REPORT OF THE
DEPARTMENT OF MOTOR VEHICLES AND
DEPARTMENT OF AIR POLLUTION CONTROL

Joint Study of the Desirability and Feasibility of the Replacement of Older Motor Vehicles, or Early Motor Vehicle Retirement Programs

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 29

COMMONWEALTH OF VIRGINIA
RICHMOND
1993

COMMONWEALTH of VIRGINIA

Department of Air Pollution Control
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Richmond, Virginia 23219

Department of Motor Vehicles
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December 23, 1992

TO: The Honorable L. Douglas Wilder, Governor of Virginia, and Members of the Virginia General Assembly

Pursuant to House Joint Resolution 144, 1992 General Assembly, the attached report on Early Motor Vehicle Retirement Programs has been prepared. The resolution directed the Department of Motor Vehicles and the Department of Air Pollution Control to study the desirability and feasibility of providing incentives for the replacement of older motor vehicles. Specifically, HJR144 requested that the study identify segments of higher polluting vehicles based on age or equipment, estimate the value of these vehicles, and estimate the cost of a program to remove them from service. The study also requested that the Senate Joint Resolution 104 committee be consulted. A draft of this report was furnished to that committee at their November 6 meeting and comments from their December 9 meeting have been incorporated.

We are pleased to submit this report, entitled, "Joint Study of the Desirability and Feasibility of the Replacement of Older Motor Vehicles, or Early Motor Vehicle Retirement Programs."

Sincerely,

Wallace N. Davis
Executive Director
Department of
Air Pollution Control

Sincerely,

Donald E. Williams
Commissioner
Department of
Motor Vehicles

Report to the General Assembly and Governor of the Findings of the Vehicle Scrappage Advisory Committee and the Departments of Motor Vehicles and Air Pollution Control on a Proposed Early Motor Vehicle Retirement (EMVR) Program Based on the Directives of 1992 House Joint Resolution 144

An Overview and Preface

House Joint Resolution Number 144, adopted by the 1992 General Assembly, requested that the Department of Air Pollution Control and the Department of Motor Vehicles conduct a study of the desirability and feasibility of providing incentives for the accelerated replacement of older motor vehicles. Under this resolution, the Departments were requested to consult with and report to the joint subcommittee created pursuant to Senate Joint Resolution No. 104 (1992), which is studying cost-effective measures that can be used to enable Virginia to comply with the 1990 Clean Air Act.

Under this mandate, the Departments established the Vehicle Scrappage Advisory Committee (Advisory Committee), composed of members from both agencies along with interested parties and organizations from private industries affected by the proposal (see **Attachment A**). Through a series of meetings, this group:

- identified the motor vehicle population which, by reason of age and lack of emissions control equipment, is likely to be responsible for a disproportionate share of Virginia's air pollution attributable to motor vehicles;

- estimated the cost of removing air pollution attributed to these vehicles using existing or planned strategies developed in other areas or model program guidance from EPA;

- developed a cost analysis of providing some form of bounty or other incentive to owners of older vehicles as an inducement to replace the older vehicles with newer, "cleaner" vehicles; and

- developed recommendations for creating and implementing a proposed early motor vehicle retirement (EMVR) program in Virginia.

The Department of Motor Vehicles and the Department of Air Pollution Control concur with the assessment of short-term air pollution reduction benefits associated with vehicle retirement programs and the pilot program recommended in this report. The Departments do not hereby propose to adopt any of the recommendations contained in this report and do not recommend any particular funding source, but do endorse the recommendations as sound, achievable and beneficial to air quality. This report was submitted jointly by the Advisory Committee, the Department of Air Pollution Control, and the Department of Motor Vehicles to the Joint Subcommittee identified in 1992 Senate Joint Resolution 104. This formal report is hereby presented to the Governor and the 1993 General Assembly as required by 1992 House Joint Resolution 144.

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EXECUTIVE SUMMARY

The 1992 General Assembly requested a study of the desirability and feasibility of providing incentives for the accelerated replacement of older motor vehicles. The Vehicle Scrappage Advisory Committee was formed, with representatives from the Departments of Air Pollution Control and Motor Vehicles, as well as interested parties from private industries. The Vehicle Scrappage Advisory Committee focused on four areas.

- Identification of the motor vehicle population that is likely to be responsible for a disproportionate share of Virginia's vehicle air pollution.
- Estimates for the cost of removing air pollution attributable to these vehicles.
- Development of a cost analysis to provide a form of "bounty" or incentive to owners to replace these vehicles.
- Development of recommendations for creating and implementing a proposed early motor vehicle retirement program in Virginia.

The work of the Advisory Committee has led them to recommend that a pilot program be conducted in the Northern Virginia area. It would be targeted at those localities subject to vehicle emission inspection and maintenance (I&M) for a period of three years.

Candidate vehicles would include those potentially eligible for I&M waivers and willing owners of pre-1981 vehicles as funds allow.

Information on several potential funding sources has been provided, but no one source has been recommended. Any funding source should allow for the $700,000 to $800,000 needed for the retirement of each 1000 vehicles, with a "bounty" of $700 offered to the owners who retire their vehicles under this program.

It is estimated that 80-90 tons of ozone-forming pollution would be removed, over a three-year period, if at least 1,000 vehicles are retired. EPA guidelines limit the life span of these reductions to three years due to the replacement of scrapped vehicles by other vehicles which are usually driven more.

Expansion of the program could be based on funding and interest to include other I&M or nonattainment areas in the state or even statewide implementation.

What is an Early Motor Vehicle Retirement Program?

Air pollution from vehicles contributes over half of the total pollution which forms ozone. A disproportionate amount of that pollution comes from older cars which were either not designed to burn fuel efficiently or have deteriorated to the point that they pollute heavily. According to the U.S. Congress Office of Technology Assessment, cars of 1971 or earlier vintage made up only 3.4% of the national fleet in 1990 and were driven only 2% of the miles. EPA estimates they created at least 6% of the hydrocarbon emissions, 7.5% of the carbon monoxide, and 4.7% of nitrogen oxides. They also have poor fuel economy.

In Virginia's nonattainment areas (currently Northern Virginia, Richmond and Hampton Roads), the percentage of pre-1972 cars ranges between 3.4%-4.4% of the total vehicle population according to 1991 data from the Department of Motor Vehicles. These vehicles produce 10-12% of the total VOC emissions from cars and trucks weighing up to 8500 lbs. Pre-1981 model years, ranging from 21% to 27% of the vehicle population, produce 45%-50% of the total VOC emissions. The percentage of older cars in the vehicle population and the pollution from those cars will decrease annually as cars are retired. Estimates are that approximately 20% of pre-1981 vehicles are normally retired by their owners each year.

