

# RS≡A Remote Sensing≡Air, Inc.

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Haskins Hobson

Thank you for the opportunity to comment on the Draft Inspection/Maintenance (I/M) Summit White Paper of October 26, 2005. Below are my comments.

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## **Comments on Draft Inspection/Maintenance (I/M) Summit White Paper October 26, 2005 by Judith Zwicker 12-06-05**

### **Overall Comments**

I do not see the need for changing the program at this time.

- The program is working – emissions are being reduced.
- Combined with other emissions reduction programs such as Stage I & Stage II Vapor Recovery and reformulated gasoline there have been measurable reductions in ozone levels resulting in attainment of the 1-hour ozone requirement.
- Analysis of the data from the centralized station tests and the RapidScreen tests show a reduction in emissions due to repair of vehicles.
- The surveys have shown that about 10% of the people do not like the program. This is about the same percentage of vehicle owners who need to get their vehicles fixed. A program that would make these people happy would not be a viable program since no vehicles would get fixed.
- The public is accustomed to the present program and how it works – changing the program for three years will only cause more dismay and complaints from the public.
- Changing the program for three years will result in a financial burden for the decentralized station owners who will need to invest in hardware, software and training. If the station owners are to recoup these costs over 3 years, the testing and repair costs are likely to go up.
- Changing the program for three years will result in a higher financial burden for the State of Missouri related to higher oversight and data management costs.
- OBD II only testing is certainly not the way to go now since there are problems with the OBD systems of 1996 through 1998 (and some newer models) AND there are still significant emissions from 1981 through 1995 vehicles.
- Not testing 1981 to 1995 vehicles may cause some people to buy older vehicles or to keep their current vehicles longer to avoid testing.

The comments below are based on the structure of the White Paper.

### **Purpose of the I/M Summit and White Paper**

1. Is there a reason for the current contract expiring with the date that the SIP is due?
2. Does “sunset” mean that it ends? If no legislation is passed, does this mean that the design of the program stay as is but that a new contract is needed and would be put out for bid under the current design?

### **I/M Summit Participants**

1. Need the list of participants
2. Which community members were invited

### **I/M Summit Process**

No comments

### **I/M Summit Presentations**

Need web pages

### **Air Quality Status in St. Louis**

1. Gateway Clean Air Program has been key to meeting 1-hour standard and necessary for maintenance
2. The program will be need to meet 8-hour standard

### **Legal Requirement for I/M in the St. Louis Non-attainment Area**

1. Changing demographics of the St. Louis area vehicle fleet.
  - a. The number of older vehicles registered in the St. Louis area is decreasing but the amount of emissions in tons per year is not decreasing so quickly.
    - i. Figure 1 shows the relative number of registered vehicles and the relative emissions in tons/year for vehicles with MY 1971 through 1980, 1981 through 1995, and 1996 through 2006.
      1. The dropping of 1971 through 1980 vehicles from testing is not a major problem for vehicle emissions since they represent a very small percentage of registered vehicles and of miles/year driven with their total percentage of emissions in tons/year are less than 5%.
      2. Not testing 1981 through 1995 vehicles would be a big mistake because they represent over 50% of the HC and NOx emissions and over 70% of the CO emissions in tons/per year even though they represent less than 30% of the registered vehicles and 20% of the annual vehicle miles traveled..
      3. 1996 through 2006 vehicles represent over 70% of the registered vehicles and 80% of the annual vehicle miles traveled but represent less than 30% of the CO emissions

