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before the
HOUSE TRANSPORTATION COMMITTEE
SUBCOMMITTEE ON TRANSPORTATION SAFETY
PENNSYLVANIA HOUSE OF REPRESENTATIVES

FEBRUARY 25, 1992

Good morning, Mr. Chairman and members of the Subcommittee. I am Edwin B. Erickson, Regional Administrator of the Mid-Atlantic Region of EPA in Philadelphia. I am pleased to be here this morning to discuss the requirements of the Clean Air Act Amendments of 1990 for an enhanced automobile inspection and maintenance program and the benefits this program will have on improving Pennsylvania's air quality.

Without question, the United States has the best vehicle pollution control program in the world. Nonetheless, vehicle traffic generates about half the pollution that ends up in our air. In some ozone nonattainment areas, the percentage is even higher.

Of all highway vehicles, passenger cars and light trucks emit most of the vehicle-related carbon monoxide and ozone-forming hydrocarbons. They also emit substantial amounts of nitrogen oxides and toxic air pollutants. Although we have made tremendous progress in reducing emissions of these pollutants, total fleet emissions remain very high. This is because the number of vehicle miles traveled (VMT) on U.S. roads has doubled in the last twenty years to 2 trillion miles per year -- offsetting much of the remarkable technological progress in emissions control over these

same two decades. In 1988 in Pennsylvania alone, VMT totaled over 83 billion miles. Projections indicate that the steady growth in vehicle travel is continuing. Ongoing efforts to reduce emissions from individual vehicles will be necessary to achieve our air quality goals.

Further reduction of new car emissions will be achieved with tighter Federal standards, beginning in 1994, and even greater reductions will be realized if Pennsylvania adopts California's Low Emitting Vehicle standards. However, benefits from these programs will not be realized before attainment demonstration deadlines and will not be sufficient to reach attainment without an enhanced inspection and maintenance (I/M) program.

Under the Clean Air Act Amendments of 1990 (the Act), the U.S. Environmental Protection Agency (EPA) is pursuing a three-point strategy for achieving major emission reductions from mobile sources. The development and wide-spread sales of cleaner vehicles and cleaner fuels, such as reformulated gasoline and oxygenated fuels, represent the first two strategies. It will be many years, however, before these cleaner cars dominate our vehicle fleet and none of these efforts will be successful unless we ensure that cars in use are properly maintained.

The focus of my remarks today is the third strategic point -- I/M programs. The concept behind I/M is to ensure that cars are properly maintained in customer use. I/M produces emission reduction results soon after implementation of the program. I/M is also critical if we are to fully realize the benefits of the new

clean vehicles and clean fuels programs scheduled for phase-in over the next ten years. This is because I/M will help to ensure that such vehicles function properly.

Just as it is important for future cars to function properly, it is also important to understand that today's cars are absolutely dependent on properly functioning emission controls to keep pollution levels low. A strong I/M program will accomplish this. Minor malfunctions in the emission control system can increase emissions several-fold -- **the average car on the road emits three to four times the new car standard.** Major malfunctions can cause emissions to skyrocket. As a result, 10 to 30 percent of cars are causing the majority of the vehicle-related pollution problem. Unfortunately, it is rarely obvious which cars fall into this category, as the emissions themselves may not be noticeable and emission control malfunctions do not necessarily affect vehicle driveability or performance.

Effective I/M programs, however, can identify these problem cars and assure their timely repair. In fact, enhanced high tech I/M programs are the most effective -- **and the most cost-effective** -- air pollution controls we have identified. We project that new high-tech I/M programs would cut vehicle emissions up to 30 percent, at a testing cost of about $9 per vehicle per year. This represents a major step toward the Clean Air Act's requirement that ozone nonattainment areas achieve an average annual 3 percent overall emissions reduction.

What do the 1990 Clean Air Act Amendments say about I/M?

The new law establishes the Ozone Transport Region in the northeastern United States that includes the Commonwealth of Pennsylvania. The Act requires enhanced I/M programs in all metropolitan statistical areas located in the Ozone Transport Region which have a population of 100,000 or more people.

The Act also directs EPA to establish a minimum performance standard for an effective enhanced program that includes on-road (either roadside or remote sensing) emission testing and administration features to assure that the program is meeting this standard. The Act also requires states to include specific elements including computerized analyzers, a $450 minimum cost waiver, a registration based enforcement system (or equivalent), and future on-board diagnostics inspection. Each state must also submit a report to the Administrator of EPA every two years to assess program benefits.

