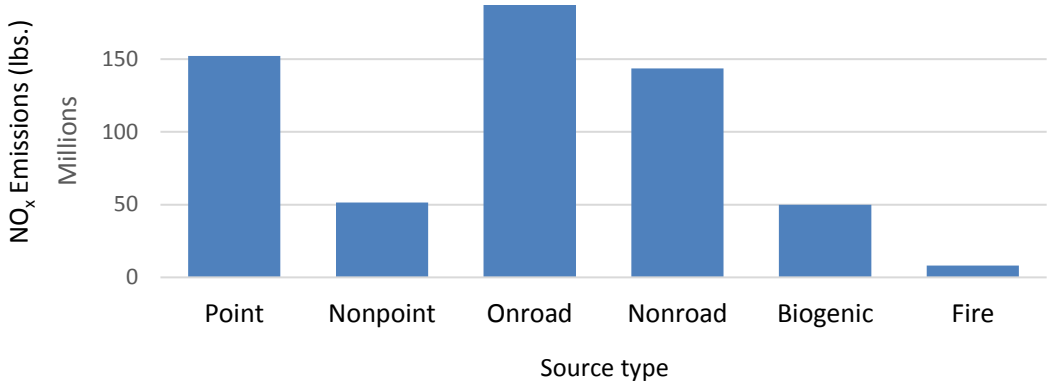


Includes emissions of NO_X, $PM_{2.5}$, sulfur dioxide, and volatile organic compounds.

[3] 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 www.pca.state.mn.us/air/life-and-breath-report.

In Minnesota, on-road vehicles are the largest source of NO_X pollution.

Figure 10: NO_x emissions by source type in Minnesota, 2014 *Source: Minnesota 2014 emissions inventory*

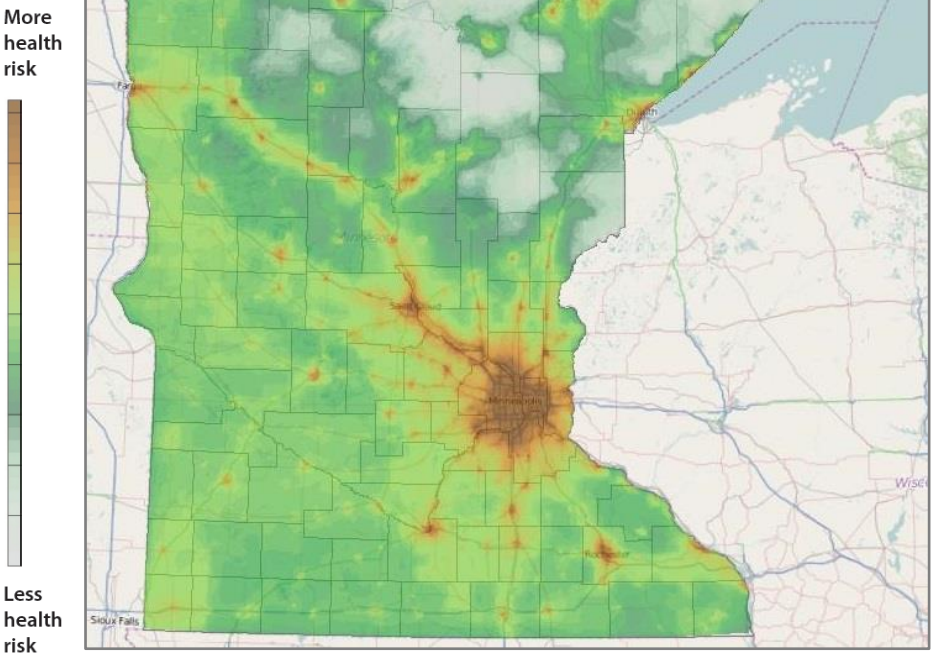


The MPCA models health risks associated with air pollution to better understand the sources of exposure and to prioritize our work. The MPCA modeling indicates that diesel exhaust is a primary driver of risk from outdoor air pollution in our state. Figure 11 shows the health risks associated with diesel exhaust in Minnesota. Health risks from diesel exhaust are higher close to roadways.

Figure 11: Health risks from diesel exhaust (all source categories)

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.



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

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) found that air pollution does not affect everyone in the same way. The groups most affected by air pollution are people of color, elderly residents, children with uncontrolled asthma, and people living in poverty. They experience more hospitalizations, emergency-room visits for asthma, and death related to air pollution.

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

In June 2019, the MPCA held ten public meetings in Bemidji, Burnsville, Duluth, Marshall, Minneapolis, and Rochester. The MPCA staff provided information and results from our Phase 1 grant programs, answered questions, and encouraged participants to provide input on what matters most to them as we look toward Phase 2.The MPCA staff took notes at those meetings for consideration alongside the written comments we received. Participants were also encouraged to submit written comments and were provided information on how to do so.

After receiving and reviewing significant 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 2 report.

A draft Phase 2 plan was released to the public in early November 2019 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. Public meetings were held in Duluth, Minneapolis, St. Paul and Rochester, with an additional broadcast meeting seeking public input at the Detroit Lakes, Brainerd, Mankato and Marshall MPCA offices. One of these public meetings was also offered as a webinar for those unable to attend a meeting in person.(see Appendix 5 and Appendix 6).

Written comments

The MPCA had an initial open public comment period through August 2019 with an additional public comment period on the draft plan through December 2019. We shared 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.

We received comment letters from the general public and other stakeholders. 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 two stakeholder meetings with interested groups over the summer of 2019. These meetings were 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 these meetings 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 these meetings 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 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 meetings included call-in and webinar options for remote participation. 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 used an online survey to offer an additional opportunity for the public to provide input in a faster, more convenient way. We also used social media including Twitter and Facebook to share information about the survey, public meetings, open comment periods, grant opportunities, and the settlement in general.

Table 3: Phase 2 stakeholder meeting participants

Name	Description
Aggregate and Ready Mix Association of MN	Association
MN Propane Association	Association
MN 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
MN 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 MN	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
MN Department of Administration	State agency or department
MN Department of Commerce	State agency or department
MN Department of Health	State agency or department
MN Department of Transportation	State agency or department
MN Department of Veteran Affairs	State agency or department
MN Office of Enterprise Sustainability	State agency or department
MN Public Utilities Commission	State agency or department

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 during the Phase 2 public engagement process. This information was used to help create our Phase 2 state plan draft.

The comments and discussions about the draft plan can be found in Appendix 6.

General themes

In the development of the Phase 2 plan, MPCA received input through public and stakeholder meetings, a public comment period, and online survey. In general, themes have been similar to what we heard in our Phase 1 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 measureable results

Community meetings

In 2019, MPCA held ten community meetings around the state and two technical stakeholder meetings with a web conferencing option in Saint Paul. Many meeting participants told us to ensure that funding reaches across the state and benefits many communities in ways that make sense for those areas. Cost-effectiveness and emission reductions to maximize the environmental benefit of settlement funding were also discussed.