- and less than 50% of HC and NO<sub>x</sub> emissions, mostly due to the significantly higher miles/year driven by these vehicles.
- ii. Figure 2 shows the relationship between the percentage of RapidScreen vehicles seen in 2005 and the number of registered vehicles and the number of vehicle miles traveled (registered vehicles by MY times the number of miles/year/vehicle/MY driven from the Mobile 6 program) suggesting that the RapidScreen test data are a good indicator of percentage of vehicle miles traveled by MY. This correlation has been confirmed by other programs as well.
  - iii. Figure 3 shows the trend toward the percentage of newer vehicles seen by the RapidScreen vans decreasing from 2000 through 2005. The number of vehicles seen by the RapidScreen vans is proportional to the number of miles/year driven for each MY group. The decrease appears to be not linear but an inverse exponential with the rate of decrease slowing.
2. Testing technology improving
- a. OBD is proactive but only for 1996 and newer vehicles and some might say 1999 and newer since there are significant problems with the 1996 through 1998 OBD II systems on many models.
  - b. Because of the OBD problems with the 1996 through 1998 vehicles, it would be best if they were tested by IM and OBD or a least OBD pass and then IM240 if OBD fail.
  - c. The fact that OBD is present for these newer vehicles doesn't negate the need for IM testing for the 1981 through 1995 vehicles as shown in Figure 3.

It would seem that the significant emissions from 1981 through 1995 vehicles would preclude going to an OBD only testing program and still prevent "backsliding".

## **I/M Program Design Elements**

### **1) Vehicle Emissions Test Methods**

#### ***OBD Testing***

1. Is OBD testing really fraud-resistant? I heard at the show on December 3, 2005 that there are ways to manipulate the OBD results from changing code to changing boxes to making changes that affect the emissions but not the OBD test.
2. Is OBD really an emissions test? Isn't really a determination of the presence of problems that might cause emissions? This is good in that it is preventative but from what I have read and seen there problems with false passes and false fails.
3. The OBD appears to be the way to go for the 1999 and newer vehicles but the problems with the 1996 through 1998 vehicles might mean that the IM240 test would be better or a viable high emitter program to get high emitters (both 1981 to 1995 and 1996 through ---) removed from the fleet or repaired.

4. It would be most equitable if all fuel types were required to be tested including diesel, ethanol, LPG, etc. for all model years from 1981 through the current year.
5. What is the level of fraud with the current program? How would fraud prevention be performed differently from the current program?
6. The OBD Kiosk sounds as if it might be something for the future after more testing and validation that there could not be fraud and looking into cost of oversight and operating these due to the sensitivity of the equipment needed for the testing.
7. The transponder sounds interesting. There would have to be a flag in the registration process to stop a vehicle whose transponder shows a problem that has not been fixed before the registration as well perhaps of a fine if a notice to get fixed has been ignored. This would be similar to a clean screen/high emitter program but for 1996 and newer vehicles only.
8. Improved technology options need to be left open for any program. This would include improved remote sensing technology.

### ***IM240 Testing***

1. The IM240 test cannot be performed on 1980 and older vehicles.
2. The fact that the existing IM structure is in place and working suggests that it be left in place until the impact of the vehicles needing IM240 testing is a much smaller percentage of the total emissions in tons/year. (See Figure 3).
3. I agree with the minority that the 1981 through 1995 vehicles should continue to be tail pipe tested.
4. The adding the gas cap test and a leaking gasoline test to the safety inspection and requiring the safety inspection to provide electronic data with quality assurance is very good idea. This testing will do nothing to reduce the tailpipe emissions for all vehicles and will require that there is more and better MDNR oversight (additional costs) and higher fees for the facilities doing the safety inspections are losing money already with the \$12 fee.

### **2)Model Years**

1. New model year vehicles should not be exempt.
  - a. Problems found during testing will allow the vehicles to be repaired early reducing the cost of the repairs and likely allowing them to be done under warranty.
  - b. If a person can afford a new car, the \$24 every 2 years or \$1/month should not be a problem. Continuing the present program could well result in lower fees than \$1/month.
  - c. Hybrid electric vehicles and other “good fuel” vehicles should be tested along with all others to ensure that there are no emissions problems.

### **3)Geographic Coverage**

1. I agree that the coverage by county is correct.
2. It would probably be good for the whole state to have the testing statewide but this is not likely to happen.