Early Vehicle Retirement Programs remove these vehicles from service, and destroy the emission system components and engine, by offering to purchase them from willing owners. The programs reduce pollution by taking these older, higher-polluting vehicles off the road sooner than they would normally have been retired. The benefits in pollution reduction and fuel savings are immediate and substantial; there may be safety benefits as well. However, the benefits are short-lived because the vehicle is being removed from service only a few years sooner, on average, than would have occurred normally. There is also the question of what amount of driving is then transferred to another vehicle and how much net pollution reduction results from replacing one vehicle with another.

Affected Motor Vehicle Population

Using the criteria established and applied by the EPA, the Advisory Committee identified those vehicles built prior to the 1981 model year as the vehicles that contributed the most to reducing the air quality in Virginia and the ones that would ultimately be targeted under an Early Motor Vehicle Retirement (EMVR) program (see **Attachment B**). The Advisory Committee focused on those pre-1981 vehicles located in the nonattainment areas in the state as the primary candidates for inclusion in a EMVR program (see **Attachment C**).

The state's nonattainment areas were targeted because those areas have the greatest need for pollution reduction and because an emission inspection and maintenance program (I/M programs) will be operational in at least one of those nonattainment areas, Northern Virginia, and probably in Richmond as well. The Advisory

Committee felt that linking the I/M program inspections with an EMVR program would produce better results in terms of obtaining greater participation in a scrappage program and achieving overall air quality compliance in the nonattainment area. It also was determined that if and when a scrappage program were established, it should begin in these nonattainment areas and possibly expand to the rest of the state after an appropriate trial period.

Estimated Costs for Reductions Under Proposed or Existing Plans

Cost-effectiveness comparisons for other proposed or existing programs for removing air pollution attributable to motor vehicles and to small business and industry are shown in **Attachment D**. Costs under the proposed EMVR plan outlined in this report are highlighted in the information presented in the following section. Currently, the cost effectiveness of an EMVR are favorable. This changes in time as more old vehicles are retired naturally and more vehicles have to be purchased and scrapped to obtain the same net pollution reduction.

Analysis of Costs of Offering Incentives

The Advisory Committee determined the costs of its proposed EMVR program based on an optimum "bounty" of $700 (see **Attachment E**). It used bounty cost estimates from those programs in other states (primarily California and Delaware). We will incorporate data collected by a survey of pre-1981 vehicle owners attitudes towards a retirement program and a $700 bounty (see **Attachment F**). The Advisory Committee also estimated pollution reductions per vehicle based on existing emissions data (see **Attachment G**).

Recommendations for a Proposed EMVR Program

Based primarily on the available costs and emissions data provided by the Department of Air Pollution Control, the Advisory Committee made recommendations for a proposed EMVR program in the following areas:

- Program Type;
- Funding Sources;
- Geographic Area Covered;
- Eligible/Target Vehicles;
- Vehicle Disposition;
- Management System and Tracking; and
- Program Time Period.

This next portion of the report outlines advisory committee recommendations in these seven specific categories.

Program Type

The first recommendation is that any viable program operation proposed by private industry (funded and managed by that industry) should be supported by the Department of Motor Vehicles and the Department of Air Pollution Control. It was further recommended that each of these departments perform an internal review of their own regulations to ensure that no regulatory barriers exist that may prevent or hamper such a program. It was, however, recognized that very few large industries exist in Northern Virginia and therefore it is not likely that a program of this type will be proposed by private industry for Northern Virginia.

Barring the implementation of a privately-funded program, the committee recommends that Virginia consider implementing a pilot program in Northern Virginia. The program would take approximately 800 older vehicles off the road each year for the first three years of operation of the new vehicle inspection and maintenance (I&M) program in Northern Virginia. The program would be state-funded. The number of vehicles purchased would depend on the amount offered for each vehicle (buyback cost or "bounty"), the cost per vehicle to run the program (administration cost), and the cost to test both the retired vehicle's pollution emissions and the emissions of any replacement vehicle (the I&M fee). It is not clear, however, that attempting to test the vehicles is cost-effective and any program development should contain an evaluation of this aspect or a mechanism for doing so in the initial stages of the program.

Funding Sources

The funding sources are listed below as unprioritized options, from which the state or General Assembly could choose. Although funding by private industry is listed separately, the committee felt that private industry should be allowed to purchase pollution reduction credits from a "bank" of such credits as may be generated by a system funded through other funding sources. This option, under any of the funding source options, could enable the purchase of more vehicles and may sustain the program for a longer period.

I. The advisory committee recommended that the state consider adding one or two dollars to the vehicle emission inspection and maintenance (I&M) fee in those areas considering a vehicle retirement program. For example, a one dollar add-on to the I&M fee in Northern Virginia would generate approximately $700,000 a year and, as indicated above, might enable the early retirement of over 800 vehicles per year and pay for the administration of the program and the emissions testing of the vehicles. The funding would be shared by all Northern Virginia vehicle owners.

II. Another idea would be to add a dollar to the vehicle registration or title fees. There are roughly 5.2 million current vehicle registrations statewide. Some cars are registered more than once in a year because they are sold more than once. Some cars are registered biennially. Therefore the number of registration transactions per year varies slightly but is generally consistent with the number of vehicles registered. The Northern

Virginia area has a vehicle population of around 1.4 million, the Richmond area around 650,000 and Hampton Roads approximately 1 million. This idea would likely generate more funds than adding to the I&M fee. The DMV indicated that limiting the $1 add-on fee to once per car per year, regardless of the number of times that vehicle was sold, would be very difficult and inadvisable.

III. The committee felt that another equitable fund source would be the addition of 1/10th of one cent to the existing fuel tax, either statewide or in Northern Virginia. The funds generated in Northern Virginia alone (between $1.25 and $1.5 million) would enable the early retirement of approximately 1500 vehicles per year. Northern Virginia localities have separate fuel tax authority granted by the General Assembly. This idea would spread the cost of funding over the very large group of people who drive and refuel their cars, and therefore pollute, in Northern Virginia, including many who live and register their cars elsewhere. It was well understood by the group, however, that tax increases are not a popular idea and support for this idea from both the government and the public could be difficult to obtain.

IV. As mentioned previously, a vehicle retirement program could be funded by an industry or a consortium of industries in order to gain pollution reduction credits. The only vehicle retirement programs which have been operated thus far in the U.S. have been industry-funded programs. Appropriate government agencies may assist in the development and operation of such programs. It should be noted, however, that no industries have expressed any interest in funding a program.

As a footnote, the idea of a hybrid of any or all of these funding sources is another possibility and may provide maximum, equitable funding for a vehicle retirement program.

Geographic Area Covered

The area of coverage depends largely on the funding source and amount of funds. The committee felt it was important to link a vehicle retirement program to vehicle emissions inspection and maintenance (I&M) programs in the areas subject to I&M. At a minimum, the committee recommends that a pilot program be considered for the area in Northern Virginia covered by an I&M program.

The additional recommendations for the geographic coverage include, in order of preference: a) the Northern Virginia and Richmond I&M areas, in proportion either to the subject vehicle population or the amount of funding generated in each area; b) all three nonattainment areas in Virginia, proportional to funds generated; and, c) statewide.