In Greater Minnesota, community members expressed concerns about the exposure of children to emissions during bus rides to school. Residents also expressed concerns about traffic along busy roadways, especially in the Twin Cities metropolitan area. There was strong interest in continuing the effort to install EV fast-chargers, and participants told The MPCA staff that funding for EV chargers should be invested in rural areas and smaller metropolitan areas.

In the Twin Cities, community members expressed concerns about the many pollution sources that people are exposed to in urban areas, and specific concerns about environmental justice. Many community members told us to focus efforts in areas where pollution sources, poverty, and communities of color intersect. Participants also identified reducing emissions from school buses as a priority.

Pollutants of concern

Participants were asked to express which air pollutants they are most concerned about and would like MPCA to focus on when allocating settlement funds. Recognizing the progress made on the NO_X and PM emission reduction goals in Phase 1, participants asked for an increased focus on GHG emission reductions, while retaining NO_X reductions as intended by the settlement. Fine particulates ($PM_{2.5}$) were also identified as a concern for communities because of the potential exposure and health concerns related to those pollutants.

Alternative fuels

At many meetings, 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.

Commenters also recommended incentivizing the purchase of alternative fuels by offering greater funding amounts for first-time purchasers of alternative fuel vehicles and equipment. This would help first-time purchasers offset the additional cost of needed infrastructure for the alternative fuel (i.e. natural gas, propane).

Electric school buses

In public meetings (primarily in the Twin Cities metro area), there was a strong interest to direct funds to help purchase electric school buses in Minnesota. This was expressed by some participants in the technical stakeholder meetings as well.

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 to expand the network of fast-charging corridors 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.

While most commenters requested we continue funding highway corridors, there was also interest in continuing to fund Level 2 charging units for public, workplace, and especially multi-unit housing locations.

Written comments

One of the primary ways we received input was through written comments. We received 1,350 total comments. Key themes from these comments include:

Electrification and electric vehicles

Of the 1,350 commenters, 1,271 of them (94%) support the continued effort to fund EV charging stations. This is among the highest proportion of comments received on any single topic. Some commenters made suggestions for the locations of EV charging stations, including specific cities, locally owned gas stations and convenience stores, restaurants, hotels, and multi-family dwellings. Many commenters support the use of renewable energy, especially solar, to power these stations. We received 1,324 comments in support of using settlement funds for electric buses, predominantly school buses but also including public transit and heavy-duty electric vehicles.

Propane and natural gas

Comments suggested fuels such as propane or natural gas can power many heavy-duty vehicles and equipment instead of diesel. Comments described the benefits for replacing older diesel engines with these alternatives, including the ability to fund many more projects and reduce more NO_X emissions when compared with electric replacements.

Environmental justice and health impacts

Diesel emissions are harmful to human health, and in Minnesota, lower income communities and communities of color are disproportionately exposed to diesel pollution. Of all the comments received, 672 (49%) supported environmental justice-related uses of the settlement funds. The majority of these comments focused on concerns about helping low-income communities. There were 336 comments relating to health and exposure concerns (25%), most of which focus on children.

Eligible project types

Some commenters stated preferences for project types that they felt would bring the most benefits to Minnesota. We received 1,324 comments (97%) supporting replacing school buses with cleaner equipment, nearly all of whom specified preferences for electric options. Requests for other alternative fuels, such as propane, were also expressed. Two hundred thirty-two comments (17%) supported funding upgrades to heavy-duty vehicles and adopting electric technology. Commenters also supported using funds to replace diesel transit buses, trucking fleets, and expand Minnesota's DERA program, which upgrades a wide variety of heavy-duty equipment, including construction, rail, marine, and idle reduction equipment such as Truck Refrigeration Units (TRUs).

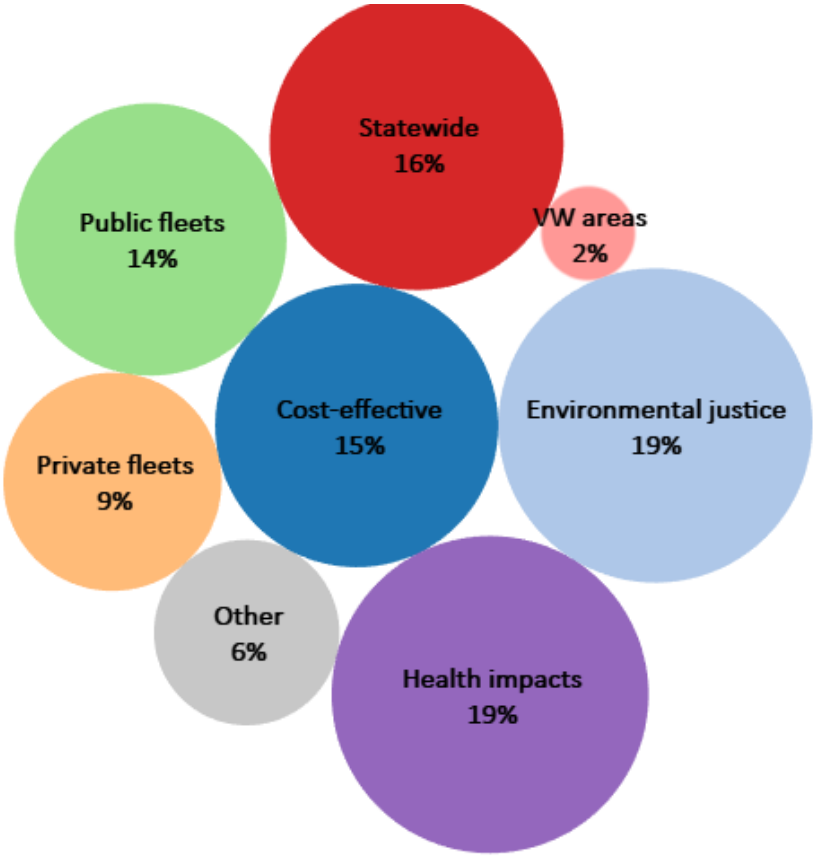
Other ideas

The comments offer a wide range of other suggestions, some of which are not eligible for funding based on the requirements of the settlement. Ideas included using funds for light rail-related projects, supporting clean energy and infrastructure development through education, offering rebates for the purchase and ownership of EVs, and supporting new technology research.

Dotmocracy

At each public meeting, we included an interactive engagement tool that we call "dotmocracy" to get a sense of attendees' priorities and interests related to the VW settlement funds. Each participant was given three dots to express what they thought was most important for us to consider as we fund projects. To reach more Minnesotans, we also launched an online survey with the same question. Overall, we received 602 responses from approximately 200 participants.

Figure 12: What is most important to you?