#### 4) Test Network

1. Centralized (Test Only) – this is the present system and it is working well and I think it should be continued at least until the fleet is such that the vehicles needing IM240 tests are producing a small amount of annual emissions when some of the more exotic methods such as the kiosk and transponder might be the way to go but not for at least 5 years.
2. Decentralized (Test & Repair) – bad idea, this did not work previously. The costs would greatly increase for the MDNR to provide quality assurance, oversight, and database management of many separate stations. Many station owners do not want this because they lose money with these tests.
3. Decentralized (Test Only) – still a bad idea for same reasons as above.
4. Hybrid (Both) – If this means centralized available for vehicles needing IM240 testing as well as OBD testing and decentralized for only OBD testing similar to California, it might work. I understand that California requires a certain number of vehicles to go to a centralized test station for acceleration simulation mode (ASM) tests as well as all vehicles that fit their high emitter profile.
5. Combined Safety/Emissions Testing (Have to offer both)? The combination of safety and emissions testing is the only real convenience for decentralized and using the local shop. Otherwise it is really easier just to go to a station with no need to schedule a time and no need to leave your vehicle.

#### 5) Remote Sensing

1. Clean Screening has been a very popular part of the program. The program works and could be made more convenient and efficient with more vans and more options for redeeming the notices.
2. With the newer remote sensing technology, detection limits are lower and there is the capability of determining particulate emissions that will become important as the need to avoid non-attainment in relation to particulates comes into focus.
3. Clean Screening is cost effective but not free – a lot of work goes into making sure it works properly and accurately and so the motorist should pay.
4. Dirty Screening or High Emitter Screening can work but is much harder to enforce. The same data collected for Clean Screening can be used for Dirty Screening. Notices can be sent out but will have little effect if there is not a strong enforcement mechanism OR a “carrot” of positive assistance for those who come forward.
5. Very useful for fleet analysis and evaluation of the impact of emissions testing.
6. Some misconceptions about remote sensing and clean screening need to be corrected.
  - a. Clean Screening lets many dirty cars get exemptions because test data a long as 1 year from the registration due date are allowed.
    - i. There is a 2% sample of vehicles that would obtain a clean screen notice but are not so that the vehicle will go to the test station to be tested. The results from this testing since 2000 has shown that less than 2% (relative to total number of tests) of all clean screen vehicles fail the station test for any reason (gas cap or excess values for any of the gases tested or now OBD failures) and that

the overall retained emissions reductions are over 95% for HC and CO as well as for NO<sub>x</sub> except for the first year of the program and 2002 when the station standards changed from initial to final (Figure 4).

- ii. The data indicate that the percentage of failures for older tests (>10 months from the registration due date) is the same as the percentage of records with >10 months from the registration due date. In other words, there does not seem to be a correlation between older test dates and failures.
  - iii. No program can have a time period less than 6 months because the notices must be sent out 2 months before the end of the registration period in order to give all registrants sufficient time to redeem and get the registration AND it takes time from the time of the test to process the data in a quality manner.
- b. Vehicles with MIL On issues will search out RapidScreen vans to pass when they could not at the stations.
- i. The data I have evaluated show just the opposite. More people come to the stations who would have had a clean screen notice and are tested with the MIL On than do for the 2% audit sample. This suggests to me the most people do want to get their cars tested to find out what is wrong and get it fixed.
  - ii. Most people are too busy to even think about such things.

## 6)Waivers

1. No Waivers – not really feasible but waivers should be limited. The beginning of the program the waiver cost limit was too low and many vehicles did not get fixed. This needs to be thought through carefully so as to be fair and effective.
2. Cost Limit – this is how it has been. Is there a better way?
3. Repairs by anyone?? This is difficult. There really has to be some way to determine that repairs have actually been made for the money and that the owner hasn't been cheated or is cheating.
4. Repairs by trained technicians seem like a good idea
5. One condition should be the one now applied that there have to have been a certain amount of reductions for the repairs. This guarantees that work was actually done for the money and that some emissions reductions have been attained.
6. I heard that in California that there are no waivers for high emitters – the vehicles need to be repaired below high emitter status or scrapped.

