LION ELECTRIC

STATE OF NEW JERSEY

Department of Environmental Protection

PROJECT SOLICITATION

LION8

WASTE MANAGEMENT

GREATER MID ATLANTIC MARKET AREA
107 Silvia Street
Ewing, NJ 08626

To Whom It May Concern,

Waste Management of New Jersey, Inc. (WM) appreciates the opportunity to present our response to the New Jersey Volkswagen Environmental Mitigation Trust Program call for projects to deploy two (2) all-electric automated side-load refuse trucks. Waste Management is responding to this Project Solicitation with the hope to accelerate adoption and deployments of zero-emission vehicles in New Jersey; thus, improving the lives of the citizens within the State of New Jersey.

Waste Management of New Jersey Inc. (WM) is the leading provider of comprehensive waste management in North America, offering services that range from collection and disposal to recycling and renewable energy generation. At Waste Management, our fleet of more than 32,000 vehicles provides reliable everyday waste collection for our customers while minimizing our environmental impact. We have set bold goals, utilized smart solutions, and leveraged innovative technology to realize progress. These efforts started in 2007, when we set our first goal to reduce CO2 fleet emissions by 15 percent, which we achieved in 2011, primarily by transitioning our fleet of collection vehicles from diesel to cleaner-burning natural gas. With a vision to create a near-zero emissions collection fleet, we are now working toward a science-based target to reduce emissions associated with our fleet to 48 percent by 2038, against a 2010 baseline. From 2010 through 2017 we have reduced fleet emissions by 28 percent.

For the deployment of our all-electric automated side-load refuse trucks, Waste Management of New Jersey Inc. (WM) will be partnering with The Lion Electric Co. (Lion), Lion's authorized dealer, and Clipper Creek – a charging infrastructure vendor. Our new all-electric automated side-load refuse trucks will be used in a residential setting to service the municipalities of Elizabeth and Galloway Township, New Jersey. The trucks will be responsible for providing services such as collection, transfer, disposal services, and recycling and resource recovery throughout these communities.

To date, our equipment manufacturing partner, The Lion Electric Co. has over 300 electric heavy-duty vehicles deployed in North America with 6,000,000 proven and drive miles on its current batteries, electric components, and heavy-duty chassis. Today, Lion also has the manufacturing capacity to build 1,000 trucks annually. Designing, building, and delivering electric heavy-duty vehicles is Lion's daily mandate; their experience and success will reflect on Waste Management, through measurable performance, real-life client references, 100% on-time deliveries and way beyond the "early adopter" experience.

Waste Management of New Jersey Inc. (WM) strongly supports the Volkswagen Project Solicitation and thanks the New Jersey Department of Environmental Projection for its work to date on zero-emission vehicle implementation. We hope that our response will successfully demonstrate that Waste Management of New Jersey Inc. (WM) can fulfill New Jersey's goals by delivering and operating quality, zero-emission vehicles in a short amount of time.

We look forward to working with the New Jersey Department of Environmental Projection to implement this project.

Sincerely,

Jim Pryor

Jim Pryor
Area Fleet Director
Waste Management of New Jersey Inc. (WM)

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	Waste Management of New Jersey, Inc. (WM)
Applicant Address	107 Sylvia Street
City, State, Zip Code	Ewing, New Jersey, 08628
Contact Person	Jim Pryor
Title/Position	Area Fleet Director
Phone	609-434-5609
E-mail	jpryor1@wm.com
Owner Name	Waste Management of New Jersey, Inc. (WM)
Owner Address	107 Sylvia Street
City, State, Zip Code	Ewing, New Jersey, 08628
Contact Person	Jim Pryor
Title/Position	Area Fleet Director
Phone	609-434-5609
E-mail	jpryor1@wm.com

PROJECT NAME	Waste Management of New Jersey, Inc. (WM) - Electric Truck Refuse Pilot Project

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

1 ■ **2** ☐ **3** ☐ **4** ☐ **5** ☐ **6** ☐ **7** ☐ **8** ☐ **9** ☐

PROJECT PRIORITY Priority # 1 of 1 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 grant request is $858,300, which is equal to 75% of the total project cost. Thus, Waste Management of New Jersey, Inc. (WM) would cover 25% of the cost of the project or the equivalent of $286,100.