The category descriptions offered were:

- Health impacts: Focus on achieving health benefits by also reducing related pollutants
- Cost-effective: Achieve greatest NOx emissions reductions for lowest cost per ton
- Statewide: Spread funding across Minnesota
- Public fleets: Focus on publicly-owned vehicles
- Environmental justice: Prioritize vulnerable communities
- Private fleets: Equal eligibility for privately-owned vehicles
- Volkswagen areas: Fund projects where most diesel VWs were located
- Other: Fill in your other ideas

Figure 12 represents input from all of our public and technical stakeholder meetings in Bemidji, Duluth, Marshall, Minneapolis, Rochester and St. Paul, and the online survey.

Online survey

In seeking feedback for Phase 2, MPCA used an online survey to allow participants to express detailed interests on key topics. We received 144 responses to this survey, summarized below. We also received hundreds of written responses to open-ended questions, which have been read and reviewed but not quantified.

Reducing pollution

Survey respondents indicated that we should consider not only NO_X reductions in selecting projects to fund, but should also consider other pollutants related to diesel vehicles. Fifty-nine percent said we should focus on GHG emissions, 25% said we should focus on reducing $PM_{2.5}$, and 16% of respondents said they are most concerned about reducing NO_X with settlement funds.

Eligible project types

When asked which fuel types should be encouraged when replacing heavy-duty vehicles and equipment, 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%).

The survey also asked participants if Minnesota should provide incentives to encourage particular groups to apply. Participants suggested encouraging local governments (81%) and small businesses (76%). The next most common selection was non-profit organizations (72%), followed by state government (54%) and large businesses (42%).

Electric vehicles

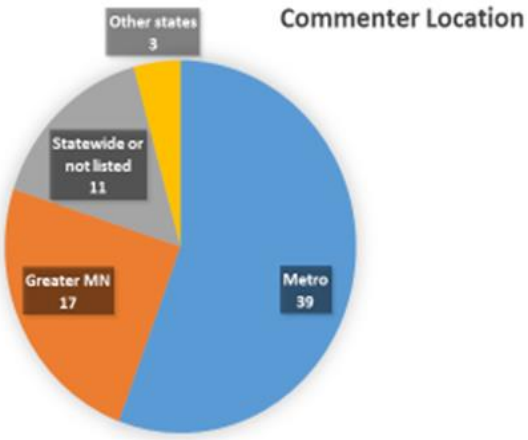
The survey asked participants what types of EV charging stations would be most useful to them or have the greatest impact when considering whether to make the switch to an EV. Respondents could select up to three options. They expressed a strong preference for charging along highway corridors to allow long-range travel between cities (66%). Other options included create EV charging hubs in the cities for public use (51%), Level 2 charging in public places (48%), Level 2 chargers at multi-unit housing (32%), fast chargers not associated with highways (27%), Level 2 chargers at workplaces (19%), or do not fund EV chargers (6%).

Appendix 6: Public input on Minnesota's Draft Phase 2 plan

The Phase 2 draft plan was open for public comment until 4:00 p.m. on December 20, 2019. Throughout the draft plan public outreach process, we solicited comments and discussion from Minnesotans across the state. We received 61 written comments representing over 90 individuals and organizations, as well as discussed the draft plan with 40 participants at our public meetings throughout Minnesota.

Commenters on the draft plan represented different groups:

- Associations
- Environmental Advocacy
- Government
- Industry
- General Public



Some of the common themes of these comments were:

- Fund more electric school buses and provide more per bus
- Recognize alternative-fueled options like propane, especially with school buses
- Continue looking at ways to reduce NOx
- Make GHG reductions a priority pollutant when selecting projects
- Continue to fund EV charging infrastructure at 15%

Summary of Comments Received

Summarized examples

- 19 - Environmental Advocacy Organizations
    - Plan will not maximize the potential of the funds due to continued incentives for fossil-based transportation and heavy equipment.
    - Climate emergency requires us to transform transportation system.
    - Electric school buses and increased Level 2 for Metro, especially ACP50
    - Increase grant amounts for communities most impacted.
    - Include car sharing benefits in metrics
- 17 - Propane proponents for school buses (Associations, Industry, and General Public)
    - Oppose Plan because it should not be designed for one type (electrification) which is more expensive and not proven.
    - Propane will accomplish every VW Settlement goal, especially NOx reduction and should be able to equally compete in all categories.
    - Minnesota is a diverse state with different needs (weather, length of routes). Schools should have a choice.
- 3 - Twin Cities Metro Communities, non-profits, and transit advocacy partnerships
    - Minnesota VW Settlement has the furthest to go on the GHG goal
    - Level 2 is the most cost-effective way to achieve this
    - Invest more in Level 2 chargers, especially ACP50 neighborhoods
    - Investing in Level 2 would leverage additional funds
    - Quantify and include the benefits of car sharing

Overview of Electric Vehicle (EV) Charging comments:

- Generally favored. When mentioned, vast majority favored full 15% allocation
- Fast charging corridors
    - Overall supportive with some suggesting specific locations and others suggesting to allow fast chargers in the Twin Cities Metro area
- Level 2
    - Comments ranged from keeping the 90% Fast chargers/10% Level 2 chargers funding split to allocating more for Level 2 (up to 50/50), especially in Metro Area of Concentrated Poverty (ACP50) neighborhoods

Overview of School Bus Comments:

- Many comments received
- Electric School Bus
    - Supporters: Reduce emissions - especially GHG; reduce exposure to children; and reduce fossil-fuel dependence by advancing electric transportation
    - Those against: concerns with new technology feasibility in Minnesota, cost per bus, and dedicated funding categories
    - Increase Grant amounts per bus – suggest $250,000 in districts with at least 40% students receive free or reduced lunch and $150,000 for others
    - Develop a Pilot program
- Propane School Bus
    - Supporters: Oppose Plan because it excludes propane from eligibility of 65% of funding; cheaper, can result in greater emission reductions, and schools should have an option
    - Those against: propane and other fuels perpetuate reliance on fossil fuel

Overview of other vehicles and equipment comments:

- Off-Road Equipment and On-Road Vehicles – fewer comments were received compared to school buses or electric vehicle charging equipment.
    - Mentions to eliminate programs that allow fossil-fueled replacement options
    - Mentions to increase funding for fossil-fueled replacement options that result in higher emission reductions and are proven to work
    - Calculations for emission reductions when replacing with electric options should recognize the life of the new vehicle rather than the remaining life of the old diesel engine
    - Similar to electric school buses, dedicate a portion of the available funding in Phase 2 to electric transit buses.

Other Items commented on include:

- Instead of the goal to distribute 60% of funds in the Metro and 40% of funds in Greater Minnesota, consider the distribution so 60% of emissions are reduced in the Metro area and 40% reduced in Greater Minnesota
- Contractor/Aggregators
    - Allow aggregators for other categories and a request to increase the cap placed on each project.