What makes an effective I/M program?

EPA and state audits have shown that the simple idle test used in today's programs is quickly becoming obsolete. This type of test worked well for pre-1981, carbureted, non-computerized cars because typical emission control problems involved "rich" air/fuel mixtures that affected idle as well as cruising emissions. Today's computer controlled cars continuously adjust engine operations and cannot be effectively tested at idle. Emissions must be tested during high emission acceleration and deceleration driving modes to reliably test sensor and computer operation and identify "high

emitters". At the same time, visual inspection of emission control devices is becoming less relevant. This is because tampering and misfueling rates have declined significantly with the phase-out of leaded gasoline and the difficulty of tampering with today's sophisticated cars. Additionally, high-tech tailpipe testing can discover many instances of tampering that were previously undetectable by either a tailpipe or visual check.

Another shortcoming of current tests is the inability to detect evaporative emissions. Over the last several years, we have learned that vapors which escape from various points in the vehicle fuel system represent a huge source of hydrocarbon emissions, generally greater than tailpipe exhaust.

EPA has developed two functional tests which can determine whether vehicle evaporative emission control systems are operating properly: 1) A simple pressure check to find leaks in the fuel system. 2) A check of the "purge" system that removes gasoline vapors stored in the charcoal canister and routes them to the engine where they can be burned as fuel.

With these issues in mind, EPA has developed a high-tech emissions test for today's high tech cars. The test simulates actual driving and allows accurate measurement of tailpipe emissions and evaporative system purge. Unlike idle tests, it can also accurately measure emissions of nitrogen oxides (NO_x). This is especially important in the northeastern U.S., where control of NO_x is important to address the ozone problem. This is true because NO_x emissions, along with volatile organic compounds, are

precursor pollutants of ozone smog.

This high tech test is so effective that testing every two years yields almost the same emission reduction benefits as annual testing. In our research, doing the test right has proved far more important than doing it often.

We estimate that a high tech test in a high volume system will cost about $18 per car, including oversight and administration costs. On a biennial basis though, the testing cost drops to about $9 per year. This is in line with the average costs of today's I/M programs. (Today's average costs are about $18 for decentralized programs and about $8 for centralized programs).

A misconception that comes up frequently is the belief that these high tech tests require a so-called centralized testing program. This is not true. Often the term "centralized" refers a an I/M program with test-only stations where a large volume of tests are performed by the state or by a single contractor at a few specific locations. A traditional "decentralized" program is one where a relatively low volume of tests are conducted by numerous small businesses which also often perform vehicle repairs. High tech I/M testing can be done by independent small businesses. Of course, the high-tech testing equipment is more expensive, and may drive a system with fewer high volume test-only stations. Such independent, high volume, test-only stations are now operating in several states (e.g., Texas and California). These I/M programs with independent test-only stations actually generate an increase in the number of vehicles requiring repair.

Regardless of the test format, good quality control and enforcement measures are critical for a fair, yet effective inspection program.

As mentioned earlier, Pennsylvania is facing a Clean Air Act mandate to reduce overall emissions by an average 3 percent per year. Effective high tech I/M programs can make an enormous contribution toward this goal. Emission reductions the Commonwealth achieves through I/M can help offset the emissions generated by the growth in vehicle miles travelled and allow for new industrial growth. Any needed reductions not achieved by mobile source related strategies, such as I/M, will have to be achieved by industry to meet the CAA requirements. Tougher and more comprehensive controls on industrial sources could make it more difficult for industrial growth in the Commonwealth.

As stated earlier, not only is high-tech I/M the most beneficial air pollution control program we know of, it is also the most cost effective. High-tech I/M is **seven** times more cost effective than tighter new car tailpipe standards and at least **ten** times more cost effective than additional controls beyond reasonably available control technology (or RACT) which is the level of control currently required on small and large industrial sources. It remains cost effective to adopt I/M for the VOC reductions it achieves, alone, not to mention the carbon monoxide (CO) and NO_x reductions that would also be achieved.

