

**Michigan Department of Environmental Quality
State Clean Diesel Grant Program
The 2011-2012 Request for Projects Competition
GRANT PROPOSAL COVER SHEET**

(This is page 1 of your proposal)

APPLICANT/ORGANIZATION INFORMATION

Project Name: ABC School District's Engine Project
Applicant/Organization's Name: ABC School District
Address (physical location): 2468 Mulberry Lane
Address (mailing address): P.O. Box 987654-0000
City: East Lansing State: Michigan Zip Code: 48823
County: Ingham
Applicant/Organization Telephone Number: (517) 555-1212
Applicant/Organization Fax Number: (517) 555-1212
Applicant/Organization's Federal ID #: 006-1234567

PROJECT CONTACT INFORMATION

Project Manager's Name and Title: Joe Schmoe, Transportation Director
Address (if different than above): (same as above)
City: (same as above) State: Michigan Zip Code: (same as above)
Project Manager's Telephone Number (if different from the above): (same as above)
Project Manager's E-mail Address: JoeSchmoe@gmail.com

Project Location(s) -city, township, village or county. If more than one, list all City of ABC and City of DEF

GRANT INFORMATION

Grant Funding Amount Requested: \$161,172.50
Value of Additional Match: \$83,172.50
Total Project Costs: \$244,345.00

Please check the most appropriate box for applicant type:
 Michigan city, township or village
 Michigan county
 Port authority
 Public school district(s)
 Private school (non-profit only)
 Other non-profit
Type: _____
 Private fleet owner/operator
Type: _____

GRANT PROPOSAL COVER SHEET
(continued)
(This is page 2 of your proposal)

Please check the most appropriate box(es) for the types of fleets represented in the application

- School bus(es)
- Municipal bus(es)
- Medium-duty truck(s)
- Long Haul truck(s)
- Heavy duty truck(s), not elsewhere specified
- Marine vessel(s)
- Non-road equipment – construction/material handling
- Non-road equipment – port/rail/material handling
- Non-road equipment - mining
- Non-road equipment - agricultural
- Energy production equipment

Please check the most appropriate box(es) for the type of technology represented in the application

- Shut down/start up system
- Auxiliary power (APU)
- HVAC battery-power system
- Fuel operated heater
- Generator set
- Solar storage & transfer
- Thermal storage & transfer
- Diesel oxidation catalyst
- Diesel particulate filter
- New vehicle with certified engine, type: school bus
- Certified engine, repower
- Other:

GRANT ACCEPTANCE

Name of Person with Grant Acceptance Authority:

Arnold Smythe

Title of Person:

Superintendent, ABC School District

Signature:

Joe Schmoe

11/30/11

Title of Signatory

Transportation Director, ABC School District

Date

**Michigan Department of Environmental Quality
State Clean Diesel Grant Program
The 2011-2012 Request for Projects Competition
GRANT PROJECT PROPOSAL FORMAT**

(This information begins the 3rd page of your proposal)

Project Name:	ABC School District's Engine Project
Applicant/Organization's Name:	ABC School District
City:	ABC City
County:	Ingham

I. Work Plan

The City of ABC and the City of DEF, an adjacent upriver community, bear a disproportionate environmental and public health burden as the host communities for industries, utilities and infrastructure that benefit the entire ABC metropolitan area economically. The area is a major transportation hub for planes, trains, freight yards, and automobiles. In addition to having the busiest waterway passage in Michigan, this region is home to several heavy industries including three textile mills, an automotive manufacturing operation, and a waste recycling/incineration facility that burns trash in antiquated incinerators. Additionally, in the last 10 years the City of ABC's population has grown by over 400% and is the fastest growing area in the county, with over 200,000 residents.

The Michigan Department of Environmental Quality's 2009 Annual Air Quality Report shows the 2007-2009 annual three-year average PM_{2.5} concentrations measured in Ingham county, which includes both ABC and DEF cities, was one of the highest in Michigan. The three-year average shows that Ingham county has a disproportionate amount of particulate matter and ozone pollution, mainly generated by the industrial, commercial and mobile sources in the area. Every year, over two million long haul trucks cross the Wiblywobly Bridge in the City of ABC, contributing to the amount of particulate matter and ozone pollution in the air. This air pollution contributes to higher than average incidence of asthma in the community. According to the Michigan Department of Community Health, the average rate of asthma cases in 2007 rose by 10% over the previous two years, mainly among school-aged children. The hospitalization rate for Ingham county also remained high, especially among school-age children at a 17.1 rate per 10,000 population, compared to 10.1 per 10,000 population statewide for children of the same age.