Summary of plan changes

Phase 2 Plan changes in response to comments and discussions around the state:

- Conduct Electric School Bus Pilot Project
- Increase dollar amount per bus for electric school buses
- Increase points and/or funding for propane or other alternate fuel projects that result in additional emissions reductions (propane, natural gas, bio-diesel, ultra-low NOx engines, etc.)
- Increase per project dollar amount of contractor fees where applicable
- Clarification to EV charging corridors

Phase 2 Plan discussions in response to comments that did not result in plan modifications:

- Calculation methodology for 60/40 split (TC Metro/Non-Metro) projects
    - Since 60% of the Volkswagen Vehicles were located in the Twin Cities metropolitan area and 40% were in Greater Minnesota, we looked at keeping this 60/40 split based on money spent on projects in these regions. While we are still working to achieve this goal, one commenter suggested that since the Volkswagen vehicle emissions were split between metro and Greater Minnesota in the same proportion, the emissions reductions should be split that way as well. After discussing a variety of emissions calculation options, we do not think this is an achievable goal with the parameters set up and by the State's granting process. We must maintain competitive Request for Proposals and proposals are to be competitive by standard criteria. While we don't disagree that this could be valuable, we do not believe it is possible within the confines of the settlement. We will continue to look at the RFP process and adjust accordingly to meet our goals.
- Emissions reduction calculation process for EV's
    - A limited number of comments wanted the agency to revise our calculation process, as they thought our current process is too conservative, and did not give enough emissions reduction credit for electric vehicle chargers. After additional discussion with program staff and emissions modeling experts, it was decided that our current method, while conservative, results in emissions calculations that are quantifiable and defendable, and in line with emissions calculations performed in other states.
- Project distribution (percent of funds to each project area)
    - Some of the comments received were from Minnesotans critical of our project distribution scenario. A number were displeased with the amount of funds committed to the electrification of Minnesota's transportation infrastructure while others questioned continuing to fund transportation projects that rely on fossil fuel. Agency staff looked at all of the comments and discussed the project distribution strategy, and decided that the current strategy would result in a balanced approach to promote modernizing our transportation infrastructure as well as reducing emissions across the state.
- Add specific financial cutout for electric transit buses, similar to how we are treating school buses
    - The MPCA considered this option, but chose to continue to include electric transit buses in the heavy-duty electric vehicle category. This category has sufficient funds available for electric transit options.

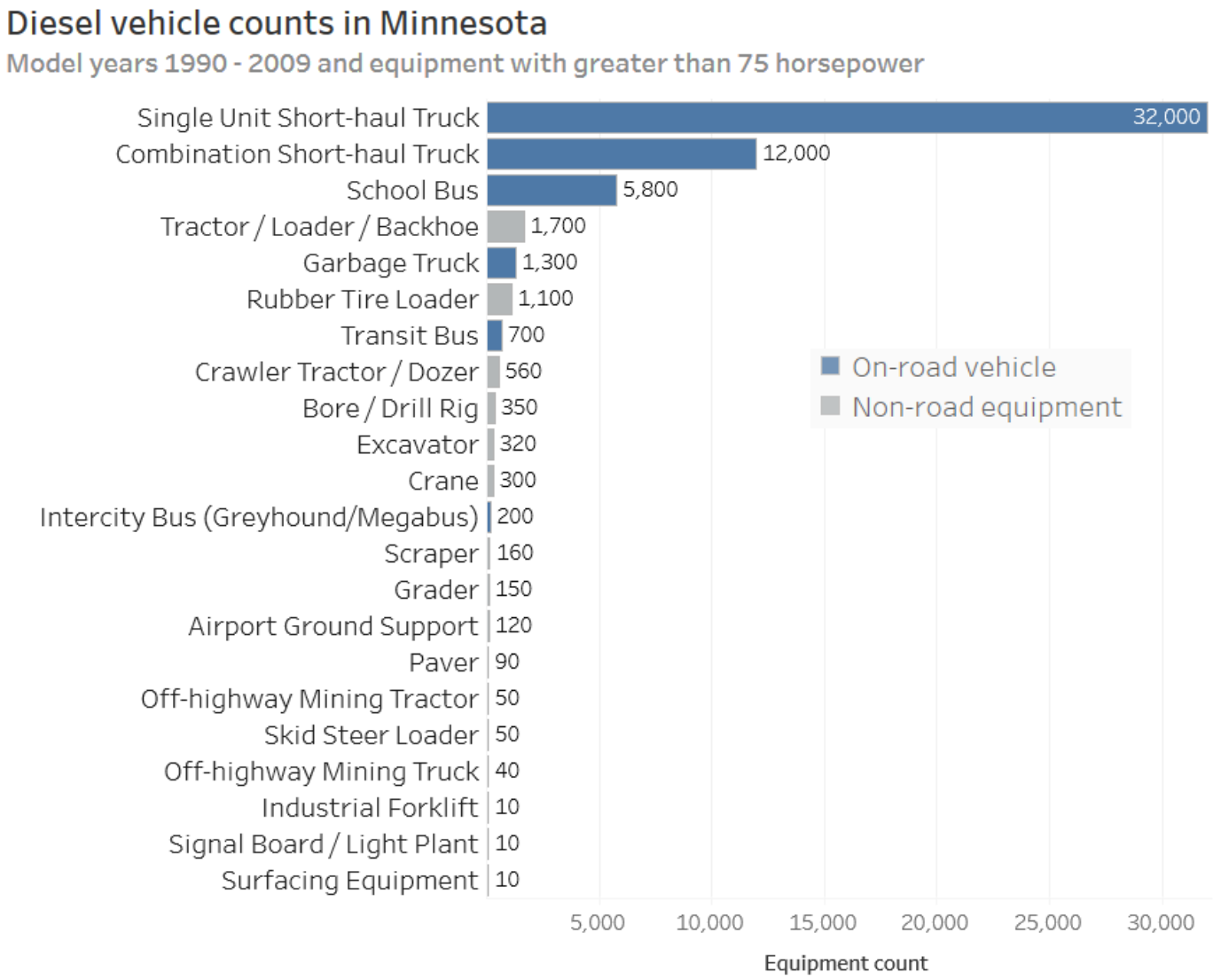
Appendix 7: Data on heavy-duty diesel vehicles and equipment in Minnesota

The following graphs include data on eligible vehicle population, emissions, and cost-effectiveness that were used to develop Minnesota's plan for the VW settlement funds. The graphs included here display data for NO_X; to see emissions estimates for $PM_{2.5}$ and GHGs, please visit our website (www.pca.state.mn.us/vw).

Vehicle inventory

Figure 13 shows the number of vehicles and equipment in Minnesota that are eligible for VW settlement replacement funding. The graph includes modeling data for 2017 based on the EPA's vehicle emissions model MOVES2014a, EPA's 2014 National Emissions Inventory Version 1 (rail yards and ports), and the National Association of State Energy Official's Volkswagen Settlement Beneficiary Mitigation Plan Toolkit.