Eligible or Target Vehicles

The consensus of the committee was that an early vehicle retirement program should first concentrate on getting the cars and trucks off the road that fail the I&M test and have such large repair estimates that they are likely to be candidates for I&M waivers.

(If Virginia so chooses, EPA guidance allows a waiver of the I&M test if vehicle owners have failed an initial test and have spent at least $450 to repair the engine or emissions systems. This waiver eligibility is determined by the type of I&M program implemented in a given area.) Secondarily, and dependent on available funds, the program should target retirement of pre-1981 automobiles by owners willing to accept the bounty offered.

Vehicle Disposition

The committee agreed that a retirement program should not allow vehicle engines or other emission system components to be reused but that salvage of other appropriate parts such as body parts and interior parts, by reputable salvage operations should be allowed. The committee made several specific recommendations for guidelines to be used in determining reputable scrap and salvage operations. The list below is not comprehensive and may be added to or refined based on EPA guidance or requirements and continuing collaboration with involved parties.

- Define criteria for selection of reputable, responsible salvage/scrap dealers; to include:
  - Proper handling of hazardous wastes
  - Reuse of salvageable materials
  - Recycling of appropriate materials
  - Proper disposal of remaining materials
  - High degree of environmental responsibility
  - Physical capability to handle volume of vehicles
  - Licensed salvage dealers as defined in the Salvage Act
- Once this list is determined, invite voluntary participation and make these names available to dealerships and the public via a written list and phone access.
- Identify or "brand" each vehicle retired through this program with a specially marked or numbered Non-repairable Certificate through the Department of Motor Vehicles (DMV).
- Require salvage dealers to provide some type of affidavit to DMV that the engine and emission system were rendered useless.

Management System and Tracking

The committee recommends that adequate safeguards be adopted in order to prevent the unwanted import of older, higher-polluting automobiles and trucks into the subject area; either to replace those taken off the road or to be surreptitiously included in the retirement program. Suggestions include, but are not limited to, a requirement for one year of registration prior to being a program candidate, a current safety inspection, valid license tags, and a current locality sticker or tag. In addition, any fees owed to the DMV or any locality in Virginia by virtue of registration or titling fees, personal property tax assessments, or traffic citations should be deducted from the bounty.

Certain members recommended that the program allow dealerships to accept vehicles, route them to salvage dealers and provide the funds to the vehicle owner. The funds might be provided in the form of a voucher which could be turned in for cash at the DMV or could be used as trade-in value on a new purchase. Salvage dealers may want this same opportunity or may simply want to issue vouchers. In either case there would have to be a one-for-one tracking system for the vouchers and the titles to the scrapped vehicles. The accounting system facilitating this should be streamlined to allow dealerships to either turn in their vouchers for cash or deduct their value from fees owed to the DMV for titling and registration transactions.

In order to track the pollution reduction benefits gained from a retirement program, it was recommended that the vehicle owner be given a voucher for a free I&M test on the vehicle intended to substitute for the one retired. This voucher would be recognized at the I&M test site as originating through this program and the test results (i.e. the pollution emissions) from the replacement vehicle tracked in a special way. Those establishments accepting cars into the program would also have to test the retiring vehicle so that the savings in pollution could be calculated. The cost of these inspections would need to be figured into the cost of the program. Alternatively, the program could simply accept the EPA guidelines for calculating emission credits and not test either the old or the replacement vehicle.

Program Time Period

A problem associated with any vehicle retirement program which is operated on a continuing, unlimited basis is that vehicle owners may be strongly tempted to continue operating highly-polluting and unsafe vehicles until some external stimulus (such as an impending safety inspection or large repair bill) requires the owner to make a "repair or scrap" decision. This behavior would be counter to retirement program goals.

In order to combat this pitfall, some type of periodic termination of the buyback period is recommended. A natural limit in the annual or currently available funds, due to the fund source, would certainly serve this purpose. An alternative would be to identify beginning and termination dates for the program. These could be annual or announced periodically depending on funding.

Conclusions

The Advisory Committee recommends, with the concurrence of the Department of Air Pollution Control and the Department of Motor Vehicles on air quality benefits, a pilot program with the following characteristics:

- Approximately $700,000 to $800,000 generated annually from one or more funding sources for retirement of each 1000 cars the program would target.
- A "bounty" of $700 offered to the vehicle owner, $50 set aside for program administration, and approximately $50 set aside for I&M testing of both the

retired and replacement vehicles (total=$800/vehicle).

- Candidate vehicles would include those potentially eligible for I&M waivers as a priority and willing owners of pre-1981 vehicles subject to I&M as additional funds allow.
- The initial, pilot program would be conducted in the Northern Virginia area subject to I&M for approximately three years and could be expanded, based on funding and interest, to include other I&M or nonattainment areas in the state.
- Vehicles would be accepted into the program through dealerships or salvage/scrap operations and funds reimbursed to those establishments or to the former owners through a DMV accounting system.
- Vehicle engines and emission systems would be rendered useless and the remains scrapped or salvaged at the discretion of the salvage/scrap operation.
- A program initiated along these guidelines would take approximately 80-90 tons of ozone-forming pollution off the roadways per 1000 cars retired, according to the EPA guidelines. It is likely that a well-managed program which tests scrapped and replacement cars on an enhanced I&M system could generate more credits.
- Accountability for the pilot program and its results would be the responsibility of the Department of Air Pollution Control. The Department of Motor Vehicles would be responsible for tracking the scrapped vehicles and controlling the accounting of funds.

Comments of the Senate Joint Resolution 104 Committee

As requested by House Joint Resolution 144, a report of the findings of this study was provided to the Senate Joint Resolution 104 Committee. On December 9, that committee requested that the Department of Air Pollution Control continue to research the subject of early vehicle retirement and look for innovative ways in which a program might be brought to bear on Virginia's air pollution problems.

