State of New Jersey
Department of Environmental Protection

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

CATHERINE R. McCABE
Commissioner

PROJECT PROPOSAL

OVERALL GOAL

The State of New Jersey, as a beneficiary of the Trust established pursuant to the national Volkswagen settlement, intends to use its allocation from the mitigation trust to efficiently implement projects that reduce oxides of nitrogen (NOx) emissions in a cost effective and technically feasible manner. The implemented projects must meet the criteria of the Consent Decree. New Jersey is issuing this solicitation for project ideas to ensure a broad range of project ideas are considered.

NJDEP anticipates primarily funding pilot electrification projects, including the replacement of heavy-duty vehicles/engines such as buses, trucks, and non-road equipment in urban areas disproportionately impacted by diesel emissions, as well as electric vehicle charging/fueling infrastructure installation in strategic locations across the state.

Submissions must contain all the information outlined in the "Project Proposals" section of this document.

ELIGIBLE PROJECTS

A general summary is below. Click here for comprehensive list and associated definitions.

Source Category	Emission Reduction Strategy	Allowed Expenditure Amount
1. Class 8 local freight trucks & port drayage trucks	Repower and replacement	Up to 40% for repower with diesel or alternative fuel or up to 75% (up to 100% if government owned) for repower with electric. Electric charging infrastructure costs are an eligible expense. Up to 25% for replacement with diesel or alternative fuel or up to 75% (up to 100% if government owned) for electric replacement. Electric charging infrastructure costs are an eligible expense.
2. Class 4-8 school bus, shuttle bus or transit bus	Repower and replacement	Same as row 1
3. Freight switching locomotives	Repower and replacement	Same as row 1
4. Ferries/Tugs	Repower	Same as row 1
5. Oceangoing vessels	Shorepower	Up to 25% for shore side infrastructure if non-government owned (up to 100% if government owned)

Source Category	Emission Reduction Strategy	Allowed Expenditure Amount
6. Class 4-7 local freight trucks	Repower and replacement	Same as row 1.
7. Airport ground support equipment	Repower and replacement	Up to 75% to repower or replace with electric (100% if government owned). Electric charging infrastructure costs are an eligible expense.
8. Forklifts and Port Cargo Handling Equipment	Repower and replacement	Up to 75% to repower or replace with electric (100% if government owned). Electric charging infrastructure costs are an eligible expense.
9. Electric vehicle charging stations or hydrogen fueling stations for light duty vehicles only		Up to 100% to purchase, install and maintain infrastructure if available to public at *government owned* property. Up to 80% to purchase, install and maintain infrastructure if available to public at *non-government owned* property. Up to 60% to purchase, install and maintain infrastructure at a workplace or multi-unit dwelling that is not available to the general public. Up to 33% to purchase, install and maintain infrastructure for publicly available hydrogen dispensing that is high volume or 25% for lower volume.

PROJECT PROPOSALS (Open with Adobe Reader)

Electronic submittals are preferred and should be sent to VWComments@dep.nj.gov, however paper submittals will also be accepted and should be sent to:

NJDEP
Division of Air Quality
Mail code 401-02E
Trenton, NJ 08625-0420
Attn: VW Settlement

All proposals must contain the following information; incomplete applications will not be considered. If your project is selected, you may be contacted for additional detailed information. Send questions to VWComments@dep.nj.gov

To enter information electronically, use Adobe Reader

CONTACT INFORMATION

Applicant Name	City of Paterson
Applicant Address	800 Broadway
City, State, Zip Code	Paterson, NJ, 07514
Contact Person	William Rodriguez
Title/Position	Director
Phone	973-321-1488
E-mail	wrodriguez@patersonnj.gov and to jsherman@ccmtdg.com
Owner Name	same as above
Owner Address	
City, State, Zip Code	
Contact Person	
Title/Position	
Phone	
E-mail	

PROJECT NAME	Revised City of Paterson Fleet Electrification Program - Phase 1

PROJECT CATEGORY OR CATEGORIES (choose from 1-9 in "Eligible Projects" section above)

1	2	3	4	5	6	7	8	9
X								

PROJECT PRIORITY Priority # of proposals
If submitting more than one proposal, what is the sponsor's priority of this proposal?