The total estimated project budget is $1,144,400, for the purchase of two (2) all-electric automated side-load refuse trucks and four (4) charging stations - two (2) charging stations per truck, as well as the cost of the charging infrastructure installation for the project. The cost per truck is as follows: $559,700 for the truck, an estimated price of $5,000 for the charging station, and an estimated cost of $7,500 for the charging station installation.

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

The Waste Management of New Jersey, Inc. (WM) All-Electric Refuse Truck Project will result in the destruction and replacement of two (2) diesel refuse trucks, from our current fleet. These refuse trucks will be replaced with two (2) all-electric, zero-emission, Lion8 Automated Side-Load Refuse Trucks from The Lion Electric Co. Please find the information for one out of the two vehicles that we will be scrapping and replacing in the text box below. Information for both vehicles to be scrapped is located as an addendum, on a separate PDF further down in our project submission form. Using the Environmental Protection Agency emissions reductions tool, based on the diesel vehicles we have available to scrap the annual greenhouse gas emissions that we will reduce per year are as follows: vehicle #1 – 85 tons, and vehicle #2 – 80 tons.

Geographic area where emissions reductions will occur? Union and Atlantic Counties

Estimated size of population benefitting from the emission reductions? 820,011

Estimated useful life of the project? Up to 12 years

Number of engines/vehicles/vessels/equipment included in the project? Two (2) all-electric refuse trucks

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

Model Year 2007

Horsepower 300

Annual hours of use 1,915

Annual amount of fuel used 7,980

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

The project will benefit the city of Elizabeth (Union County) as well as Galloway Township (Atlantic County). Although the air quality in the State of New Jersey has gotten better, it still ranks among the worst in the nation because of high concentrations of ground-level ozone pollution, according to the American Lung Association (ALA). In the 2017 State of the Air report from the ALA, Union County received a "C" grade, and Atlantic was given an "A" (A being the highest grade). Since this report, the ALA has listed Union County as DNC (no monitoring collecting data in the county).
Though based on the previous report, we will assume that the "C" still stands and that the county did in fact have a couple of "orange alert days", those in which the air quality is considered unhealthy for children, active adults and anyone with asthma or other respiratory ailments. Looking at the 2019 results, Atlantic County has now transitioned to a "B" grade and the county recorded 2 "orange alert days". Whether a county is listed as an "A", "F" or "DNC", the groups largely at risk of air pollution remain the same, which includes children under 18, adults 65 & older, people with low incomes, minority populations, children and adults suffering from pediatric asthma. In Union County alone there are 336,018 people who identify as a minority and 36,144 adults living with asthma. In comparison, Atlantic County has 116,925 people who identify as a minority and 17,681 live with asthma. In addition to this report, both Union and Atlantic Counties are listed as non-attainment areas when looking at their National Ambient Air Quality Standards (NAAQS), produced by the Environmental Protection Agency.

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

The following project partners will be involved in this project: Waste Management of New Jersey, Inc. (WM), The Lion Electric Co. – original equipment manufacturer, Clipper Creek – electric vehicle charging infrastructure vendor, Atlantic City Electric, PSE&G, and The Lion. Electric Co. licensed dealer – H.K. Truck Center.

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

Project Period // Waste Management of New Jersey, Inc. (WM) is prepared to proceed and issue a purchase order as soon as we receive authorization to proceed from the Department of Environmental Protection. We will take possession of the new zero-emission vehicles six to nine months after a purchase order has been emitted to The Lion Electric Co. licensed dealer for the purchase of two (2) Lion8 Automated Side-Load Refuse Trucks. Lion is committed to delivering quality products as quickly as possible based on the grant response. The purchase and installation of the charging infrastructure would follow the same timeline as the vehicle deliveries, to ensure that the project is complete in a timely manner.

Demonstrated success in implementing similar projects?

As these will be the first zero-emission refuse trucks in our New Jersey operations, we are very confident in our equipment manufacturer, The Lion Electric Co., capabilities, and proven success in implementing and demonstrating success with similar projects. A global leader in deploying electric vehicles, Lion has already deployed vehicles with more than 6,000,000 miles of service and recorded data. They are in a unique position to have operating data and a history of advancing our technology towards a zero-emission future. Lion is the most experienced in this field from infrastructure support, to service, to on-time delivery.

