



THE CITY OF SAN DIEGO
REPORT TO THE CITY COUNCIL

DATE ISSUED: October 10, 2011 REPORT NO:
ATTENTION: Public Safety and Neighborhood Services Committee
SUBJECT: Emmisions Controls Impacts on Emergency Response Apparatus
REFERENCE: None

REQUESTED ACTION

This is an informational item only. No action is required by the Committee or the City Council.

STAFF RECOMMENDATION

Accept the Report.

EXECUTIVE SUMMARY

The Fire-Rescue Department operates approximately 150 diesel powered emergency response apparatus. In 2007, the United States Environmental Protection Agency (EPA) implemented new diesel particulate emissions control requirements applicable to all diesel motors with the exception of those used in military and construction applications. These regulations affect approximately 40 apparatus in the current Fire-Rescue inventory.

The diesel particulate filters installed in these apparatus are designed to become clogged over time by capturing the visible black soot that would otherwise be put into the air we breathe. When they fill to a certain point, indicator lights inform the operator of the filters' condition. A few options for corrective action can then be taken. All options involve an on-board computer operating the engine at an elevated RPM to "burn off" the pollutants that are beginning to clog the filter. Without action, damage to the engine and emissions control devices will occur.

In some cases, corrective action must be immediately taken to avoid damage. This results in the emergency response apparatus having to be removed from service and run through a regeneration (regen) cycle to clean the filter. This can occur on short notice and has resulted in the emergency response vehicles being unavailable for a response for periods of 45 to 60 minutes for the regen itself, longer if the apparatus must travel to the Repair Facility in Kearny Mesa or if the system fails to regen properly.

The application of these emission control standards to the public safety sector is a national issue that has been discussed by the International Association of Fire Chiefs (IAFC) and the International

Association of Firefighters (IAFF). It is unclear whether either organization will seek an exemption for the fire service to ensure emergency response capabilities are not compromised by having to periodically remove apparatus from service to perform emissions system regeneration cycles. Moreover, it is not clear whether the EPA or engine manufacturers will be open to developing differing emissions control standards solely for the relatively small fire service market.

DISCUSSION

Increased emissions control standards implemented by the EPA and enforced by the California Air Resources Board (CARB) since 2007 have had significant impacts on all diesel engine vehicles operating on the highway. While visible pollutants have been greatly reduced, improving our air quality, these systems have had reliability problems in fire apparatus.

Over the road (OTR) trucks have the benefit of typically operating for longer periods of time over longer distances than fire apparatus. This allows the regen equipment to operate more seamlessly, often performing its functions with little or no interaction from the driver. The short 'duty cycle' for fire apparatus has created many problems that engine manufacturers seemed unprepared to deal with. Instead of running for hours between stops like a big semi might, fire apparatus run in 10 to 15 minute cycles. This has been hard on system components resulting in increased down time compared to pre-2007 vehicles.

Unfortunately, multiple emissions-related problems have manifested themselves since 2007 resulting in numerous 'out of service' and 'change out' events ('out of service' means the vehicle is unavailable for response while repairs or maintenance are being performed – 'change out' means the apparatus could not be readily repaired necessitating the crew moving into a reserve vehicle). General Services, Fleet Services Division has been working diligently with two different engine manufacturers and their local dealers to find solutions to these problems. The systems finally seem stable enough to allow for in-the-field regens to be performed by fire crews. This will greatly reduce out of service time by eliminating the wait or travel times for mechanics. But failure of these systems to perform as designed will require Fleet Services intervention, and out of service or change out status.

Lastly, another emissions change occurred for 2010. Selective Catalyst Reduction (SCR) has now been added to apparatus. This system introduces diesel exhaust fluid (DEF) into the exhaust stream to react with the remaining tailpipe emissions, emitting only nitrogen and water. This is stored in a small on-board tank, and works in conjunction with regen. Real world experience in Europe and here in the US shows that DEF does extend the regen interval. We are just taking delivery of the first seven fire apparatus with this technology and have no operational experience as of yet.

The impact of regen on the fire fleet has been significant for crew out of service time, repairs and maintenance. And while direct repair costs are low due to favorable engine manufacturer emission system warranties, fiscal impacts include labor and fuel for movement of vehicles to dealers for this work and performing the actual regen process.

FISCAL CONSIDERATIONS

None.

RECOMMENDATION

Accept the report.

PREVIOUS COUNCIL and/or COMMITTEE ACTIONS

N/A

COMMUNITY PARTICIPATION AND PUBLIC OUTREACH EFFORTS

N/A

KEY STAKEHOLDERS AND PROJECTED IMPACTS

Community and Citizens



Javier Mainar, Fire Chief