## 7)Vehicle Registration

1. I agree that test stations should not provide all fee office functions.
2. It would seem reasonable to provide internet on-line registration and for stations that want to provide the service to provide it but not make it mandatory.
3. Electronic test result verification is presently available and should continue to be available.
4. What are the alternatives to license plate tags?

5. Disappearing vehicles – I assume this means the unresolved tests where a vehicle fails and never shows up again. Remote sensing data can help track these vehicles as well as watching the actual test data over the years. This takes time and has not been fully done at present.

### **8)Who Pays?**

The present system where the motorist pays makes the most sense. Under the present system there is one fee of \$24 every two years (\$1/month) and this fee pays for all of the components of the test.

1. The actual testing.
2. Training of personnel.
3. Data transfer to VID
4. Management of VID
5. Quality assurance and quality control
6. Reporting to the MDNR
7. Maintenance and repair of equipment
8. \$2.50 for each test to MDNR to defer MDNR costs (I do not have any idea how much of the MDNR oversight budget comes from this or is needed from the overall MDNR budget).

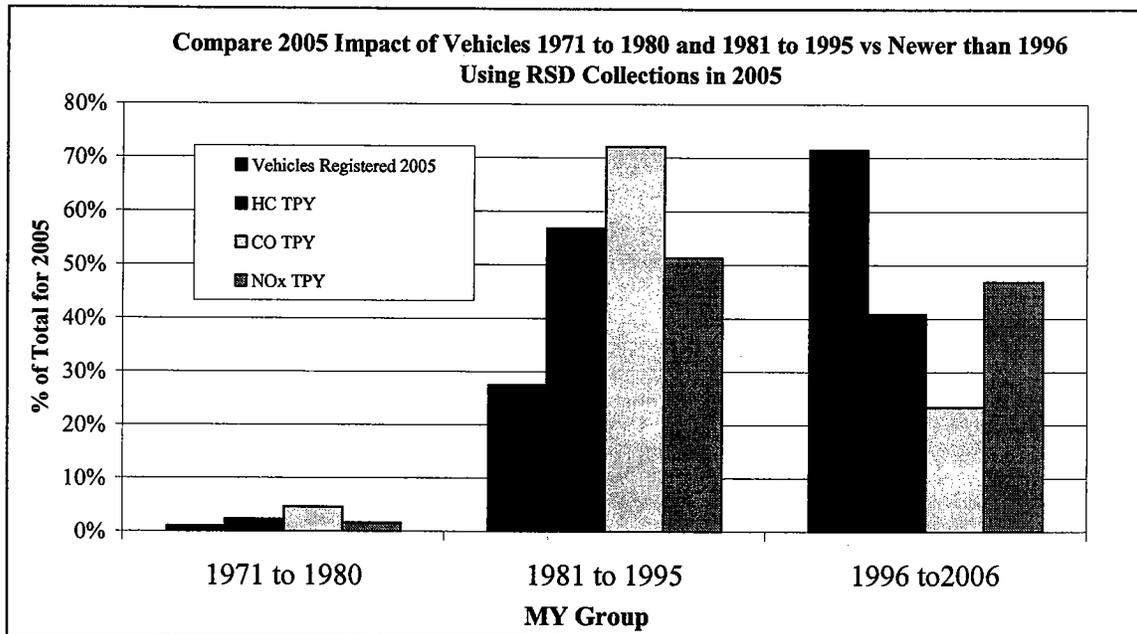
How will fees paid by the motorist encompass these costs with a decentralized system? I heard charges from decentralized stations at the December 3, 2005 show of nothing if the repairs are done by the shop, to \$9.95 to \$70. I think that letting the market set the price is a very bad idea for ability to run a well run program with necessary MDNR oversight and a well run quality assured database.