In addition, several major transportation infrastructure projects are being considered for the area, including a new port docking station for large freighters and a highway extension to the local major interstate to provide a new connection to Wiblywobly Bridge. Each of these projects will increase the amount of pollution, most especially the level of particulate matter, from diesel engines that are used during the construction of the projects and from vehicles that will use the new highway span.

For the last 10 years, the City of ABC's School district has worked with a local environmental advocacy group to educate residents and business. ABC School District and the City of DEF's School District have supported and encouraged educational campaigns by the environmental advocacy group to reduce overall pollution levels through identified sources of concern. Working with the environmental advocacy group, the Cities of ABC and DEF's school districts have formed the Wiblywobly Pollution Reduction Initiative. The Initiative has worked with federal and state agencies and received some grant funding towards its efforts to inform the community of the health effects of inhaling diesel engine fumes. To date, grant funds have been used for diesel engine emissions reduction projects, pollution source survey efforts, pamphlet development, and training sessions for businesses and community members.

II. Commitment to the U.S. EPA, regional Midwest Clean Diesel Initiative and the DEQ’s Programmatic Priorities

- This certifies that my organization is committed to helping the U.S. EPA, the Midwest and Michigan Clean Diesel Initiatives and the Michigan Department of Environmental Quality achieve clean diesel programmatic priorities as outlined in the “Instructions” section of this document and the project proposal.

III. Description of Administrative Abilities, Staff Expertise and Previous Project History

Staff and Partner Roles and Responsibilities

Name of Project Staff	Title of Staff	Affiliated Organization	Role/Responsibility with the Project
Joe Schmoe	Transportation Director	ABC School District	Grant Administrator
Mary Lou Smith	Accountant	ABC School District	Assist in preparation of invoices and reports
Bob Ryan	Installation Mechanic	ABC School District	Install DOCs on school buses
Kevin King	Installation Mechanic	DEF School District	Install DPFs and heaters on school buses

Mr. Joe Schmoe has been Transportation Director for more than 20 years with ABC School District and commands a staff of more than 10 mechanics and repair personnel that maintain the school districts’ 25 diesel engine vehicles. He and his staff are certified to repair and install equipment on heavy-duty diesel engine vehicles by the Diesel Mechanics Association. Mr. Schmoe is in charge of ABC School District’s fleet which consists of school buses and one heavy duty plow truck used for snow removal. Mr. Schmoe will coordinate with Mr. King on the equipment orders and installation needs for DEF School District for this project, and submit the project’s progress and financial status reports to the MDEQ.

Ms. Mary Lou Smith has been an accountant with ABC School District for the last 13 years and is responsible for all receivables and payments made to and from the school district. In 2009, she assisted Mr. Schmoe with the financial reporting aspects of ABC School District’s First Bus Project where she tracked the activities of equipment and installation payments on behalf of the project.

Mr. Bob Ryan is the lead mechanic at ABC School District and has more than 30 years of experience maintaining and repairing diesel engine vehicles. Mr. Ryan has previous experience installing diesel oxidation catalysts (DOC) on a similar school bus grant and will be doing the DOC equipment installation for this project.

Mr. Kevin King is the chief mechanic at DEF School District with 22 years of experience with diesel engine vehicles and equipment. Mr. King’s experience includes installing diesel particulate filters (DPF) on heavy duty trucks prior to coming to DEF School District. Mr. King also has experience with heater installation on school buses in the Arizona Public School System, and will be doing the DPF and heater installations on DEF’s school buses. He will be the primary contact for DEF School District on this project.

Previous (Grant) Project Experience

Name of Grant Project	Start and End Dates of Grant	Name of Grantor/ Agency	Grant Project Number
ABC School District's First Bus Project	10/1/08 – 4/30/09	U.S. EPA	0001-22-00567

Mr. Schmoe has had previous experience administering one U.S. EPA grant where similar exhaust control technology was installed on 9 school buses in the school district.