To summarize, a high tech I/M program provides many benefits:

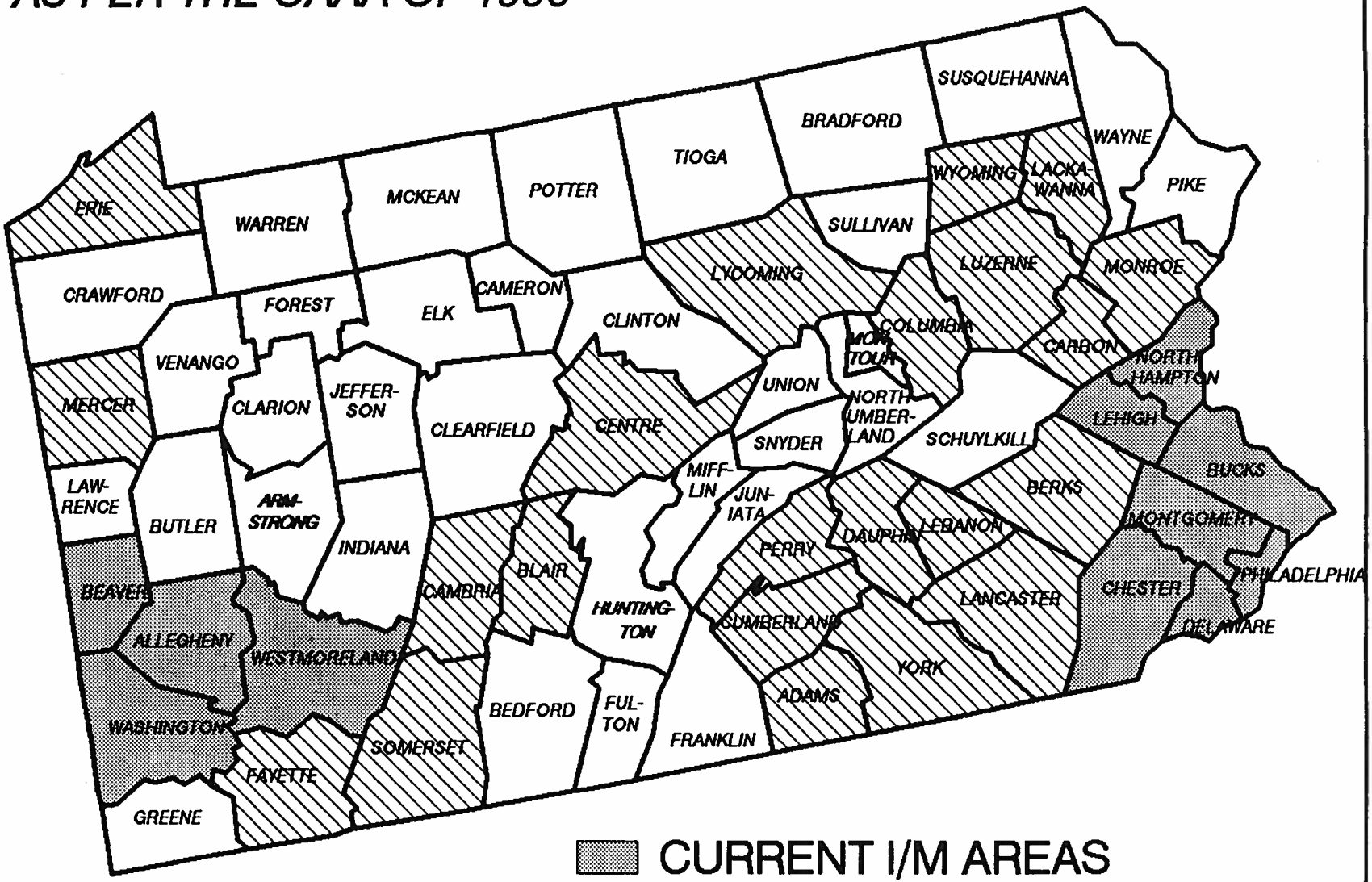
- It would achieve a 30% reduction in vehicle hydrocarbon emissions plus a 30% reduction in CO emissions, and a 10% reduction in NOx emissions.
- It is ten times more cost effective than other control options.
- It provides more precise diagnostic information to target effective repairs, saving vehicle owners time and money.
- Biennial testing means less hassle and lower testing cost for car owners.
- The costs of repair of cars pursuant to problems discovered by I/M tests is largely offset by the savings in fuel costs because properly functioning cars are more fuel efficient.
- It can be operated under a decentralized or centralized system.
- It provides a big step toward the required annual average 3% overall emission reduction, and it would generate reductions offsetting emissions from VMT growth and thereby provide for industrial growth.