### **9)I/M Test Frequency**

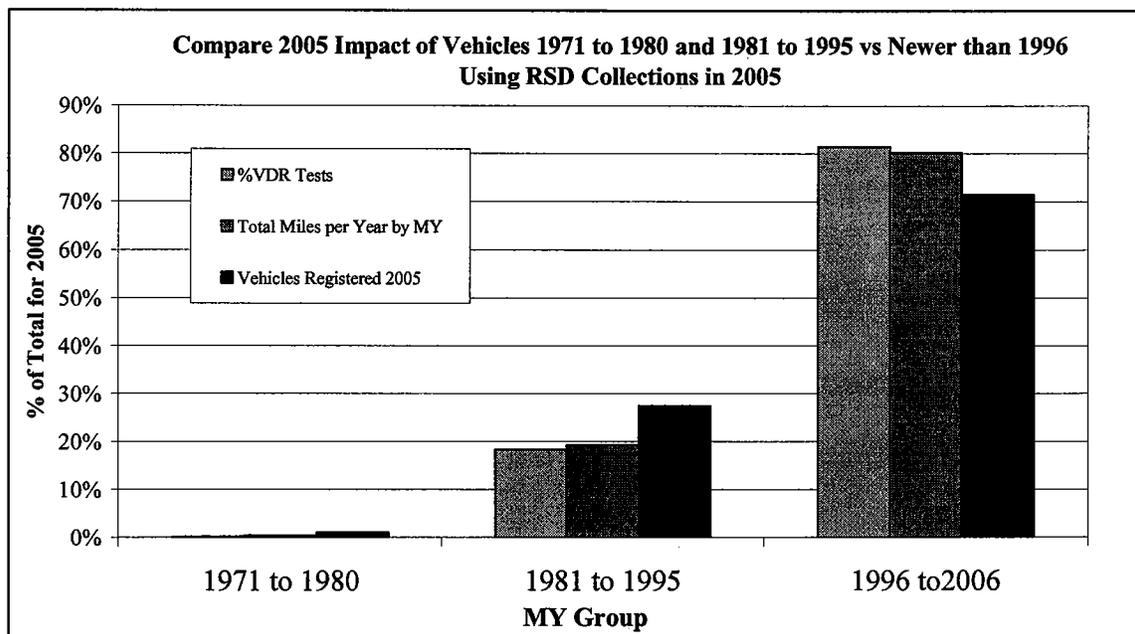
1. Annual – annual testing provides for better results since cars are repaired more often but is not likely to happen. It has been suggested that high use vehicles such as taxi cabs and fleet vehicles be tested annually because their annual miles traveled are about the same as a normal vehicle's biennial milage. In looking at data over the years it does appear to be true that taxis and more likely to fail the test than other vehicles of the same age.
2. Biennial – what we have now and it seems to be working but see above. People are accustomed to this frequency.
3. Transfer of ownership – I had originally thought that there was no reason for this but have come around to believe that the reason for having it makes sense especially for the newer cars. From the data that I have seen, newer cars that are tested on off years because of transfer of ownership have a higher fail rate than the same MY tested during their test year. It appears that these vehicles are being sold because they have problems. The reason for the testing is to protect the buyer but also to reduce emissions much like the requirements for inspections and repair before a house can be sold to ensure that the buyer is not taken and to ensure that the buyer does not buy a house with problems and not get them fixed.
4. I do not see the need or the benefit in limiting the transfer of ownership testing.