The Department of Air Pollution Control and the Department of Motor Vehicles will continue to stay abreast of this subject and analyze program options. Legislators and others who wish information should contact the following persons for assistance:

Department of Air Pollution Control - David J. Kinsey, Policy Analyst, 804-786-1620
Department of Motor Vehicles - J. Marc Copeland, Legislative Analyst, 804-367-1875

Attachment A

Membership of Vehicle Scrappage Advisory Committee

VEHICLE SCRAPPAGE ADVISORY COMMITTEE

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A. W. Quillian, Deputy Commissioner

Kevin R. Dunne, Administrator,
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J. Marc Copeland, Legislative Analyst

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Wallace N. Davis, Executive Director

James Sydnor, Assistant Executive Director,
Policy, Planning and Mobile Source Programs

David J. Kinsey, Policy Analyst

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AAA Government Affairs
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Attachment B

Vehicle Emissions Charts

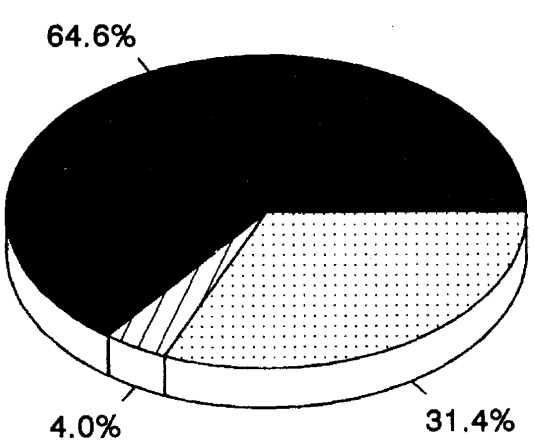
Sources of Ozone-Forming Emissions

VOLATILE ORGANIC COMPOUNDS

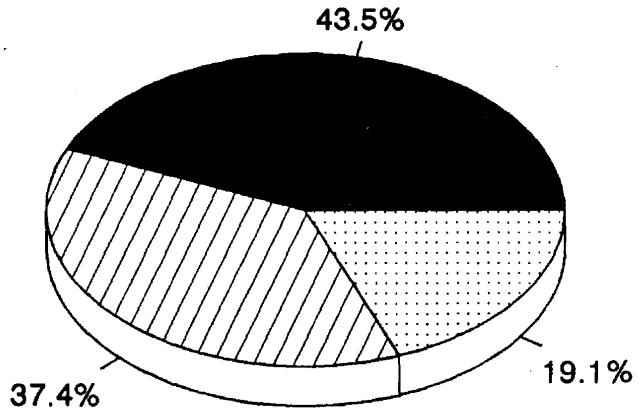
VEHICLE EMISSIONS

INDUSTRY POINT SOURCES

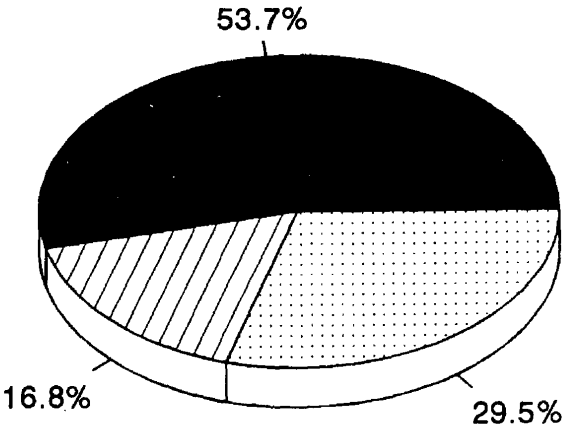
SMALL BUSINESS & CONSUMER PRODUCTS



Northern Virginia



Richmond Area

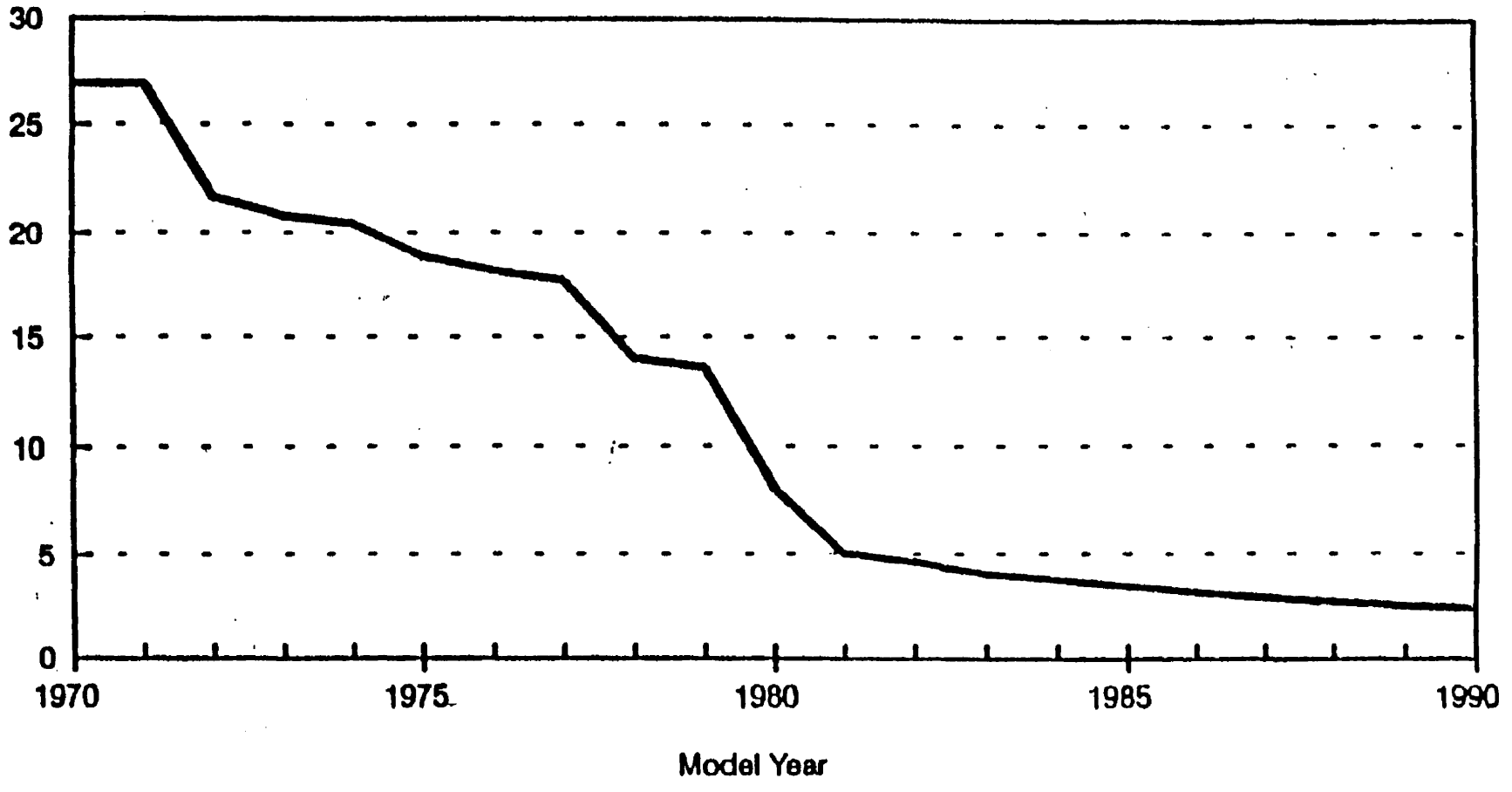


Hampton Roads/Norfolk

1990 BASELINE FIGURES

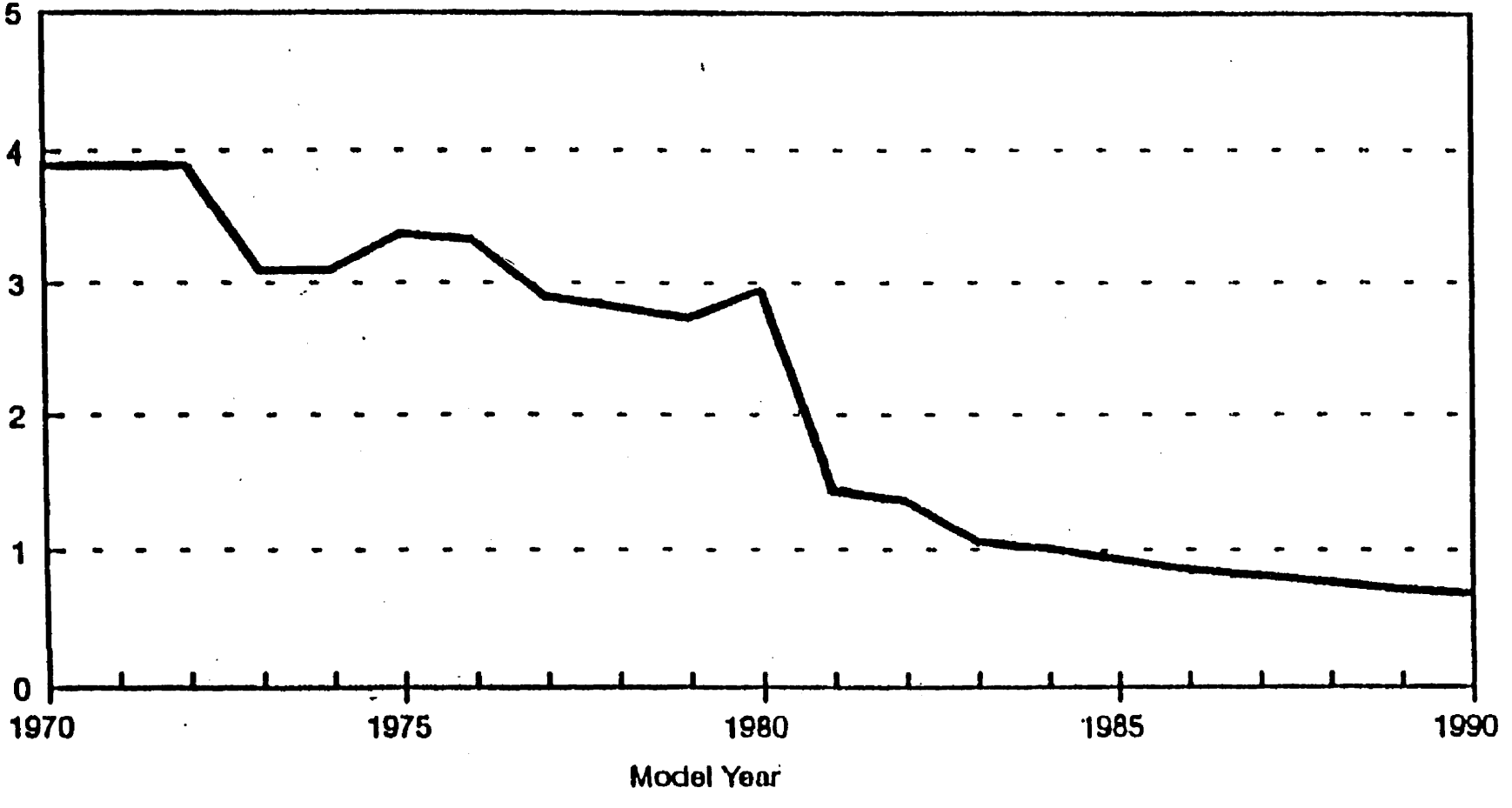
Passenger Car Hydrocarbon Emissions

(Grams per mile)



Passenger Car Nitrogen Oxide Emissions

(Grams per mile)