NOTE FOR CATEGORY 9 PROPOSALS

If your proposal is for Category 9 (Light Duty Zero Emission Vehicle Supply Equipment), follow these instructions:

Electric Vehicle stations: Do not complete this form. Instead, go to *It Pay$ to Plug In* – NJDEP's Electric Vehicle Charging Grants Program, and apply for a Charging Grant. Volkswagen funds for charging stations will be administered through *It Pay$ to Plug In*.

Hydrogen fuel cell vehicle supply equipment: Complete all of the questions on this form.

PROJECT BUDGET

Provide total estimated project budget, include source, amount of cost share, and administrative costs if applicable:

The total estimated project budget is $1,263,786 for 2 battery electric Class 8 garbage trucks along with related charging equipment, telematics, and administrative costs for electrical design, installation, commissioning, and project management services. Since the City of Paterson is a public entity, no cost share is required.

PROJECT DESCRIPTION (Briefly describe the project by completing the following questions)

This project is phase 1 of the City of Paterson's Fleet Electrification Program. Phase 1 consists of the acquisition and operation of two BYD 8R Class 8 garbage trucks that will be charged using 40kW AC wall-mounted chargers. Phase 2 will be next year and include the acquisition and operation of medium-duty electric work trucks.

Geographic area where emissions reductions will occur? 8.074 square miles

Estimated size of population benefitting from the emission reductions? 148,678 (2017 est.)

Estimated useful life of the project? 15

Number of engines/vehicles/vessels/equipment included in the project? 2

DEP will be modeling emission benefits for all projects. Please provide the necessary information below:

Model Year 2000 GMC Garbage Truck and a 2001 International Garbage Truck

Horsepower 300 horsepower each

Annual hours of use 1,920 hours of annual operation each

Annual amount of fuel used 4,549 gallons annually for each vehicle

Will the project benefit one or more communities that are disproportionately impacted by air pollution? If so, please describe?

Yes, Paterson is a NJDEP EJAC Tier 1 City. Please see discussion below.

Only shovel ready projects will be considered. Please list project partners.

Project partners are BYD Motors, Hudson County Motors, Climate Change Mitigation Technologies LLC, and the RSM Construction Group.

Estimated timeframe for implementation? Include a project timeline that identifies start and end dates, as well as the timeline for key milestones.

Delivery of the garbage trucks is approximately 1 year from receipt of a signed sales order and advance downpayment of VW funds. The chassis takes approximately 6 months and the packer-body another 4 months. Charging infrastructure will be installed during the intervening time so that the vehicles will be fully operational upon delivery.

Demonstrated success in implementing similar projects?

BYD Motors LLC is the largest electric truck OEM in the world, having sold more than 12,000 battery electric trucks worldwide and over 100 in the US. Hudson County Motors in Secaucus NJ is one of the largest truck dealers in New Jersey and the first electric truck dealer in NJ. Climate Change Mitigation Technologies LLC of Montclair NJ is a developer and manager of public and private zero emission truck fleet projects and is responsible for some of the first VW projects in New Jersey. Project partner RSM Construction Group of Paramus is expert in the design and construction of AC and DC charging systems.

If your proposed project involves alternative fuels, provide a demonstration of current or future plans to provide adequate refueling infrastructure.

The project use electricity as an alternative fuel. In phase 1 of the project, the battery electric garbage trucks will be powered with grid electricity. In phase 2, the Paterson DPW will be assessed for the viability of a solar PV power system to generate clean, green, renewable, low-cost, zero carbon fuel for the Paterson municipal fleet.

Has your organization been approved to receive and expend any other grant funds related to this project? If so, please provide details.

No

Please provide any additional information that supports this project.

Paterson is a NJDEP EJAC Tier 1 environmental justice community. The 2019 estimated population of 145,233 makes Paterson the third largest city in New Jersey. Paterson also has the third-highest density of any U.S. city with over 100,000 people, behind only New York City and San Francisco. The population density was 17,346.3 per square mile (6,697.4/km2). Paterson's racial makeup was 34.68% (50,706) White, 31.68% (46,314) Black or African American, 1.06% (1,547) Native American, 3.34% (4,878) Asian, 0.04% (60) Pacific Islander, 23.94% (34,999) from other races, and 5.26% (7,695) from two or more races. Hispanic or Latino of any race were 57.63% (84,254) of the population. The Census Bureau's 2006–2010 American Community Survey showed that (in 2010 inflation-adjusted dollars) median household income was $34,086 (with a margin of error of ±$1,705) and the median family income was $39.003 (±$2,408). Males had a median income of $30,811 (±$825) versus $28,459 (±$1,570) for females. The per capita income for the city was $15,543 (±$467). About 24.1% of families and 26.6% of the population were below the poverty line, including 39.0% of those under age 18 and 25.4% of those age 65 or over.