Figure 13: Diesel vehicle counts in Minnesota



Emissions inventory

Figures 14 and 15 show emissions from vehicles eligible for VW settlement funding. These graphs include modeling data for 2017 based on the EPA's vehicle emissions model MOVES2014a, EPA's 2014 National Emissions Inventory Version 1 (rail yards and ports), and the National Association of State Energy Official's Volkswagen Settlement Beneficiary Mitigation Plan Toolkit.

Figure 14: Annual NO_x emissions for eligible vehicles and equipment, by category

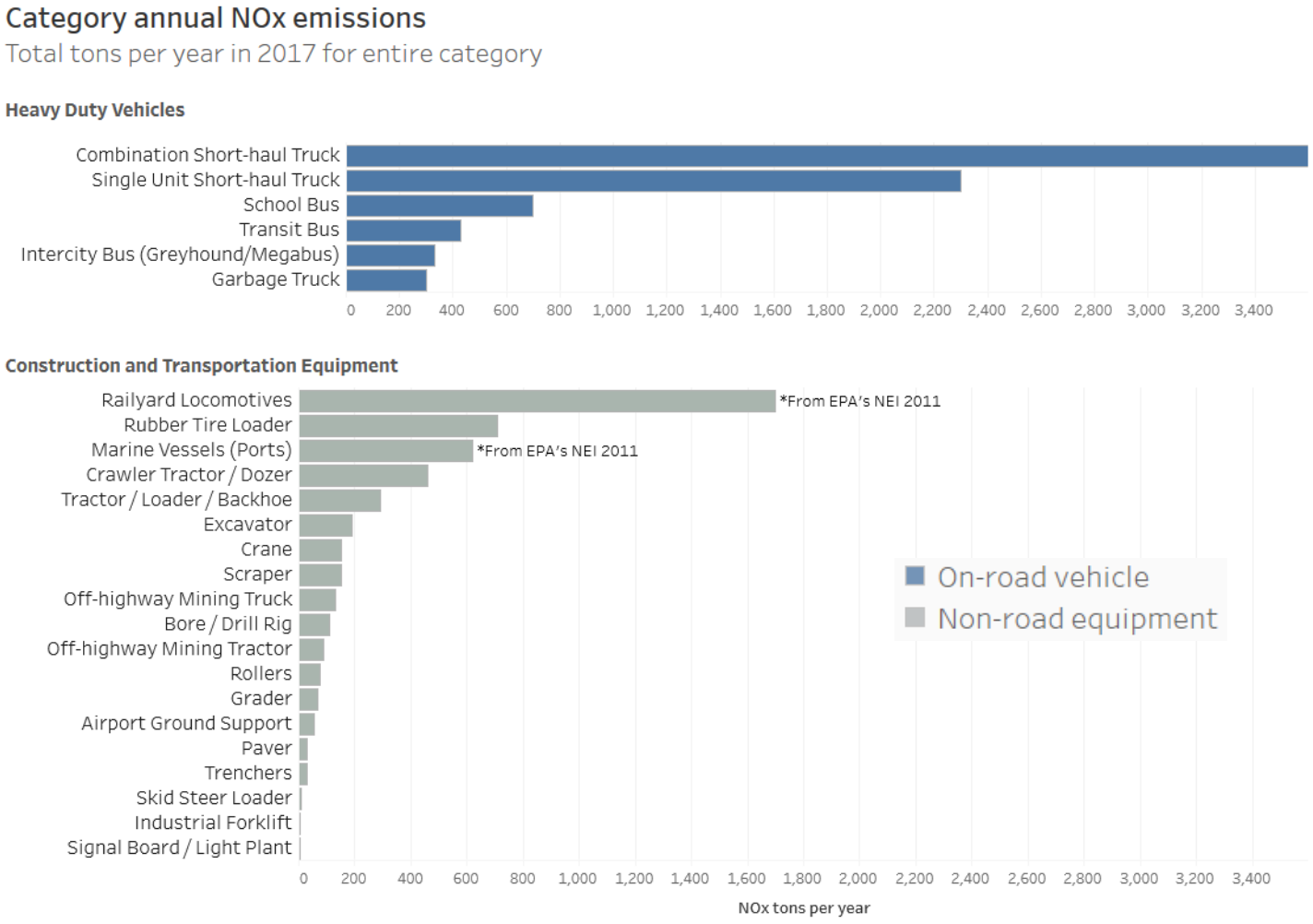
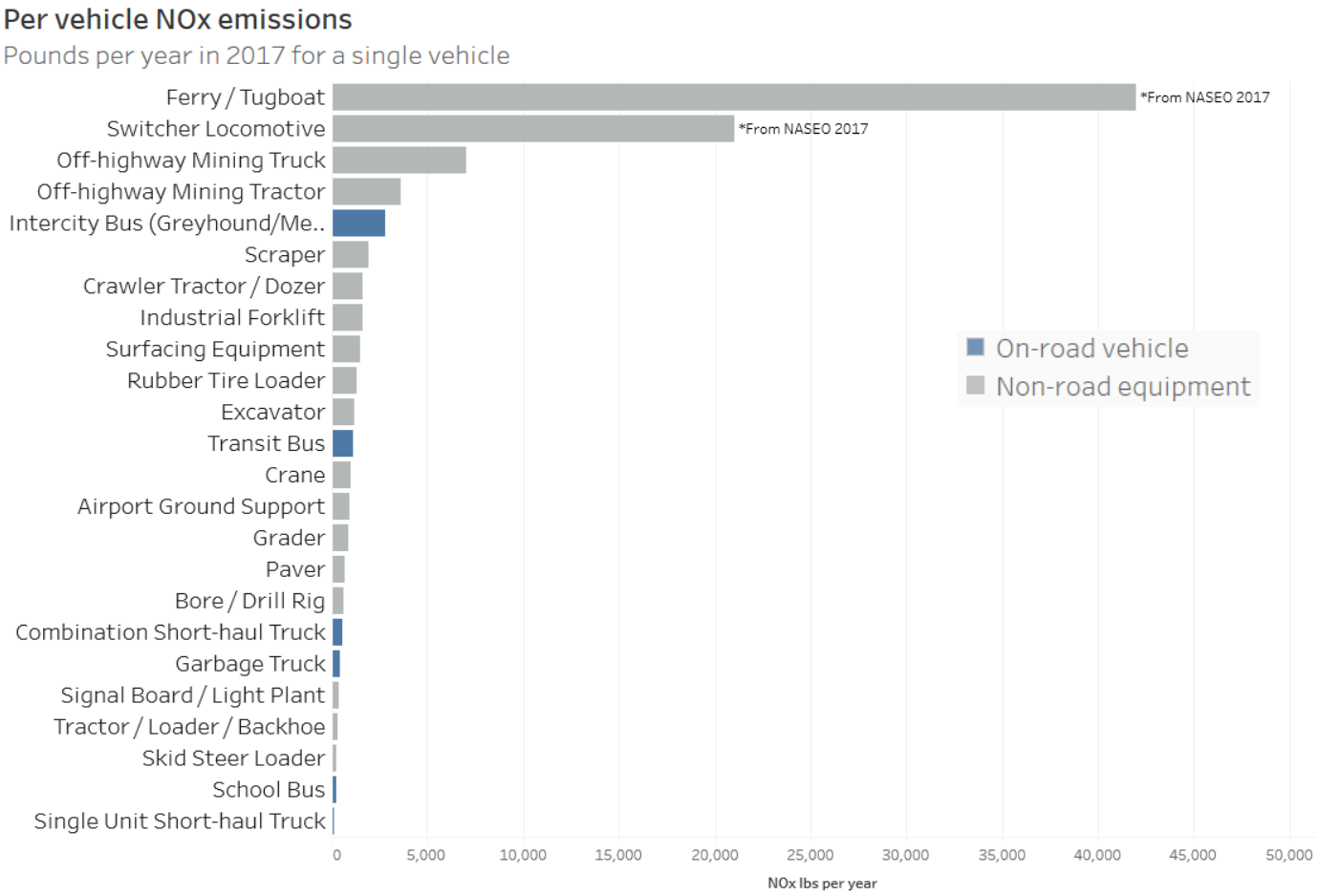