IV. Timeline and a description of Tasks/ Milestones

Anticipated Timeline for Completion	Task or Milestone to Achieve
January 5, 2012	Review fleet needs of ABC and DEF School District and develop procurement documents for equipment purchases.
January 15, 2012	Present draft procurement documents to administrators for presentation and approval at the January 25, 2012 school board meeting.
January 25, 2012	Receive school board approval to proceed with bid process; send documents to MDEQ for review.
January 30, 2012	Post procurement bid document for equipment purchases.
February 28, 2012	Review bid documents; finalize decision; inform vendors.
March 7, 2012	Place orders for equipment, engine and vehicle based on bid documents.
April 30, 2012	Orders for DOCs and DPFs arrive; mechanics begin installation of DOCs and DPFs on school buses; First quarter report to MDEQ due.
May 6, 2012	Order for heaters arrive; mechanic begins installing heaters on school buses.
May 30, 2012	Order for new heavy duty truck engine arrives; engine installation begins.
June 10, 2012	All DOCs and DPFs installed in each fleet's school buses.
June 23, 2012	All heaters installed on DEF School District's buses.
July 12, 2012	Engine repower complete on ABC School District's truck.
July 21, 2012	New school bus arrives and joins ABC School District's fleet.
July 31, 2012	Second quarter report due to the MDEQ.
August 2, 2012	Diesel engines disabled from school bus and heavy duty truck; old school bus and engines scrapped; program income documented from scrappage.
August 7, 2012	U.S. EPA Certificates of Conformity and new emission levels received from vendor; forwarded to MDEQ.
August 15, 2012	Final report and supporting documentation submitted to the MDEQ.

V. Anticipated Outputs/Outcomes

Outputs – Type of Fleet -Vehicles and Technologies Used in Project

Applicant Name: ABC School District		City: City of ABC		County: Ingham	
Fleet Type	Fleet Owner	Industry	Technology	Total Number of Vehicles/Eq.	Total Number of Engines Affected
School Bus	ABC School District	Public School	Diesel Oxidation Catalyst	15	15
Heavy Duty Truck	ABC School District	Public School	Certified Engine Repower	1	1
School Bus	ABC School District	Public School	Vehicle Replacement	1	1
School Bus	DEF School District	Public School	Diesel Particulate Filters	15	15
School Bus	DEF School District	Public School	Idle Reduction Heaters	3	3

Outcomes – Short, Medium and Long-Term

- **Short Term Outcomes:** The ABC School District's Diesel Engine Project is expected to provide students, parents, and the staff of the school system with an increased awareness of idle time and the pollution that can result from excessive idling. A demonstration project, by the vendor of the equipment provided to the school district, has agreed to hold 5 evening educational sessions at each school district so that those that are interested can see how the new equipment functions and how it limits the levels of pollution in the vehicle and around the community. Both ABC and DEF School Districts have agreed to post a video of the educational sessions on the web, along with background information about the equipment and the benefits to the community's health.
- **Medium Term Outcomes:** Both ABC and DEF School Districts will track the amount of diesel fuel use to determine if restricted idling efforts, used in conjunction with the new technology, reduces the amount of fuel used, and thus the amount of diesel engine emissions coming from the school buses. At the conclusion of the is project, ABC School District will use the U.S. EPA Diesel Emissions Quantifier (DEQ) to determine the annual and lifetime amounts of PM and NOx pollutants reduced, along with the level of hydrocarbons, CO and CO₂ reduced as well as track the cost-effectiveness of the overall project. Cost effectiveness includes tracking the savings generated from cost avoidance activities such as work place absenteeism and the development of health-based chronic ailments as asthma, cardiac disease and cancer. ABC School District's overall diesel engine emission reduction efforts are a part of the larger strategy by the City of ABC to track its carbon footprint (the amount of CO₂ reduced), by defining and applying activities that reduce CO₂ in Ingham county.
- **Long Term Outcomes:** ABC and DEF School Districts will provide the community with non-identifiable information from each school's annual health surveys and county health statistics so that parents and community members can track the health improvements that may take place as a result of the project. Both ABC and DEF School Districts will annually survey parents and staff to determine if there is an improved quality of life associated with the school buses that receive new technology. Given that this is the second diesel engine emissions reduction project that ABC School District has undertaken, it is working with the City of ABC and the City of DEF to incorporate additional diesel emissions reduction projects for each city's owned and operated diesel engine vehicles. Finally, ABC and DEF School Districts will also work with other school

districts in Ingham county to provide testimonials about the positive health and environmental experience that each has had utilizing diesel emissions reduction technology.