That said, Waste Management Inc. (WM) has extensive experience in successfully adding alternative fuel technologies to our fleet, particularly our compressed natural gas vehicles. It was because of federal and state awarded grants that we were able to purchase and deploy these vehicles. Currently, we are operating 6,536 natural gas vehicles across North America, which help to contribute to 195,000 metric tons of greenhouse gases reduced annually. We are also operating 110 natural gas stations across North America.

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

We are currently operating 204 compressed natural gas vehicles in our fleet, in the State of New Jersey, though the all-electric vehicles we are applying for today will be our first zero-emission options. We do not currently have charging infrastructure to power our new all-electric refuse trucks and are therefore request funding support from the Department of Environmental Protection to purchase and install the necessary charging infrastructure. In preparation for these all-electric vehicles we will work closely with our utility providers so that the sites are prepared to receive our Lion trucks. During these preparations we will also discuss and plan for any future all-electric vehicles that we would like to add to our fleet.

As per the project requirement, we will scrap two (2) diesel refuse trucks and replace them with the all-electric refuse trucks. To charge the vehicles we will install two (2) charging stations per vehicle, four (4) in total. Each Lion truck has two (2) onboard chargers to provide an acceptable overnight charge time so the assets will be ready the following morning for work.

To note, the project budget presented in this proposal includes the following estimated costs: four (4) charging station units, as well as the costs to install the charging station infrastructure. With the assistance of our project partners, they have provided us with these estimations for the purposes of this application. However, we are aware that based on our utility and the site we would choose for the placement of the charging station, these numbers could vary. Should the New Jersey Department of Environmental Protection award a grant to us for this project we would like to include all costs in the funds allocated to us.

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

We will solely apply for this funding opportunity to replace two (2) diesel trucks with two (2) all-electric automated side-load trucks.

Please provide any additional information that supports this project.

The refuse vehicle that will service the city of Elizabeth will operate on an "organics" route, and the vehicle will be based in Newark, New Jersey. Our second refuse truck will collect refuse from Galloway Township, which will operate out of our Woodbine, New Jersey facility. Since these all-electric trucks will be new to our New Jersey fleet, and our local transportation operators, it is for this reason that we are only applying for two vehicles through this round of funding with the Department of Environmental Protection. We would like for this pilot project to be a successful one so that we may be able to add more trucks like the Lion8 Automated Side-Load to our fleet.

We are more than confident that the vehicles will fit perfectly into our already planned routes because they will mimic what our scrapped diesel vehicles would have accomplished, but without the extra fumes and incurred costs. Once they arrive, we will ensure that all parties involved in the integration and operation are comfortable driving them before expanding their routes with the transportation providers.

Our automated side-load refuse trucks will charge overnight during non-peak hours and may be charged mid-day if needed, therefore reducing our operational costs. The utilization of this new vehicle will also reduce our maintenance costs by about 60% and energy costs up to 80% based on our preliminary evaluation. With the help of the New Jersey Department of Environmental Protection, our return on investment will occur in a minimal time frame, allowing us to significantly reduce greenhouse gas emissions while providing economic and environmental benefits to our community. In fact, one truck will reduce the amount of CO2 in the air by 80-85 tons per year (based on the EPA calculator) and will also reduce the noise pollution in the area.

As mentioned in our cover letter, the approach we take to sustainability is a serious one. Well before the term was widely used, Waste Management Inc. (WM) produced an "Environmental Report" back in 1992, to showcase our efforts in helping to take care of the environment. We know that the diesel trucks that are currently operating in our fleet are one of our biggest contributions to local greenhouse gas emissions. However, we are taking the necessary steps to move towards a fully carbon neutral fleet by 2038 and believe that launching this all-electric refuse truck pilot project is the way to begin. We are proud to remove two diesel vehicles from our fleet and that the Lion8 Automated Side-Load trucks will go above and beyond our needs.

Two additional pages have been provided as supplemental space to answer any of the questions above.