Figure 15: Annual NO_x emissions for eligible vehicles and equipment, per vehicle

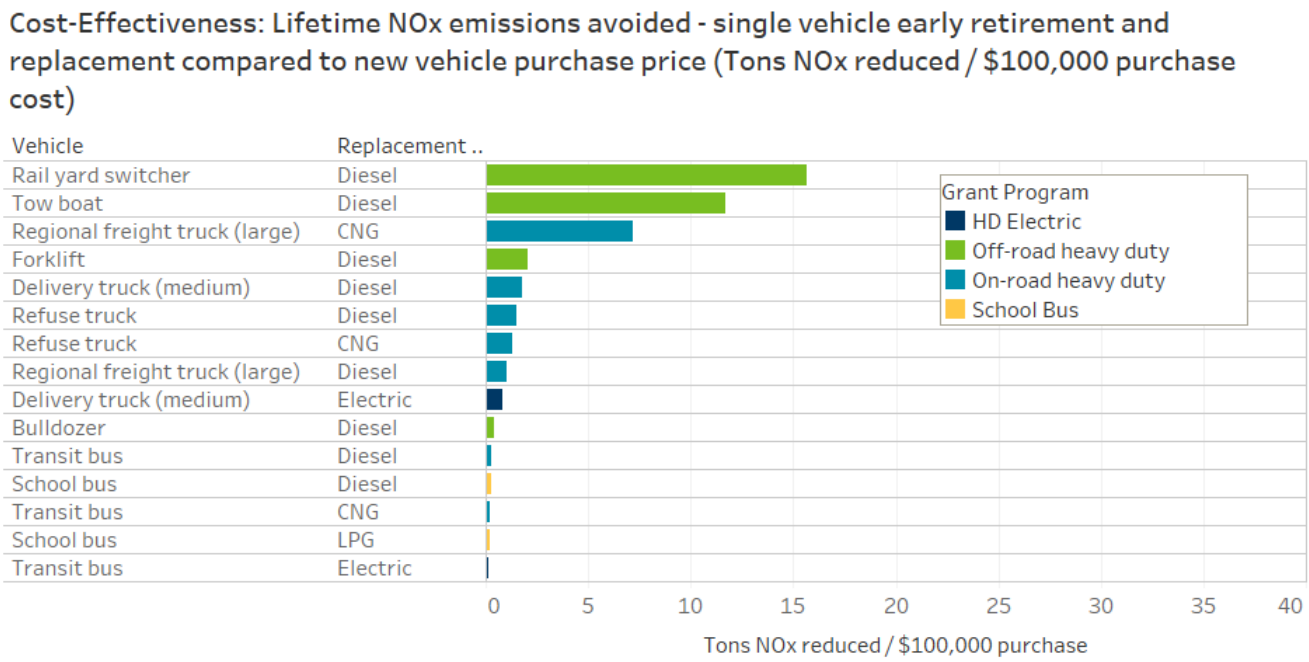


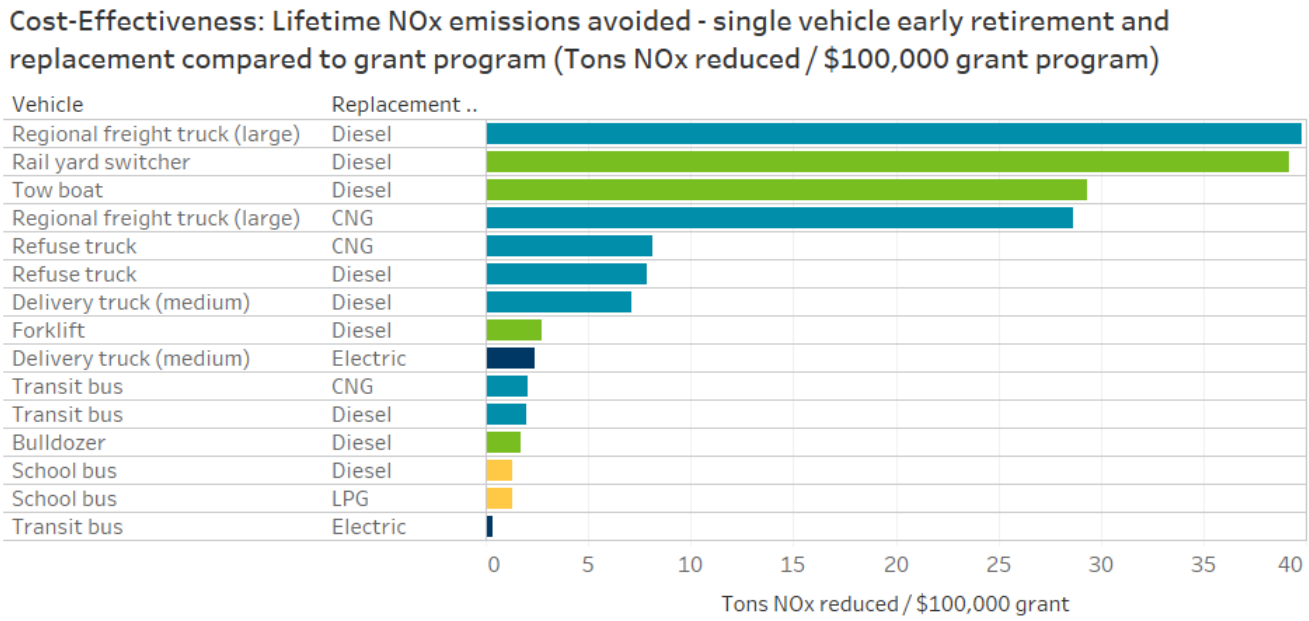
Cost-effectiveness

Figure 16 shows the approximate cost-effectiveness of various vehicle and equipment replacements. The emissions avoided are estimated over the remaining useful lifetime of a MY1998 retired vehicle.