**I/M Program Duration**

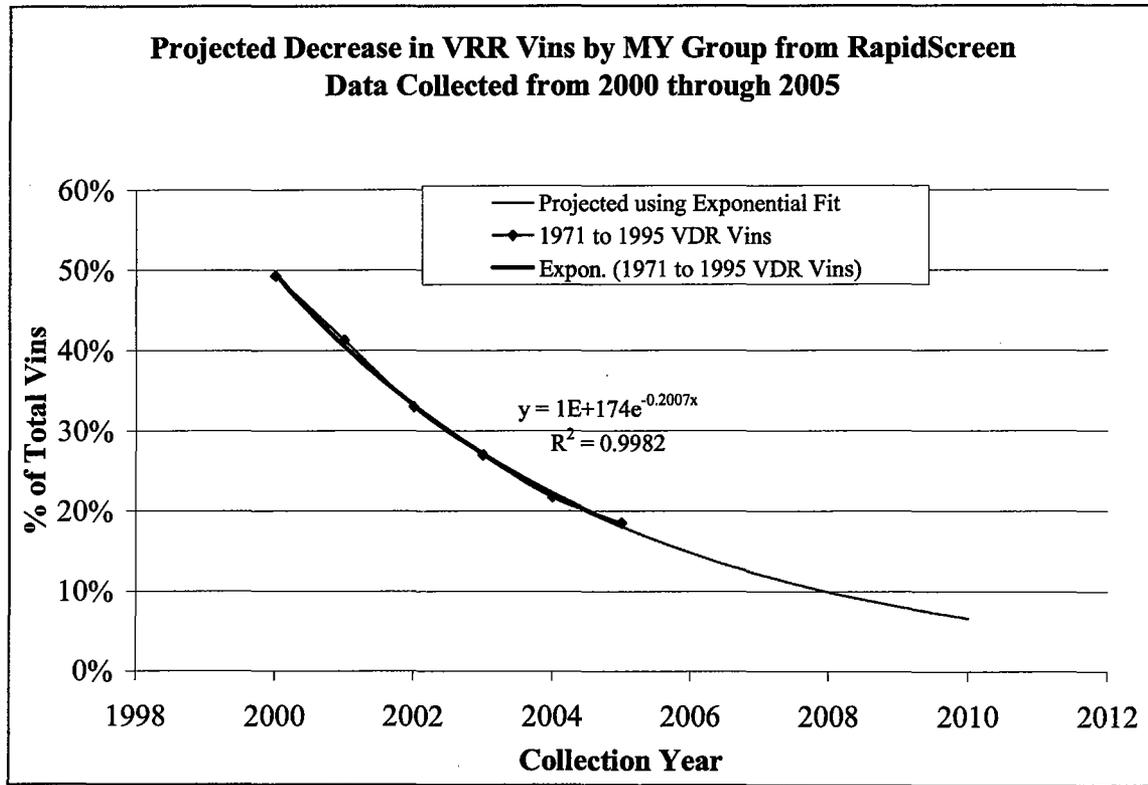
1. September 2007 to September 2010 –
  - a. First, I think having the start, change or end date of a program be in the middle of a calendar year does not make any sense at all. It is confusing for the motorists and more difficult for the VID.
  - b. It does not make any sense at all (not financial, not for emissions reductions, not for the ease of the motorist) to make a major change in the way the program is run for only three years. A great deal of money will need to be spent and great deal of time will need to be spent getting the program running smoothly and this just might be happening in 3 years time.
  - c. What makes the most sense is keeping the present program running for those three years (I would say until December 31, 2010) with an annual evaluation of costs and progress. There are improvements to the present program that can and should be made. Some of these are simple and nearly done (like internet payments for RapidScreen) and others like including diesel emissions somewhat more complicated but very doable. Given that the current program has been up and running for nearly 6 years and that most of the problems have been solved (except for some nagging OBD II issues that really are not the fault of the program but EPA mandates), the cost of testing should be able to be reduced to a certain extent depending on the improvements made.
  - d. The program needs to be evaluated annually to 2010 and after for where Missouri is in relation to attainment and need for maintenance as well as after 2010 for the possibility of using only OBD II or some other new technology that has come forward by that time.



