

June 12, 2017

Commissioner John Linc Stine  
Minnesota Pollution Control Agency  
520 Lafayette Road N  
St. Paul, MN 55155

Dear Commissioner Stine,

Drive Electric Minnesota (Drive Electric MN), a stakeholder partnership working hard to make Minnesota a national leader in adoption of electric vehicle (EV) technology and charging infrastructure, supports investing 15% of the Volkswagen Settlement Mitigation Fund dollars toward funding EV charging infrastructure for light duty vehicles and urges that the MPCA prioritize projects that replace diesel trucks and buses with EVs.

Electrifying the transportation sector achieves lower transportation costs, improves air quality, and increases energy independence. Additionally, EVs emit less than half of NOx emissions compared to gasoline vehicles<sup>1</sup>. Here are a few opportunities the VW Settlement Mitigation dollars could support in Minnesota:

- **DC Fast Charging Corridors.** Availability of recharging infrastructure to enable longer trips is a critical enabler of EV adoption. VW settlement funding can be used to invest in corridors in the state of Minnesota, following designation by the Federal Highway Administration of an EV corridor on I-94 and planning efforts on other corridors by the MPCA and MN DOT.
- **EV school buses.** Air pollution is particularly detrimental to children, making diesel emissions from school buses a particular priority. Many states, including Minnesota, have invested for years in efforts to retrofit diesel school buses with cleaner diesel technology. But why stop there? The Lion bus company of Montreal is deploying a new electric school bus. In addition to eliminating tailpipe emissions altogether (not just reducing them), it will steeply reduce full lifecycle GHG emissions.
- **EV transit buses.** This is a booming area, with at least four companies offering EV products, including New Flyer, Proterra, and BYD. Transit agencies all over the country are launching pilot projects. EV buses have a higher upfront cost and a lower lifetime cost of operation due to lower fuel and maintenance costs. VW settlement money could be used to help deploy EV buses into transit fleets throughout Minnesota, paving the way to steeply lower transit emissions.

Founded in 2010, Drive Electric MN brings together all the parts of the EV universe – automakers and auto dealers, electric utilities and cooperatives, local and state government, corporations, and NGOs – to accelerate EV adoption in MN by improving charging infrastructure and developing brand neutral educational and marketing programs. The enclosed attachment further outlines Drive Electric MN's recommendations for spending the VW Settlement Mitigation fund.

Sincerely,

Drive Electric Minnesota Members;

American Lung Association in Minnesota • Center for Energy and the Environment • Chargepoint  
Connexus Energy • Dakota Electric Association • Fresh Energy • General Motors • Great River Energy  
Kline Nissan • Minnesota Auto Dealers Association • Minnesota Department of Commerce  
Minnesota Plug in Vehicle Owners Circle • Minnesota Pollution Control Agency • Minnesota Power  
Nissan North America • Otter Tail Power Company • PlugIn Connect • Xcel Energy • ZEF Energy

<sup>1</sup>Analysis performed using GREET modeling software indicated EVs in the Miso North grid pollute 2.5 times less NOx, and EVs on 100% renewable energy pollute 8 times less NOx than gasoline vehicles when considering fuel and manufacturing emissions over the life of the car, assumed to be 160,000 miles.

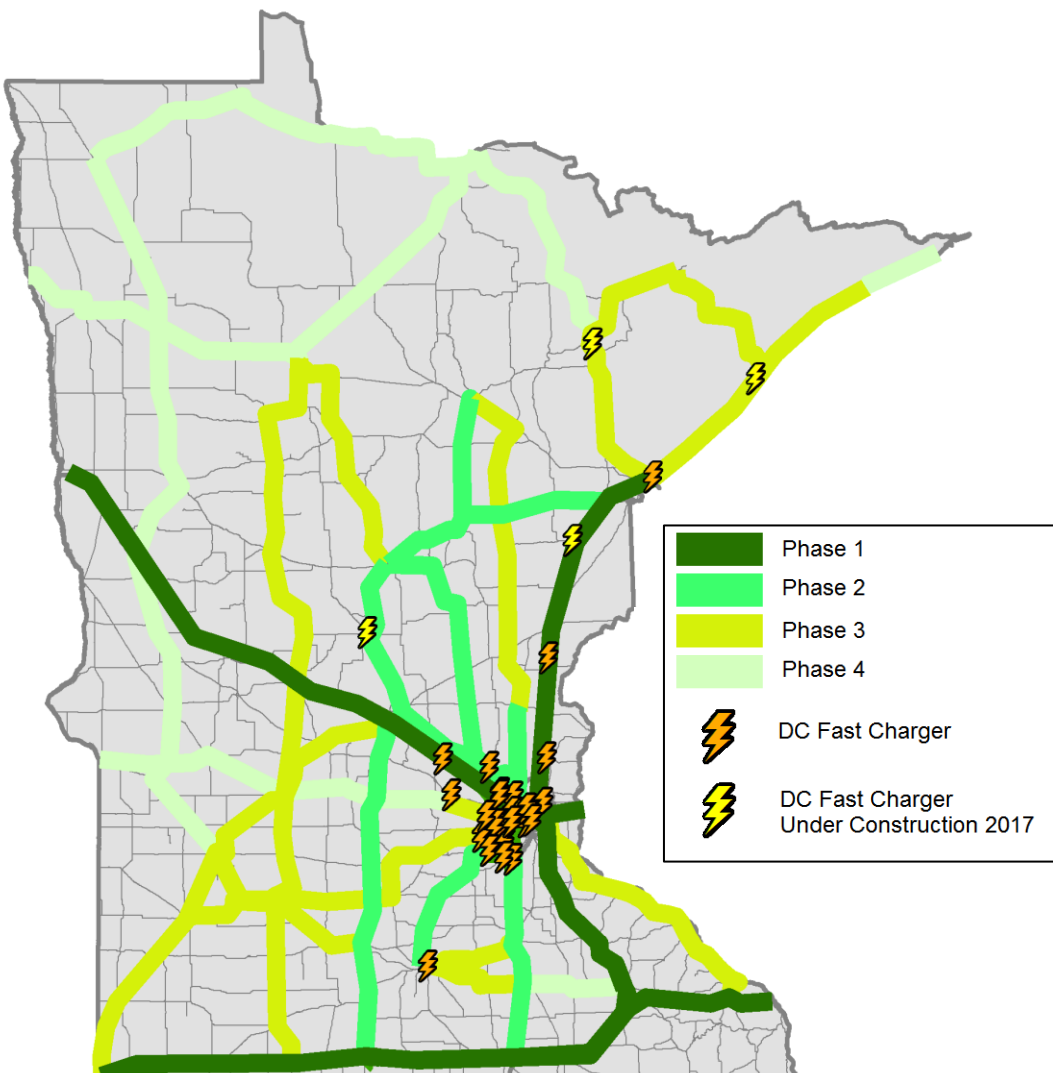
## RECOMMENDATIONS FOR INVESTING THE VW FUNDING