The top graph shows cost-effectiveness of NO_x reductions, calculated using the total purchase price of the new vehicle or equipment. The second graph shows cost-effectiveness of NO_x reductions, calculated using VW settlement grant amounts. In response to public comments, grants have been structured to improve the cost-effectiveness of investments.

Figure 16: Annual NO_x emissions for eligible vehicles and equipment, per vehicle





Appendix 8: Emission reduction calculation methods

Vehicle and equipment replacements

The MPCA used emissions reduction data from funded Phase 1 (2018-2019) project averages to estimate the emissions reductions that it expects to achieve in Phase 2 (2020-2023). A probable range of reductions was calculated to reflect the variability in emissions benefits from funded projects.

Phase 2 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 (2018) 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 takes similar specifications to AFLEET about the old and new piece of equipment to calculate the annual and lifetime emissions reductions. DEQ is used for off-road equipment because AFLEET only calculates emissions from on-road vehicles.

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, these particular details varied greatly among projects submitted and awarded funding. We anticipate that Phase 2 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 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 2. This was calculated by dividing the total funds allocated to a grant category by its maximum allowable grant amount. For example, $2.35 million is allocated for school bus replacements in Phase 2, and the maximum grant amount offered for one school bus replacement is $20,000. After removing 10% of the allocated funds for administrative costs (as allowed by the Consent Decree), we can expect to fund at least 106 school bus replacements in Phase 2.

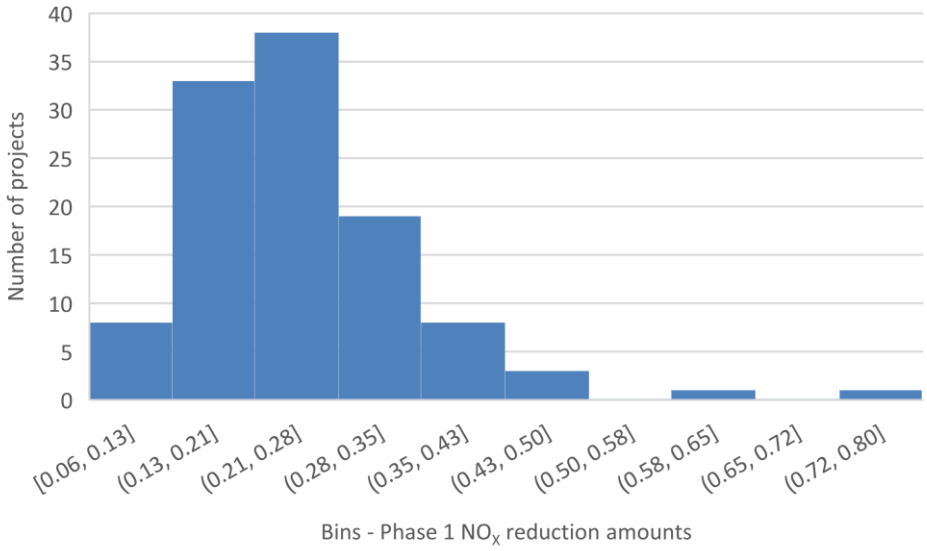
This same calculation was used for each of the other grant categories, except for heavy-duty off-road replacements. For this category, the average awarded grant amount from Phase 1 was used instead of the maximum allowable, because the awarded amounts in this grant program in Phase 1 varied much more than other grant categories.

The average reduction achieved per project was then calculated for each grant category and pollutant by simply dividing the total reductions achieved by the number of funded projects.

Continuing with the school bus example, Phase 1 school bus replacements achieved, on average, 0.26 tons of NO_X reduced per replacement. The amount of reductions achieved by school bus replacement projects, however, ranged from as little as 0.06 tons from a project to as many as 0.74 tons.

To account for the variability of reduction amounts in our Phase 2 emissions reduction estimates, a margin of error around each of the Phase 1 grant category averages was calculated.

Figure 17: Histogram of NOX reduction amounts from Phase 1 funded school bus



This margin of error was added to and subtracted from the average to set a limit above and below it. These limits served to calculate the range within which we can expect, with 95% confidence, the true average reduction of a funded Phase 2 project. In statistics, this is the definition of a 95% confidence interval—it is the range constructed such that for 95% of samples collected (in our case, Phases) the true population average will fall within these limits. By scaling this interval (range) for one project by the number of projects we expect to fund in Phase 2 in the grant category, we estimate the range of emissions reductions within which we can we can expect (also with 95% confidence) the funded projects in a grant category will achieve together (Equation 1).

Equation 1: Phase 2 reductions

$$Reductions_{Phase\ 2} = n\ funded\ projects_{Phase\ 2} \times (\ avg\ reduction/funded\ project_{Phase\ 1} \pm margin\ of\ error_{Phase\ 1})$$

To calculate the margin of error around the category averages, the standard deviation was calculated for each. The standard deviation is a value that indicates the extent of deviation, or dispersion, of a group's data points around the group's average. A small standard deviation indicates that the data points (reduction amounts) are consistently close to the grant category's average reduction, and not very spread out. A large standard deviation indicates that the reduction amounts are distant and spread much more widely around the average. A standard deviation of zero would mean that all the points are the same. It is calculated by first subtracting each data point from the group's average, and then squaring each of these differences. These squared differences are summed, and then divided by the number of data points in the group. The square root of this number yields the standard deviation of the population.

Table 4 gives the averages and standard deviations calculated for each Phase 1 grant category and pollutant. School bus replacements have the lowest standard deviations in all three types of pollutants since these projects and their reduction amounts tend to be very similar. There is small fluctuation, but generally, these reduction amounts do not vary by much. Off-road equipment replacements, on the other hand, have the highest standard deviations in all pollutant types since projects funded in this category vary the most in size and type, from construction equipment to locomotives to mining trucks. The resulting reduction amounts from projects funded through off-road grants are quite varied.

To calculate the margin of error around each average, the standard deviation is divided by the square root of the number of funded projects in the grant category, and then multiplied by the z-score associated with the desired level of confidence (Equation 2). A z-score is a measure of how many data points fall within a certain range of all possible values,

and it comes from the table of standard normal distribution values. For 95% confidence, the z-score needed is 1.96. The final margin of error calculated for each grant category added to and subtracted from each category's average to estimate its range of Phase 2 emissions reductions. The upper and lower bounds of each range were added together to estimate the total Phase 2 estimated range of emissions reductions.