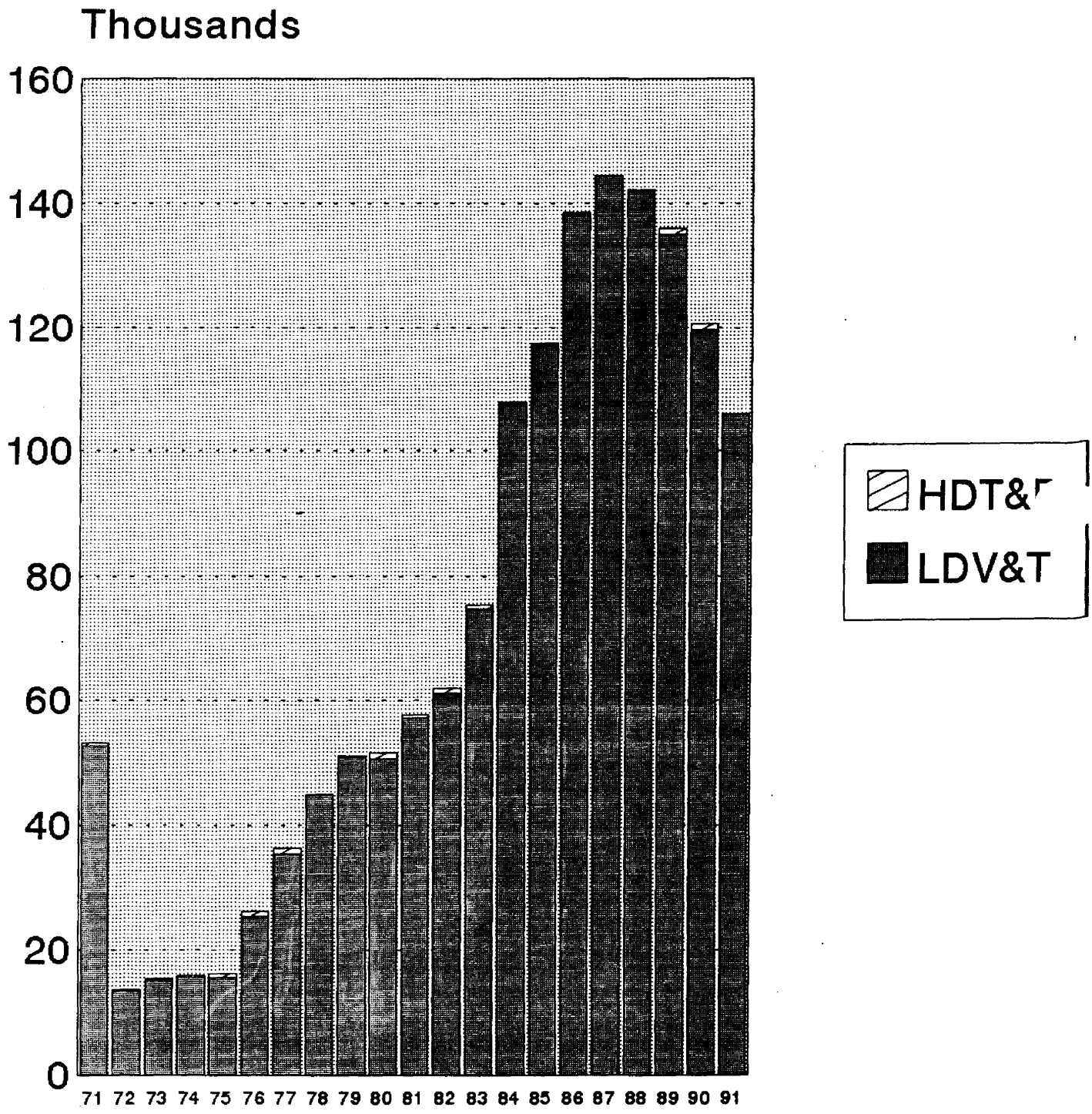


Attachment C

Number of Vehicles in Nonattainment Areas By Model Year

Vehicle Population by Model Year

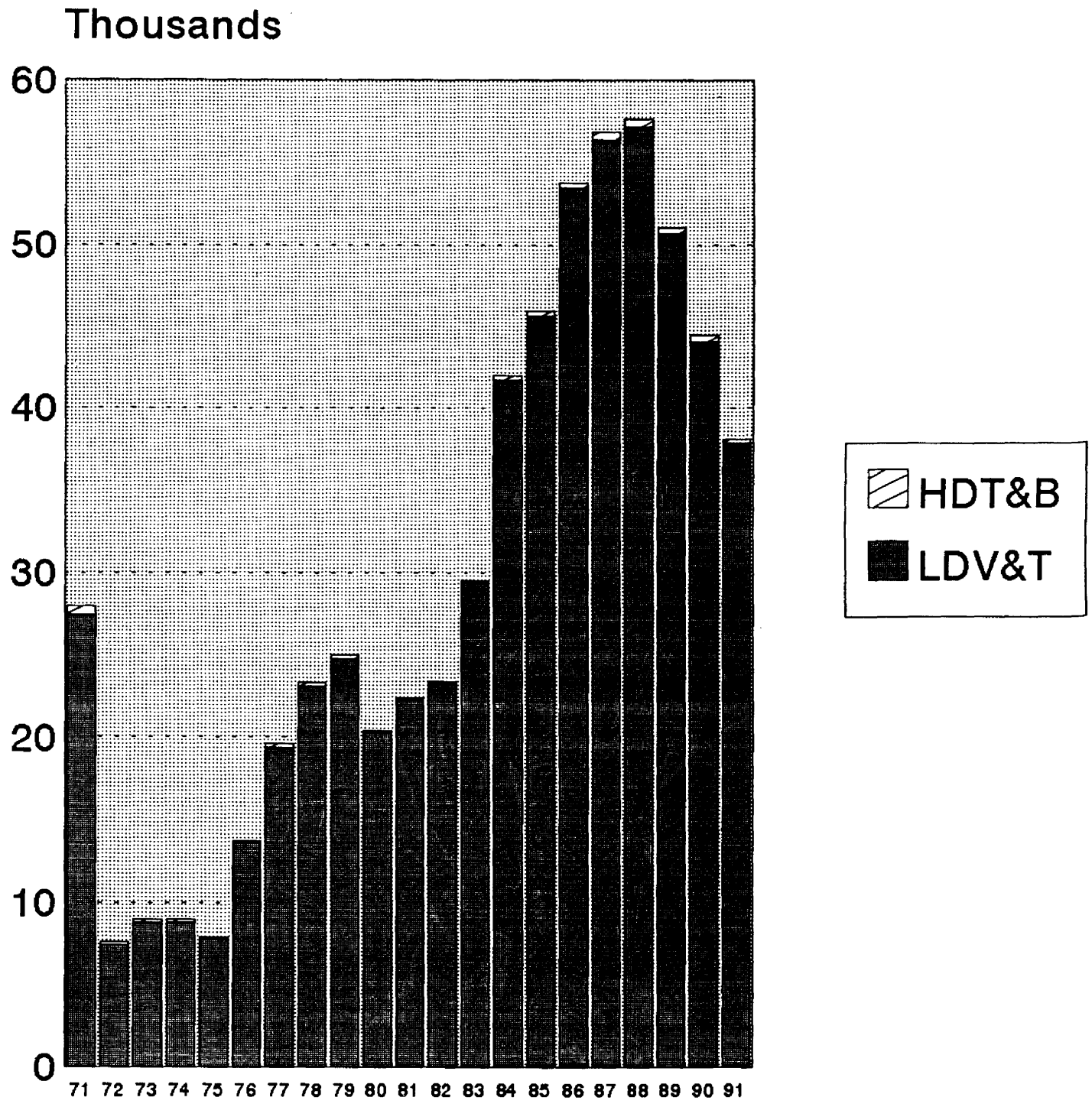
Northern Virginia Nonattainment Area



1971 bar includes '68-'71 models
1991 DMV Registration Data

Vehicle Population by Model Year