Our conclusions about the emission reduction benefits and cost effectiveness of various I/M options are based on nearly 15 years of experience with I/M, along with our ongoing research on a wide variety of mobile source emission control programs and technologies. While our investigations in this area will continue, many state legislatures are facing an imminent decision about how

to improve their I/M programs. It is true that EPA missed the November 1991 due date for promulgating I/M guidance. Such guidance will, however, define the minimally acceptable elements of an "enhanced" I/M program. For all of the reasons we have discussed today, we believe you should adopt a high-tech I/M program. We at the Philadelphia office stand ready to provide you with information on I/M-related technologies and the percent reduction in ozone precursor emissions for which the Commonwealth could take credit in its State Implementation Plan for ozone attainment.

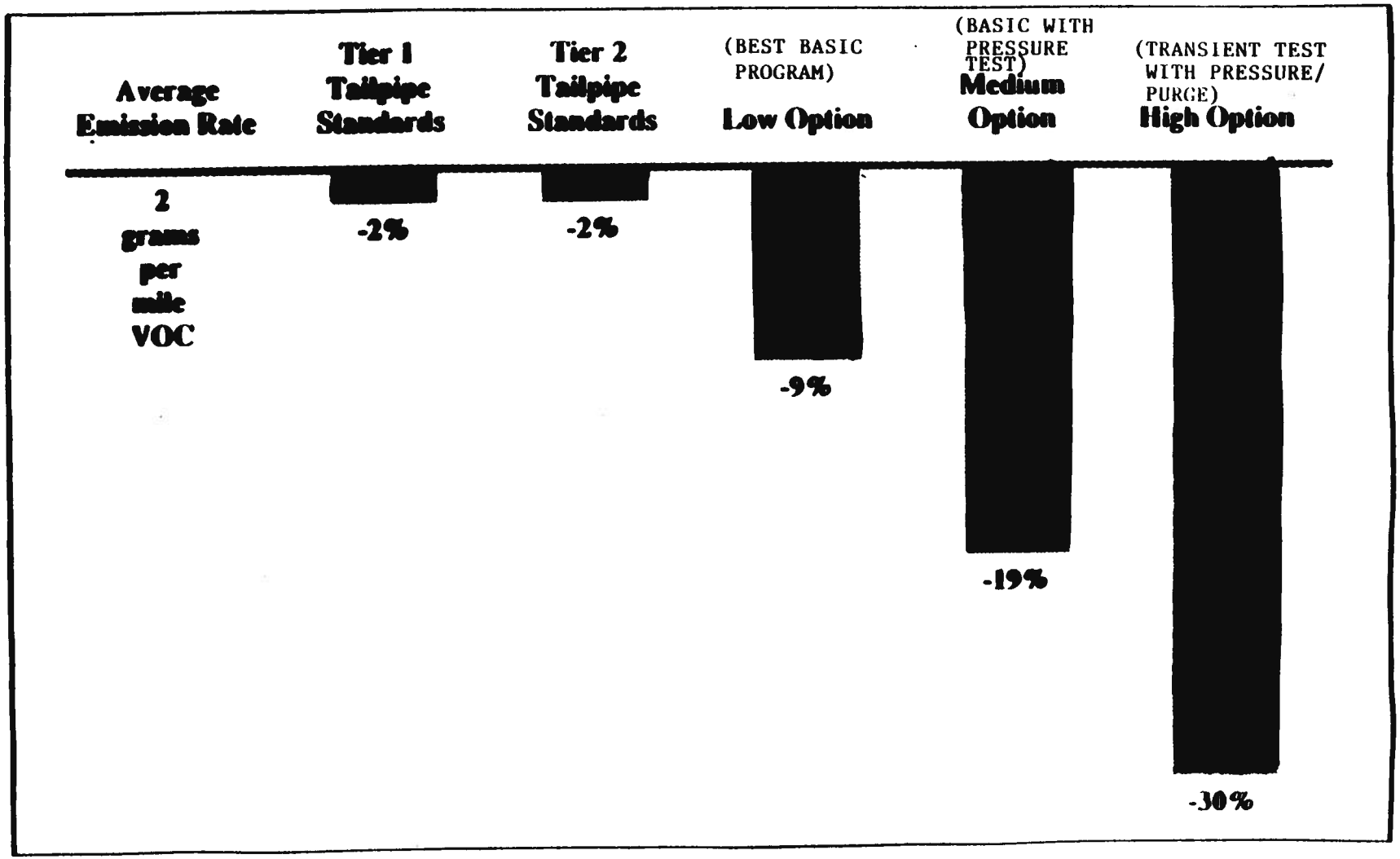
Thank you for the opportunity to be here today to discuss this very important issue. I would be pleased to answer any questions you may have.