**Figure 1. Distribution of Emissions in Tons per Year for Vehicles Grouped by MY**



**Figure 2. Comparison of %VDR Tests, Total Miles per Year and Vehicles Registered by MY**



**Figure 3. Projected Decrease in Percentages of 1971 through 1995 MY Vehicles from RapidScreen Data.**

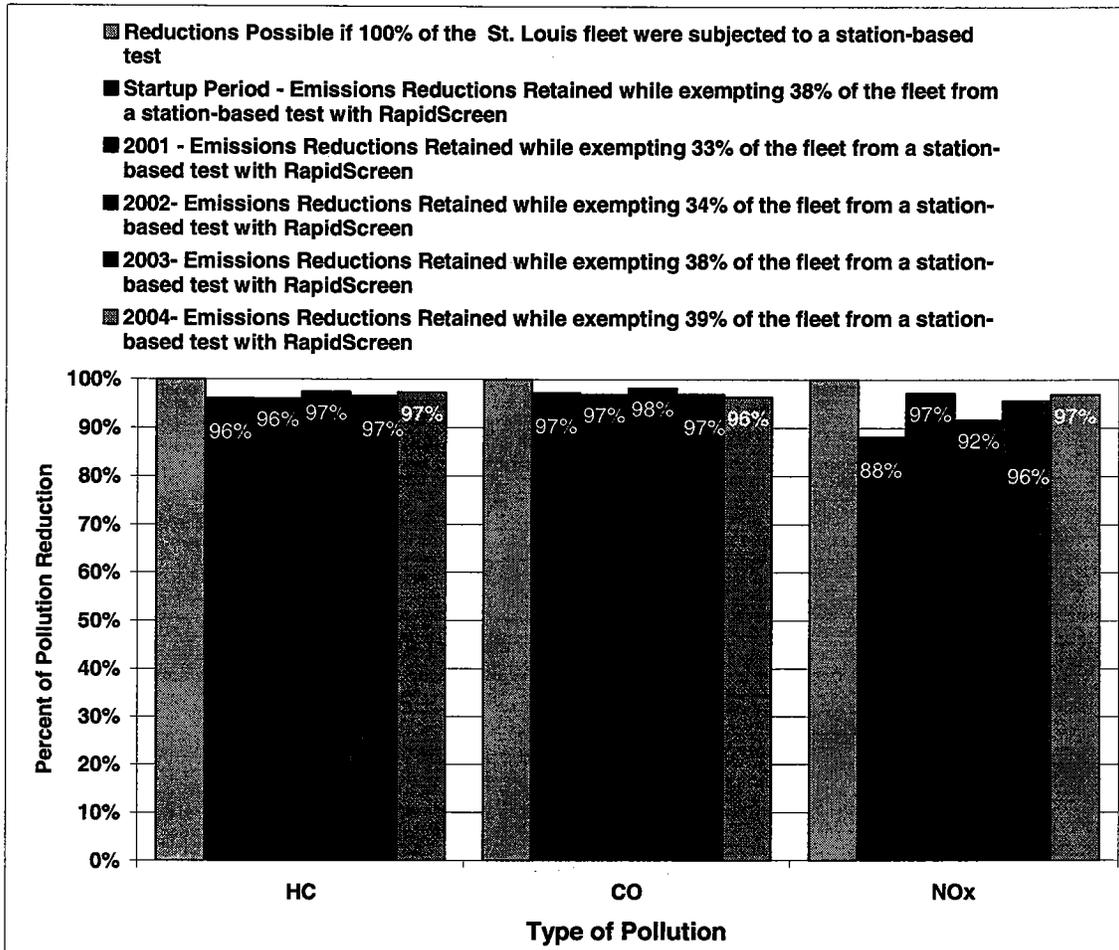


Figure 4. Retained Emissions from 2% Audit Sample Data from 2004 Annual Report.