### Infrastructure

The VW Settlement allows states to invest up to 15% of total mitigation fund dollars on light duty electric vehicle (EV) charging equipment. Drive Electric MN strongly supports allocating the maximum funding under this program to infrastructure, focusing on DC Fast Charging along high traffic corridors.

### DC Fast Charging

Increasing the number of DC Fast Chargers has been linked to increase EV adoption. We suggest an early focus on DC Fast Charging along high traffic corridors in Minnesota, allowing EVs to travel throughout the state and reduce range anxiety among drivers, which is commonly cited as a critical barrier to EV adoption. As shown on the map below, VW settlement dollars can tackle this critical barrier, sufficiently funding up to 141 50kW DC Fast Chargers every 50 miles based on a \$50,000 grant per charger. The four proposed phases outlined below tackle high traffic corridors in order of priority based on traffic numbers.



Source: GPI, MPCA, MnDOT. Figure authored by GPI, May 2017.

Proposed buildout of 50kW CHAdeMO and CCS DC Fast Charging network in MN. Current and proposed networks do not include Tesla Superchargers. VW Settlement infrastructure dollars could fund up to 141 50kW DCFC based on \$50,000 per charger grant.

### Electric Vehicles

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We recommend that EVs be allowed to compete in every category where they exist on the market under the VW settlement. Since EVs are the most cost effective solution to reduce NOx emissions while also offering co-benefits important to Minnesota, we further recommend that VW settlement grant programs require cost-sharing to maximize state dollars and give EVs the credibility they deserve.

**Cost effectiveness**

To maximize NOx emissions reduced per dollar spent by the state, projects should be evaluated based on the dollar amount requested and not on the total cost of the vehicle. A cost-sharing grant program would encourage additional project partners to come forward and provide matching funding, maximizing the VW settlement dollars. Out of the eligible repower or replacement options, EVs provide the most cost effective reductions in NOx emissions on average as shown below.

**Annual NOx Pounds Reduction per State Dollar Spent based on \$100,000 Grant**

Vehicle being Replaced	Repower or Replacement Options			
	New Diesel	CNG/LNG	Propane	All Electric <sup>1</sup>
1992-1995 School Bus	.00466	.00477	.00458	.00487
1992 Refuse Truck	.01363	.01390	NA	.01417
1992 Step Van	.00462	.00473	.00479	.00485

<sup>1</sup> Based on grid with clean electricity (renewables). Source: NASEO Volkswagen Settlement Beneficiary Mitigation Plan, 2017.

**Co-benefits**

Investments in diesel vehicle replacement should recognize the co-benefits that EVs offer. In addition to NOx emission reduction and operating cost savings, EVs offer greenhouse gas reductions, grid services making it easier to integrate renewable electricity, and support technology deployment that can offer more benefit in the future.

**Electric Vehicle Options on the Market Under Eligible Mitigation Actions 1-8**

VW Action	Vehicle type	EV Option on the market?	Manufacturers with Applicable EV Options	Beneficial Reductions		
				NOx	GHG	O&M Costs
1	Class 8 local freight trucks/port drayage trucks	✓	Build Your Dream (BYD) Q1M, BYD T9, Orange EV	✓	✓	✓
2	Class 4-8 school bus, shuttle bus, or transit bus	✓	BYD, DesignLine Corp, Ebus, First Priority GreenFleet, New Flyer, Nova Bus, Phoenix Motorcars, Proterra, Trans Tech, Zenith Motors	✓	✓	✓
3	Freight switchers	✓	Nordco Navigator NVX8040	✓	✓	✓
4	Ferries/tugs	✓	Engine modification	✓	✓	✓
5	Ocean going vessels shorepower	NA	Switch to electricity while docked	NA	NA	NA
6	Class 4-7 local freight trucks	✓	BYD, First Priority GreenFleet, Phoenix Motorcars, Workhorse, ZeroTruck	✓	✓	✓
7	Airport ground support equipment	✓	JBT Commander 15j, JBT UES-2, JBT EUROstep	✓	✓	✓
8	Forklifts/port cargo handling equipment	✓	BYD	✓	✓	✓