In terms of public health, according to the NJ Dep't of Health, Paterson accounts for 61.6% of all asthma Emergency Room visits in Passaic County, but only accounts for 29.3% of the Passaic County’s population. This anomaly is explained, at least in part, by the concentration of diesel truck pollution in Paterson. Children in Passaic County under the age of 5 have an asthma rate that is 65% higher than the New Jersey statewide average. There are 11,000 kids in Paterson under the age of 5 and 27,000 in the developmental ages between 5 and 17.

As a result of its industrial history, proximity to I-80 and New York City, and the intensity of development and resulting land values in northern New Jersey, Paterson in the present age is the home to multiple public and private fleets of diesel trucks and school buses as well as multiple waste transfer stations and other facilities that, taken together, make Paterson a NJDEP EJAC Tier 1 environmental justice community.

The concentration of diesel truck and school bus fleets in Paterson coupled with the fact that Paterson is bisected by I-80 with its very high annual average daily traffic counts [AADT] and resulting concentration of diesel exhaust pollution at the micro-scale level helps explain the fact that Paterson accounts for 61.6% of asthma-related emergency room visits in Passaic County although it only has 29.3% of the total county population ["2014 Passaic County Asthma Profile," NJ Dep't of Health. https://www.nj.gov/health/fhs/chronic/documents/asthma_profiles/passaic.pdf].

Paterson was most recently a center of the Covid-19 pandemic in the State of New Jersey. According to a study performed by the T.H. Chan School of Public Health at Harvard University, higher concentrations of PM-2.5 were associated with higher Covid-19 mortality rates [April 8, 2020 New York Times at page A16]. PM-2.5 is one of the primary local air pollutants emitted by diesel trucks and buses.

Diesel truck pollution has also been associated with diminished cognitive brain functioning and childhood autism. New Jersey has the highest rate of childhood autism in the nation.

Paterson's Municipal Fleet Electrification Program meets all the elements of the 2018 State of New Jersey's Volkswagen Mitigation Trust Beneficiary Mitigation Plan and is therefore a highly recommended project. More specifically:

1. NOx reductions. The NOx reductions will be signficant because the two diesel garbage trucks being replaced by this project are 19 and 20 years old, respectively so there will be substantial NOx emissions reductions over the 15 year lifetime of the project.

2. Environmental Justice. As already noted, Paterson is a NJDEP Tier 1 environmental justice community.

3. Learning Value. The learning value of this project is significant for the City of Paterson which operates a large fleet of medium and heavy duty diesel powered work trucks.

4. Additional Benefits. The additional benefits conferred by the project include a significant reduction in C02 emissions and reduced fuel and vehicle maintenance costs. Other additional benefits include the fact that Paterson intends to become the first All-Electric municipal fleet in New Jersey and also intends to be the center of the battery electric truck industry in New Jersey with good jobs in the advance energy economy which will confer an additional benefit on the State of New Jersey.

The Paterson fleet electrification program aligns with all of the criteria in the New Jersey Beneficiary Mitigation Plan and it therefore qualifies as a "highly recommended" project.