Equation 2: Margin of error

$$margin\ of\ error_{Phase\ 1} = \left(standard\ deviation_{Phase\ 1} \div \sqrt{n\ funded\ projects_{Phase\ 1}}\right) \times 1.96$$

Table 4: Average amount of pollutant reduced per project and standard deviation

	NO_X (tons)		$PM_{2.5}$ (tons)		GHGs (tons)	
Grant category	Average reduced / project	Standard deviation	Average reduced / project	Standard deviation	Average reduced / project	Standard deviation
School bus replacements	0.3	0.1	0.02	0.01	21.8	18.9
Clean heavy-duty on-road replacements	2.1	1.6	0.1	0.1	88.0	183.6
Clean heavy-duty off-road replacements	129.2	118.0	6.6	11.2	690.5	411.5
Electric school bus replacements	0.3	0.1	0.02	0.01	45.8	19.6
Electric heavy-duty replacements	4.7	2.5	0.4	0.7	497.6	251.0

Since heavy-duty electric vehicle projects have not been evaluated yet in Phase 1, average reductions for these categories were calculated from evaluation simulations that were conducted using school bus and on and off-road vehicle information received through the Phase 1 school bus, on and off-road grant rounds.

Electric vehicle charging stations

We estimated the cost of single connection charging ports based on Department of Energy data[4] for non-residential Level 2 and direct current (DC) fast chargers (Table 5).

Ninety percent of the EV charging station funds are directed towards DC fast-charging stations. Ten percent of the EV charging station program funds are targeted toward Level 2 charging stations at public places, multi-unit housing, or work sites. Level 2 charging stations may also be funded with money remaining after funding DC fast chargers.

Table 5: Example projects funded

Type	# Single connections
Level 2	**104**
50 kW Direct Current Fast Chargers	**43**
Total	**147**

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

The difference in cost between Level 2 stations represents different features and durability available. A multi-unit housing installation may use less expensive wall mounted stations in contrast to more robust models used in general access locations. Installation costs are also very dependent on the particular project.

Grants were estimated at $7,500 for dual-port Level 2 chargers and $70,000 for DC fast chargers.

These estimates provide an idea of how many charging station projects of each type could be funded in Phase 2 in order to make emissions calculations, but do not reflect a preference for any location type or funding targets or allocations.

Table 6: Cost estimates for installing charging stations

Station type	Cost for single connection port
Level 2	$3,750
50 kW DC Fast Charger	$50,000
150 kW DC Fast Charger	$170,000

We assumed that, on average, one vehicle per day will charge at the stations funded. This estimate is based on current fast-charging usage as reported by ZEF Energy, which operates fast chargers in Minnesota. We expect usage to increase over the coming years as EVs become more common, but feel this is a reasonable, conservative estimate based on current use levels. We did not attempt to make estimates of usage growth. We estimated that vehicles could travel 3.4 miles from each kWh of charge. We estimated the amount of charge per vehicle based on data from the U.S. Department of Energy Alternative Fuels Data Center.

We are unable to estimate the impact these investments may have on increasing use of EVs, but we are able to estimate the amount of conventional gasoline vehicle miles displaced by drivers using charging stations funded by this project. We assume that the miles driven by EVs are equally displacing conventional vehicle miles.

Table 7: Estimates of vehicle miles displaced by electric vehicles charging at program stations

	Vehicles per day	kWh charge per vehicle	VMT/kWh	VMT from charge	units funded	Annual VMT displaced
Level 2 - public	1	19	3.4	64.6	104	2,452,216
50 kW DC Fast Chargers	1	50	3.4	170	43	2,668,150
Total						**5,120,366**

We used the AFLEET model to estimate fuel use and emissions from a MY2015 electric vehicle and MY2015 conventional passenger vehicle. To travel 10,000 miles, the conventional passenger car uses 382 gallons of gasoline (E10) and the electric vehicle uses 2,940 kWh of electricity.

We modeled the sources of electricity generation using the 2016 Minnesota in-state generation mix reported by the U.S. Energy Information Administration. We plan to encourage use of renewable energy to supply charging stations, so this provides a conservative estimate of emissions benefits.

Using the annual miles driven after charging at funded stations, we calculated the emissions avoided as the difference between emissions from the conventional gasoline vehicle and the EV. The EV has no tailpipe NO_X or $PM_{2.5}$ emissions; those emissions occur upstream. The model calculates GHGs only on a well-to-wheels basis and therefore does include GHG emissions from electricity generation and fuel production. Solar or wind energy sources used for vehicle charging would create no GHG emissions.

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.

Appendix 9: 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 10: 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.

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).

1. Personnel including costs of employee salaries and wages, but not consultants.
2. Fringe Benefits including costs of employee fringe benefits such as health insurance, FICA, retirement, life insurance, and payroll taxes.
3. Travel including costs of Mitigation Action-related travel by program staff, but does not include consultant travel.
4. 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.
5. 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.
6. Construction including costs associated with ordinary or normal rearrangement and alteration of facilities.
7. 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).

Appendix 11: Trustee Notification- Phase 2 funds for additional School Bus program

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300

800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer

March 6, 2019

Russell L. Crane, MBA
Assistant Vice President | Wilmington Trust, N.A.
Rodney Square North, 1100 North Market Street,
Wilmington, DE 19890-0001

Dear Russell Crane:

The Minnesota Pollution Control Agency (MPCA) is the designated Lead Agency for the State of Minnesota in the Volkswagen (VW) Environmental Mitigation Trust Agreement. The Trust Agreement requires each Beneficiary of the Trust to submit a Beneficiary Mitigation Plan (Plan) that identifies funding priorities prior to requesting funds from the Trust. On April 11, 2018, the MPCA submitted a Plan that identified a ten-year, three-phased approach for allocating Minnesota's funds and outlined funding priorities for the first phase of settlement funds.

Based on the experience of our first Trust-funded request for proposals, the MPCA would like to modify our Plan to accommodate an additional school bus replacement grant.

Section 4.1 of the Environmental Mitigation Trust states: "Beneficiaries may adjust their goals and specific spending plans at their discretion and, if they do so, shall provide the Trustee with updates to their Beneficiary Mitigation Plan".

Pursuant to Section 4.1 of the Trust Agreement, the MPCA, as Minnesota's designated Lead Agency, will be adding an additional $645,000 school bus grant program to Phase 1 of the existing Minnesota Plan. The MPCA will add this Plan adjustment to our existing VW website to keep the public fully appraised of our program spending plans. This adjustment does not impact our ten-year program goals identified in the Plan.

This letter is intended to update the Trustee on our current Plan. The MPCA intends to conduct a full review of all of our Phase 1 programs, as described in our existing Plan, and will adjust future Phases to accommodate this slight funding shift in the existing Plan. Our overall three-phase Plan structure is not changing, however, we will be shifting these funds from Phase 2 to Phase 1 of our Plan.

If you have any questions or concerns regarding this document, or the Plan modifications described in this letter, please contact Rocky Sisk of my staff at rocky.sisk@state.mn.us or at 651-757-2173.

Sincerely,

Laura Bishop
Commissioner

LB/RS:je

cc: Christina Brown, Attorney, Minnesota Attorney General's Office
Dave Benke, Division Director, MPCA
Adonis Neblett, Legal Council, MPCA
Rick Patraw, Manager, MPCA
Rocky Sisk, State Program Administrator Coordinator, MPCA