Final Report

City of Indio

MSRC Contract ML11020

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Prepared for the Mobile Source Air Pollution Review Committee (MSRC)
under the AB 2766 Discretionary Fund Work Program

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Purpose

The purpose of this project is to reduce mobile source air pollution from the municipal fleet and improve air quality. This project reduces air pollution associated with conventional engines used to power two municipal fleet vehicles. Further, the project leverages AB2766 Subvention Funds to implement air pollution reduction projects.

Scope

The scope of the project includes upgrading two municipal fleet vehicles in order to reduce mobile source air pollution from the municipal fleet and improve air quality. The first project is an On-Road Vehicle Retrofit with CARB-Verified Level 3 Diesel Emission Control Device. This project includes the purchase, installation and operation of an after-treatment device on an International 7600 Dump truck. The dump truck is equipped with a Model Year 2006 Cummins IS-385V engine. The after treatment device must be certified to meet CARB Level 3 standards which technologies that achieve an 85 percent or greater reduction in particulate matter. This will reduce particulate air pollution from this vehicle by at least 85 percent.

The second project is a repower of Off-Road Equipment with New Diesel Tier 3 Engine. This project includes the re-power of a Sterling/Freightliner Vactor Truck. The vactor truck is equipped with a Model Year 1999 John Deere 4045TF250 engine and

this engine will be scrapped once the re-power is complete. The replacement engine must be Model Year 2011 or newer and certified by CARB to meet the appropriate federal off-road Tier 3 emission standards.

Background

City governments are responsible for providing a large number of services to residents including street maintenance, inspections, storm water management and water services. In order to carry out these responsibilities, municipalities utilize fleet vehicles for various purposes. The City of Indio currently utilizes a dump truck throughout the City for various purposes including street maintenance. The vactor truck is an integral part of the National Pollutant Discharge Elimination System (NPDES) Permit and is used primarily to reduce stormwater pollution and to maintain compliance with stormwater regulations.

As fleet vehicles age they may still be capable of performing primary functions as necessary but become outdated in terms of technology and regulations. Replacing large specialized vehicles can be expensive and it may take time for city governments to budget for their replacement. Replacing expensive vehicles that are operational can be wasteful in terms of both resources and economics. A less expensive and wasteful option for these vehicles is to retrofit or repower the vehicles with newer technology that can keep the vehicles in compliance with regulations for longer periods and possibility throughout the working life of the vehicle.

The dump truck and the vactor truck continue to work properly however; they have become outdated in the form of pollution technology. Similar but newer vehicles utilize updated engines or alternative fuel engines that create less air pollution. The

MSRC Clean Transportation Funding™ 2011 Local government Match Program identified two overall projects that would allow the City to upgrade these vehicles and reduce the air pollution associated with their use

On-Road Vehicle Retrofit with CARB-Verified Level 3 Diesel Emission Control Device

The first project to retrofit a Cummins/ISM-385V engine model year 2006 on an International 7600 Dump Truck began with the data logging needed to identify the proper equipment needed to retrofit the truck. Extensive data logging was done in-house by fleet personnel in order to know more about the emissions and what type of control device would be needed.

Once the information was collected, bid specifications were developed and bid documents were created. The retrofit equipment is specialized equipment so a list of potential suppliers had to be developed. Once potential suppliers were identified the bid documents were distributed. The bid process helps ensure the best price for the best equipment. The bids were received and the work was awarded to West Trucks International.

The dump truck was rotated in for service and the contractor, West Trucks International, installed the retrofit device and determined that the device was functioning properly. The infrastructure in the Fleet Services Department was upgraded to allow fleet services personnel to be able to regenerate the retrofit device in-house. Proper personnel were trained on the operation and maintenance of the device and the regeneration equipment. Once complete, the dump truck was rotated back into service. The retrofit device is a CARB verified Level 3 Diesel Emission Control device therefore,

the dump truck now functions in the same capacity while emitting at least 85 percent less diesel particulates.

Off-Road Equipment with New Diesel Tier 3 Engine

The second project to replace a John Deere 4045TF250 model year 1999 engine on a Sterling/Freightliner Vactor Truck began with preparing the bid specification documents for the replacement engine. Once the bid documents were complete, potential suppliers were identified and the bid documents were sent to the suppliers.

The potential suppliers did not readily send back bid information and what information was initially returned was “soft” information with only general commitments. The City contacted the suppliers repeated times in an attempt to gain specific information about products that could be used to retrofit the vactor truck. The City worked with suppliers such as Johnson Power, RDO Equipment and Valley Power Systems. The lag in information eventually caused the City request an extension to the grant.

The primary issue was that Tier 3 engines were being phased out for Tier 4 engines. Contractors were unable to give the city concrete information for a Tier 3 engine because production had transitioned to Tier 4 engines. All of the Tier 3 engines were assembled upon order so no Tier 3 engines were kept in stock and contractors were unable to locate one. After months of searching for a Tier 3 engine, it was realized that one could not be located.

Tier 4 engines are designed differently than Tier 3 engines and the footprints of the Tier 4 engines were incompatible with the vactor truck. Several engine types were considered and examined including Deutz, John Deere and Caterpillar in an effort to

find a way to engineer the Tier 4 engines to work with the vactor truck. The city worked with contractors to consider measurements, engine designs and other possibilities, however, it became apparent that a Tier 4 engine could not be made to be compatible with this vehicle without substantial restructuring that could interfere with the operation of the engine. The city devoted an extensive amount of time to the project intending to complete the process. Unfortunately, this project could not be completed because manufacturing had transitioned from Tier 3 to Tier 4 engines and Tier 4 engines were not compatible with the vehicle.

Conclusions and Recommendations

This project allowed a fleet vehicle that is used to perform necessary city services to continue to operate while producing 85 percent less diesel particulate matter. Fleet vehicles are often costly to replace and replacing operational vehicles in order to decrease air pollution is not an economically viable option. Furthermore, replacing vehicles in order to reduce air pollution can waste other natural resources and take up valuable landfill space. Programs that allow older, operating vehicles to meet updated pollution standards are valuable programs that effectively reduce mobile source air pollution and have important added benefits beyond clean air. The city recommends that that MSRC continue to consider retrofit projects for future funding opportunities. MSRC should consider the full benefits of retrofit and repower projects and the city recommends these types of projects to be continued and supported through grant funding.

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