Outcomes - Cost Effectiveness Calculations

Type of Pollutant	Estimated Emission Reductions (tons/yr)	Lifetime Emissions Reductions (tons/yr)	Total Grant Cost Effectiveness
PM	0.00	0.00	\$0.00
HC	4.56	60,719.39	\$2.65
CO	23,360	311,155.32	\$0.52
NOx	85,263.11	1,135,704.69	\$0.14
CO2	0.00	0.00	\$0.00
Amount of Grant Funding Used for Project Activities: \$161,172.50			

- Source of Cost Effectiveness Calculations: The U.S. EPA Diesel Emissions Quantifier

VI. Budget (for financial or in-kind match), **Audit/Review Letter** and **Budget Form** (Appendix A of the proposal)

Financial or In-Kind Match

ABC School District and DEF School Districts have committed to providing local school funds as a 50-50 match for grant funds used to help off-set the costs of administrative staffing and the technical installation of equipment associated with this project. Additionally, local school funds are being committed for the required cost share for the engine repower, idle reduction heaters and for the vehicle replacement. Each school district’s match commitments are outlined on the project’s Budget Form (attached).

Audits - See Appendix A – Letter from certified Public Accountant (attached to application.)

Budget Form – (attached to application).

VII. Fleet Description and Fleet Description Spreadsheet (Appendix B of the proposal – see attached)

- Fifteen diesel oxidation catalysts (DOCs) for 15 diesel engine school buses used for transportation of ABC School District’s children.
- Fifteen diesel particulate filters (DPS) for 15 diesel engine school buses used for transportation of DEF School District’s children.
- One certified engine repower for ABC School District for one 1992 heavy duty Class 8 truck used for snow plowing and clearing during the winter. This is the only heavy duty truck in the ABC School District’s fleet and was not scheduled to be replaced for another 7 years.

Early Repower vs. Early Replacement Demonstration: The cost of a new and similar heavy duty truck that could be used for this purpose is estimated to be \$250,000, and the cost of the repower is estimated to be \$56,000. Given the body of the truck and other mechanics are in better-than-average working condition, the repower saves the school district \$194,000 over the cost of a new truck. That amounts to over \$27,000 a year for the next 7 years in savings to the school district. The new 2009 certified engine meets the following 2007 on-road vehicle diesel engine emission standards: PM - 0.01 g/bhp-hr, NOx -0.20 g/bhp-hr, CO – 14.4 g/bhp-hr and NMHC - 0.14 g/bhp-hr.

- Three idle reduction heaters for 3 diesel engine school buses, owned by DEF School District.
- One diesel engine school bus replacement for ABC School District. This replaces one 1982 diesel engine school bus that has exceeded its useful life. Once replaced, the 1982 engine and school bus body will be scrapped according the guidelines of the MDEQ and U.S. EPA once the new bus is placed in the fleet.

Early Replacement vs. Early Repower Demonstration: According to the ABC School District school bus replacement schedule, this school bus was scheduled to be replaced in 2014 and is being accelerated to be replaced under this project. The cost of the new school bus is estimated to be \$89,000. The cost of a similar school bus repower is estimated at \$25,000. However with the average age of the ABC School Bus fleet being 15 years old, and the exterior body of the 1982 school bus in great disrepair, the cost of a school bus replacement is a better economic, environmental, operational and safety choice for the school district than implementing a single engine repower of an older vehicle. The 2011 model year school bus and engine meets the following 2007 diesel engine emission standards: PM - 0.01 g/bhp-hr, NOx -0.20 g/bhp-hr, CO – 14.4 g/bhp-hr and NMHC - 0.14 g/bhp-hr.

VIII. Letters of Support (Appendix C of the proposal)