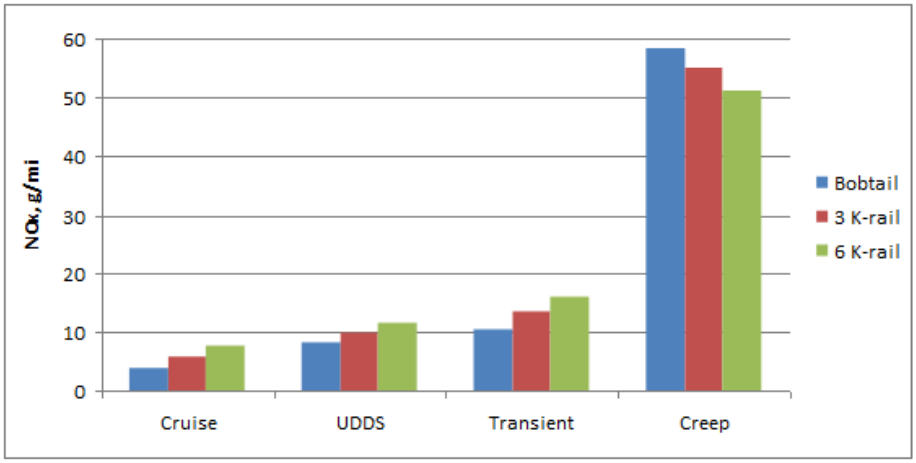
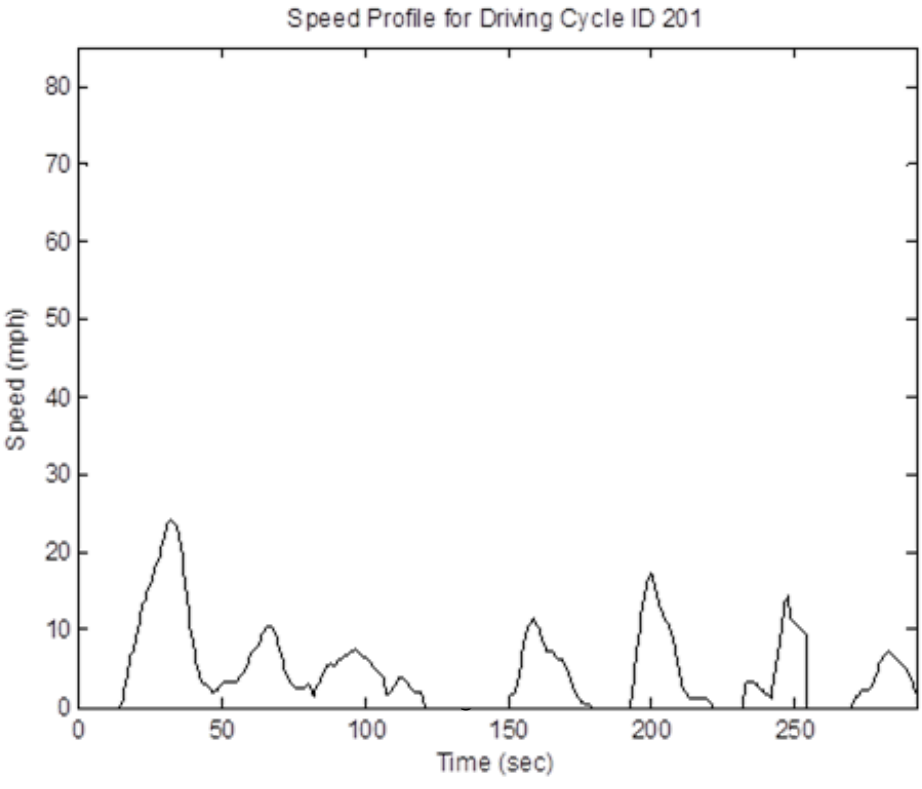
Please see the next page which contains USEPA testing data documenting the fact that garbage trucks operating in normal start-and-stop mode, also known as "creep" mode, emit 7X the amount of local diesel air pollution, including PM-2.5, as the same truck operating in "cruise" or "transient" modes.

Supplemental Information

The unique characteristics of garbage trucks are that they: (i) drive very slowly, where the engine efficiency is very low and emissions correspondingly high; and (ii) are frequently stopped in idling mode, continuing to emit pollutants while loading. This results in a diesel fuel consumption of only about 3 miles per gallon, whereas a drayage truck usually realizes about 5 or 6 miles per gallon of fuel consumed.

USEPA data for a 2008 truck shows that NOx emissions at slow speeds are seven times (7X) greater than for trucks moving at cruising speeds. Garbage trucks spend most of their duty cycle time driving through communities causing direct exposure at the receptor level to the carcinogenic by-products of diesel fuel combustion, made even worse by the slow speed of travel.

A USEPA document shows the difference in NOx emissions for a 15,326 pound 2008 truck, depending on differing modes of drive operation (note "creep" mode):



The same document also shows the following chart for a cyclical driving cycle of a garbage truck (speed vs. time):