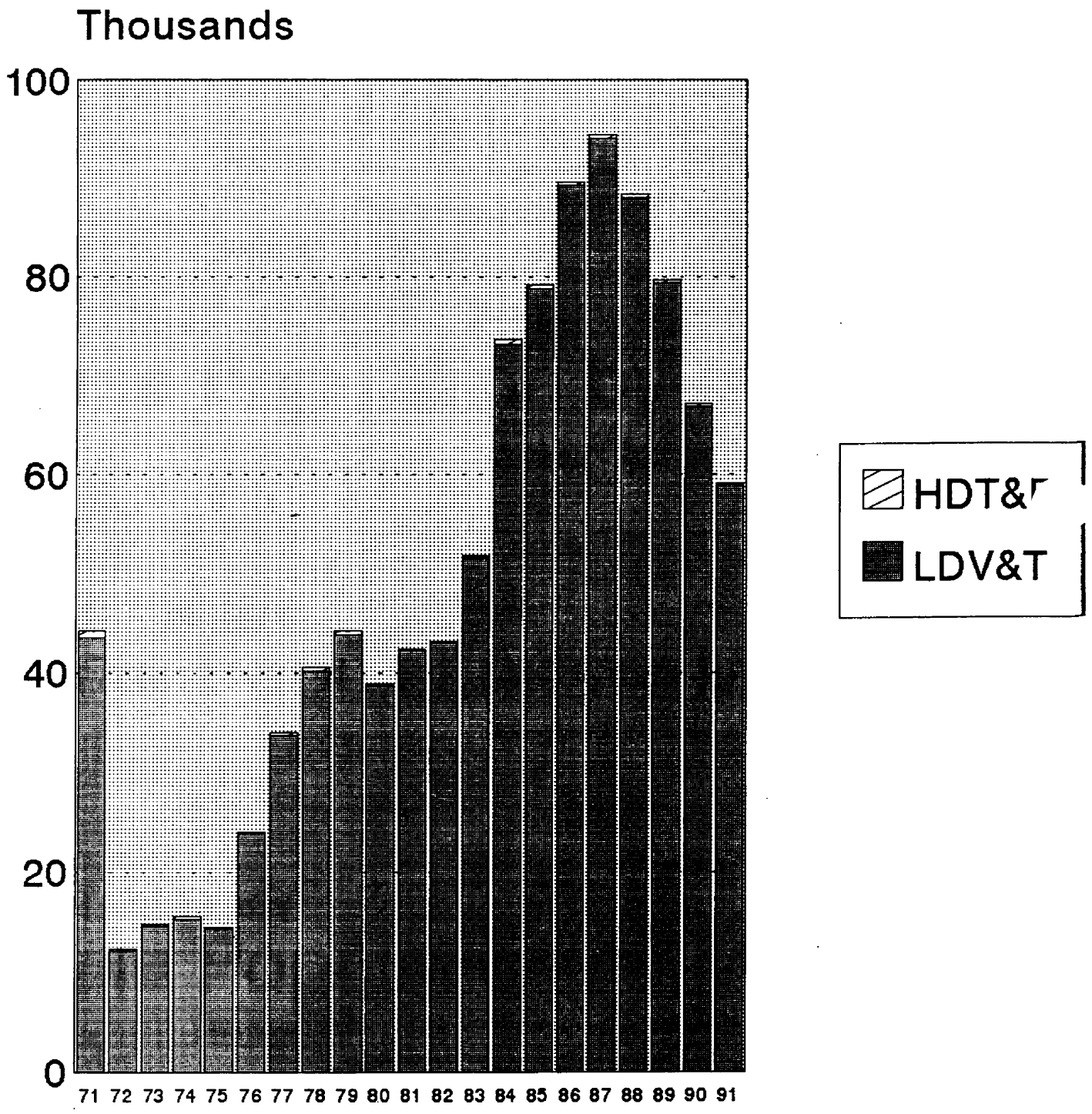
Richmond Nonattainment Area



1971 bar includes '69-'71 models
1991 DMV Registration Data

Vehicle Population by Model Year

Hampton Roads/Virginia Beach Nonattainment Area



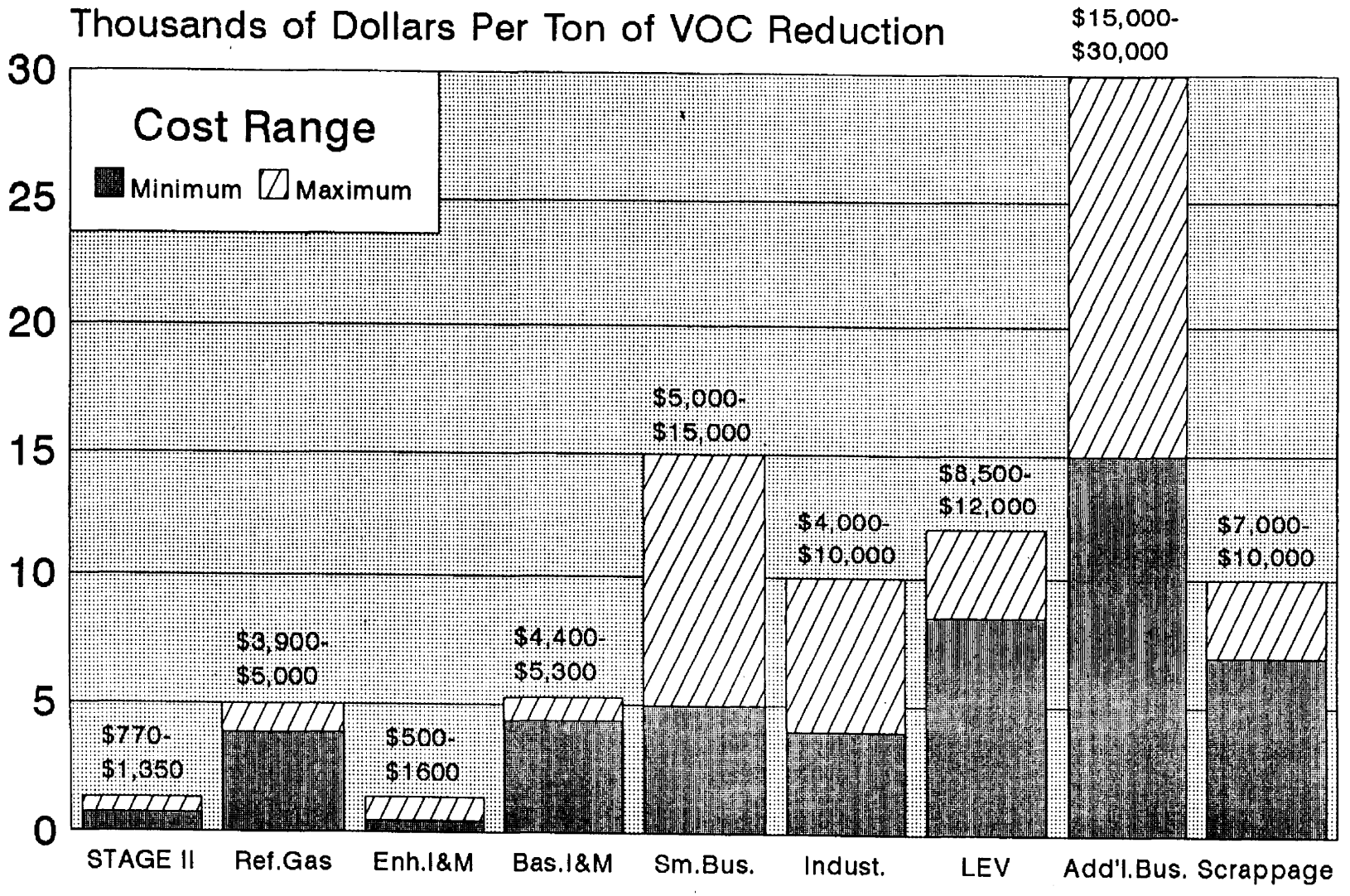
1971 bar includes '69-'71 models
1991 DMV Registration Data