Supplemental Page 1

We have chosen to partner with The Lion Electric Co., a licensed dealer in the State of New Jersey, to bring two (2) purpose built all-electric Lion8 Automated Side-Load Refuse Trucks to the communities we operate in. Lion builds their own chassis, body, and battery packs and designs their own proprietary operating software. The trucks are not retrofitted diesel vehicles; they are born to be electric.

Investing in a Lion vehicle will allow us to track our progress by calculating our average energy consumption through the smart charging system and collect data through the onboard telematic touchscreen, which is unique to Lion vehicles. The operator will simply select their charging preferences through the screen to maximize charging efficiency. The onboard touch screen will serve many purposes to our operators: it registers power usage, driving efficiency through the driving interface, maintenance interface, battery state, charging interface, parameters, smart charge, and preheat. All information on the onboard touchscreen is recorded and can be extracted as a report on a regular basis to perform multiple analyses and to understand the efficiency and cost of each electric truck.

The vehicles are also equipped with electronic modules that monitor and record data from various systems, including the motor, batteries, braking, and electrical systems. The electronic modules record information about various driving and vehicle conditions, including braking, acceleration, trip distance, and other related information regarding the vehicle. These modules record information about the vehicle's features such as charging events and status, the enabling/disabling of various systems, diagnostic trouble codes, VIN, speed, direction, and location.

The success of the project will be enhanced by the number of miles driven per year on the all-electric trucks. The more we use the trucks, the more we will save, and the better it will be for our environment and community. We will be the grantee of this grant and will operate the trucks multiple times a week while analyzing the reports generated by the vehicle.

In our case, electric trucks are new to us, and we will require the necessary training to help bridge our knowledge gap from diesel to electric. To ensure that our operators are comfortable using the new all-electric truck, they will take part in the Lion Academy Training Program. The training program will be available to a wide range of stakeholders, and most importantly our vehicle operators. The training curriculum will be extremely detailed and can last up to six hours to ensure that all parties are comfortable working on the trucks once they are delivered and operational. The interactive classes cover various topics such as safety, troubleshooting, electric chargers, EV components, maintenance, repairs, warranty work, driver tips, accessories, etc.

Conclusion//

Leaders in manufacturing and deploying zero-emission vehicles, with more than 300 electric heavy-duty vehicles on the road and a manufacturing capacity to build 1,000 trucks annually today, The Lion Electric Co., their licensed dealer, and Clipper Creek - charging infrastructure vendor, are poised to immediately support Waste Management of New Jersey, Inc. (WM) It is our strong desire to scrap two high pollutant diesel refuse trucks and replace them with zero-emission trucks and the necessary charging infrastructure.

Having a shared goal of improving air quality is what best aligns us and our project partners. Not only do our partners value focus on safety and reliability, but also the health of the communities we serve. They have invested early and deeply to develop a zero-emission technology that supports the communities in which we serve and live.

With help from the Department of Environmental Protection this program will help us to permanently remove the previously mentioned high pollutant diesel vehicles that are currently operating in our fleet, which our both communities are presently exposed to. Additionally, it will give us the opportunity to pave the way for other waste management service providers to join the electrification movement.

We would like to thank the Department of Environmental Protection in the State of New Jersey for allowing us to submit a project proposal for the Volkswagen settlement funds. We look forward to working with this Department so that we may be able to provide a healthy breathing environment to both Atlantic and Union counties.

Fleet Spreadsheet

See attached

Waste Management of New Jersey, Inc. (WM)
New Jersey Department of Environmental Protection - Volkswagen Mitigation Application
Fleet Spreadsheet

Existing Vehicle						Replacement Vehicle					
Vehicle Number	Make/Model	Model Year	Horsepower	Annual Hours	Annual Fuel	Replacement Model Year	Replacement Fuel Type	Vehicle Cost	Charging Infrastructure	Vehicle + Charging Infrastructure	Funding Request (75%)
1 (208621)	Mack MR688S	2006	300	2372	8520	2021	All-electric	$ 559,700.00	$ 12,500.00	$ 572,200.00	$ 429,150.00
2 (208623)	Mack MR688S	2007	300	1915	7980	2021	All-electric	$ 559,700.00	$ 12,500.00	$ 572,200.00	$ 429,150.00
								Totals:		**$ 1,144,400.00**	**$ 858,300.00**