POTENTIAL ENHANCED I/M AREAS IN PENNSYLVANIA AS PER THE CAAA OF 1990



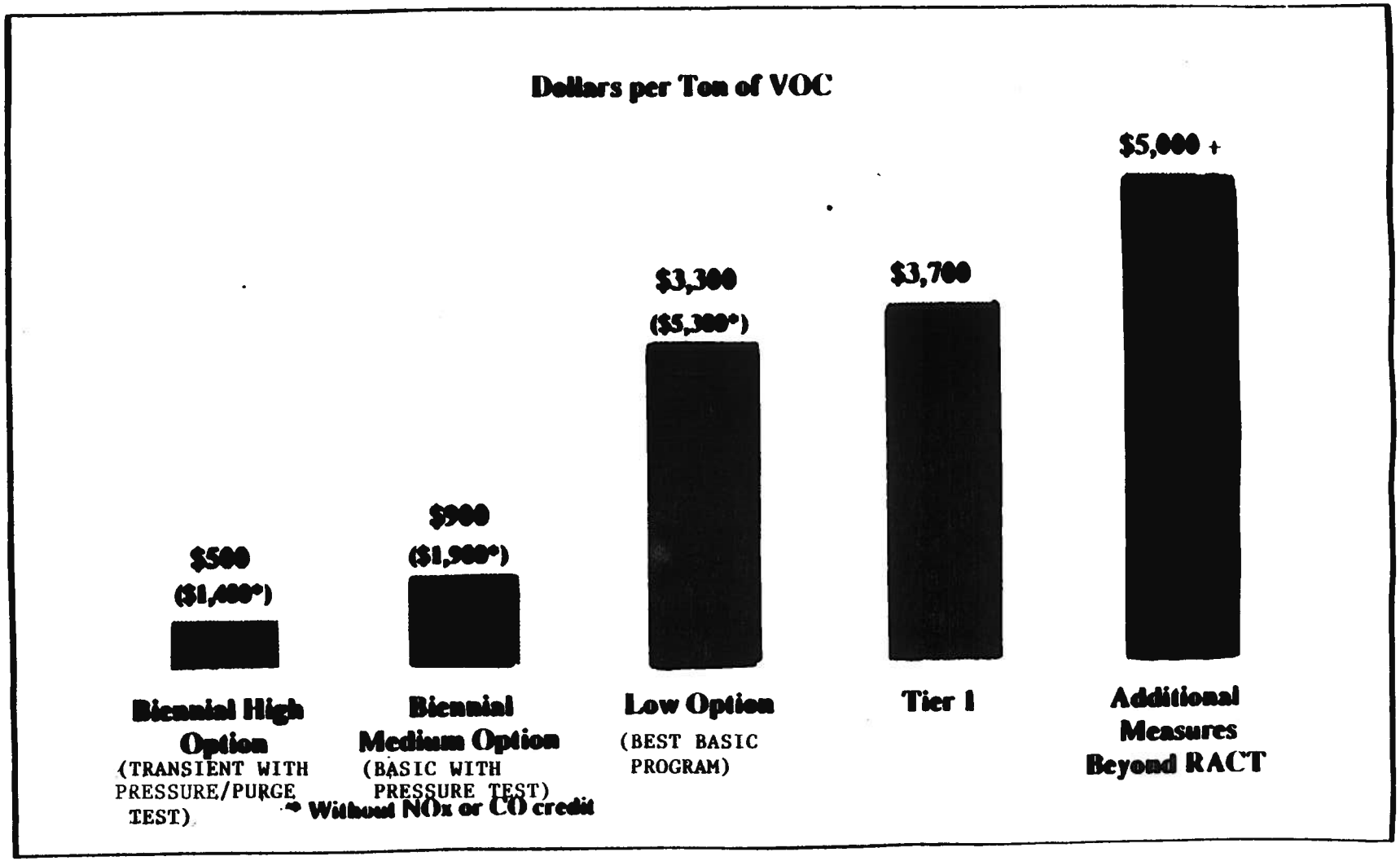
I/M CAN GET BIG BENEFITS

(EVALUATION YEAR 2000)

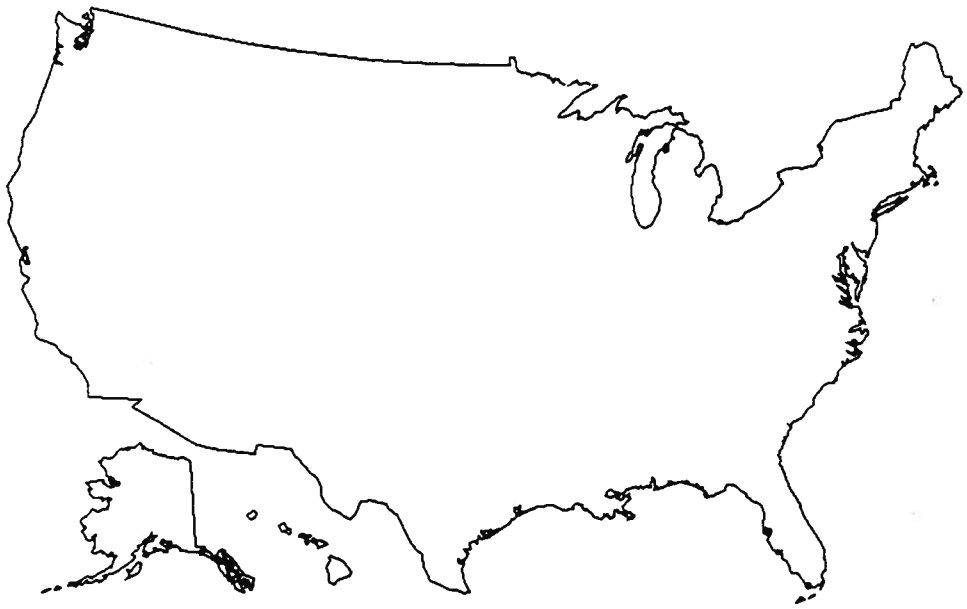


Enhanced Inspection/Maintenance

HIGH TECH I/M IS VERY COST EFFECTIVE



Enhanced Inspection/Maintenance



NATIONWIDE SUPPORTERS OF STRONG INSPECTION/MAINTENANCE PROGRAMS

SUPPORTERS OF STRONG I/M

Political Letters

Governor Carlson of Minnesota
Governor Edgar of Illinois
Governor Symington of Arizona
Governor Schaefer of Maryland
Governor Weicker of Conneticut
Mayor Whitmire of Houston

U.S. Congress
- Senator Alan Dixon of Illinois
- Senator Albert Gore of Tennessee
- Senator Barbara Milkulski of Maryland
- Senator Daniel Moynihan of New York
- Senator Joseph Lieberman of Connecticut
- Congresswoman Helen Delich Bently of Maryland
- Congressman Benjamim Cardin of Marlyand
- Congressman Steny Hoyer of Marlyand
- Congressman Amo Houghton of New York
- Congresswoman Nancy Johnson of Conneticut
- Congresswoman Constance Morella of Marlyand
- Congressman James Scheuer of New York
- Congressman Henry Waxman of California

State Legislators
- Rudy Peter Wallace of Florida
- Arthur Dorman of Maryland
- Gerald Winegrad of Maryland
- Mary Brown of Michigan

Industry and Industry Associations

American Furniture Manufacturers Association
American Petroleum Institute
Amoco Oil Company
Association of International Automobile Manufacturers
ASA Seattle
California Manufacturers Association - Southern California Air Quality Alliance
Chevron
Chyrsler Corporation
Construction Industry Air Quality Coalition
Exxon
Greater Houston Cleaners and Laundries Association
Greater Houston Partnership
Houston-Galveston Area Council
Marathon Oil Company
Minnesota Automobile Dealers Association
Minnesota Service Association
Mobil Oil Corporation
Motor Vehicle Manufacturer's Association

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SUPPORTERS OF STRONG I/M

Industry and Industry Associations

New Jersey Society for Environmental, Economic Development
Perfection Automotive Products (aftermarket parts)
Printing Industries of America, Inc.
Shell Refining and Marketing Company
Sun
Texaco, Inc.
Unocal

State and Local Government Agencies and Government Groups

Bay Area Air Quality Management District
Conneticut Department of Environmental Protection
Delaware Department of Natural Resources
Florida Department of Environmental Regulation
Maryland Department of the Environment
New Jersey Department of Environmental Protection
New York Department of Environmental Conservation
Northeast Ozone Transport Commission
Northeast States for Coordinated Air Use Management (NESCAUM)
South Coast Air Quality Management District
STAPPA/ALAPCO
Wisconsin Department of Natural Resources

Environmental and Other Groups

Clean Air Act Advisory Committee
Coalition for Safer, Cleaner Vehicles
Galveston-Houston Association for Smog Prevention
Illinois Society for Respiratory Care
Natural Resources Defense Council