Attachment D

Cost-Effectiveness Comparisons of Various Pollution Reduction Plans

Cost-Effectiveness Comparisons

PROPOSED AND POTENTIAL EMISSIONS CONTROL STRATEGIES



*SCRAP E C/E IS FOR '93 ONLY; COST INCREASES SUBSTIALLY IN SUBSEQUENT YEARS

Vehicle Scrappage Program

CURRENT AND PAST PROGRAMS

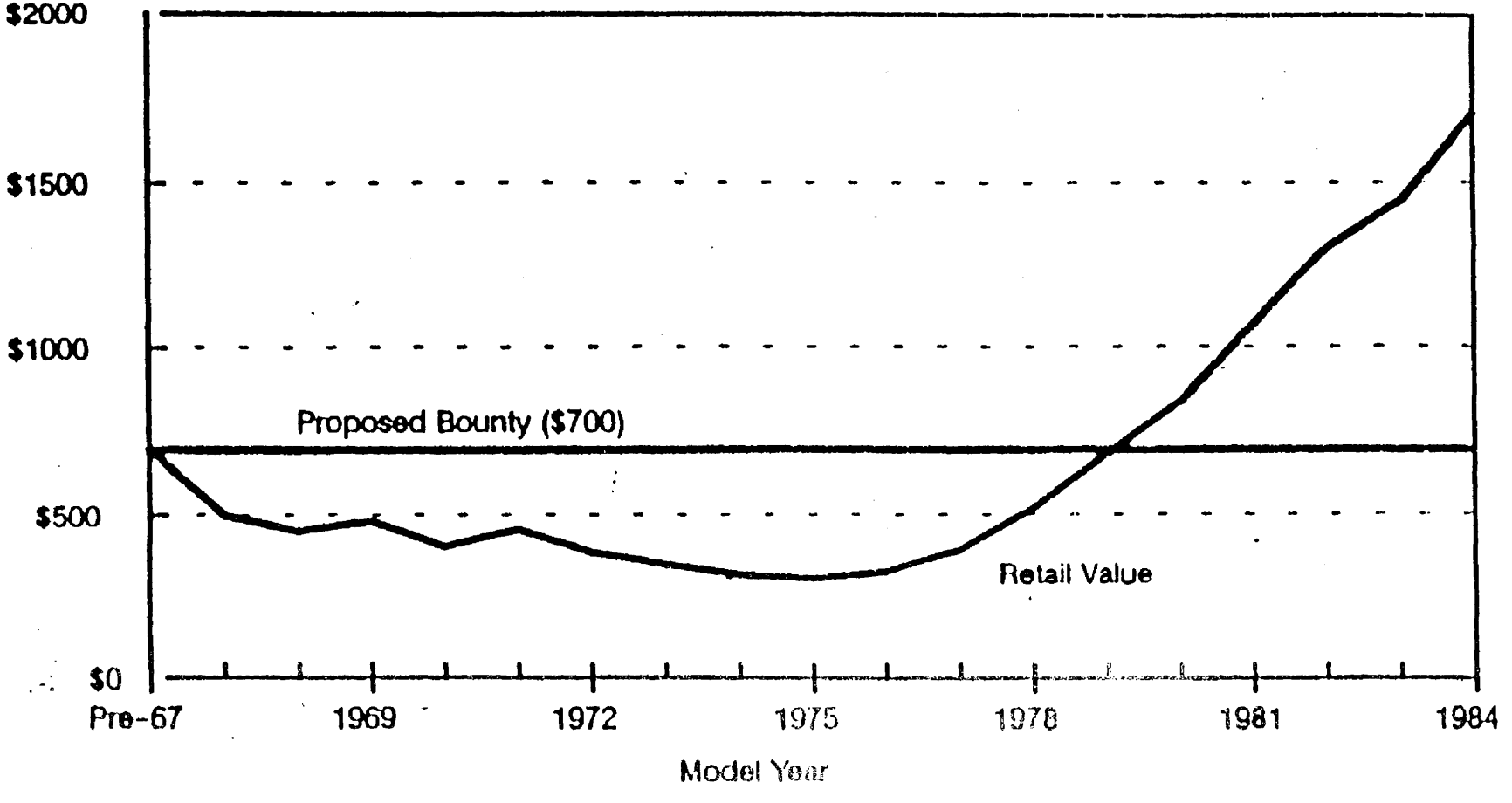
- UNOCAL program in California - 8,400 pre-1971 vehicles @ $700 each
- Chevron in California plans a program in order to phase in required controls over three years
- U.S. Generating Company in Delaware - 125 pre-1981 vehicles @$500-$600 each
- U.S. EPA has prepared an information document and plans to release guidance on pollution reduction

Attachment E

Retail Value of Used Cars

Retail Values of Used Cars

(1991 dollars)



Attachment F

Survey of Owners of Pre-1981 Vehicles in Virginia

Summary Report of Department of Motor Vehicles Survey to Determine Vehicle-Owner Attitudes Towards a Proposed Early Motor Vehicle Retirement (EMVR) Program

EXECUTIVE SUMMARY

House Joint Resolution Number 144 requested that the Department of Motor Vehicles (DMV) and the Department of Air Pollution Control (DAPC) conduct a study of the desirability and feasibility of providing incentives for the accelerated replacement of older motor vehicles. Under the provisions of HJR 144, DMV and DAPC were requested to consult with and report to the joint subcommittee created pursuant to Senate Joint Resolution Number 104, which is studying cost-effective measures that can be used to enable Virginia to comply with the Clean Air Act Amendments of 1990.

DMV and DAPC established the Vehicle Scrappage Advisory Committee (Advisory Committee), composed of members from both agencies along with other interested parties and organizations to study the issues and develop recommendations for a proposed early motor vehicle retirement (EMVR) program. A report on the findings of the Advisory Committee was presented to the SJR 104 joint subcommittee. That report indicated that a survey of vehicle owners of 1968 through 1980, inclusive, model year automobiles would be taken to try to quantify their attitudes towards the proposed EMVR program.

Methodology

The survey itself (see attachment) was developed by DMV and approved by the Advisory Committee prior to its release. The survey population consisted of owners of vehicles garaged in select cities and counties in Northern Virginia, built in model years 1968 through 1980, inclusive. This group was chosen because it would be the target population of the proposed EMVR pilot program.

The survey population totalled 3,200, which is roughly 1% of the approximately 320,000 vehicles registered in Northern Virginia that fall into the 1968 through 1980 model year range. The survey population was selected randomly from the DMV database using the following parameters:

- The vehicles selected were in the model year range described above, operated by using gasoline only, with a registered weight of up to 8,500 pounds, garaged in the cities of Arlington, Alexandria, Falls Church, Fairfax, Manassas and Manassas Park, and the counties of Fairfax and Prince William (the designated Northern Virginia nonattainment area);

- The owner/address information was printed out on mailing labels, one owner per household;

- The vehicles selected had active registrations and were not vehicles that were junked, salvaged or recently sold; and

- The name of the owner of the vehicle was not used to ensure anonymity; vehicle owners were identified simply as "Owner of 19XX MAKE" (examples: Owner of 1978 Ford, Owner of 1972 Chev, etc.).

Of the 3,200 surveys mailed, 829 (26%) were returned in the time frame allotted for inclusion in the summary report. Of those 829 surveys, the data from 815 was ultimately used in this summary. Deletions were made based on the ability to clearly determine if the completed survey actually involved a vehicle in the 1968 through 1980 model year range. The data was not used in the summary when the model year range of the vehicle was unclear.

Structure of Survey

The survey was composed of two parts. The first part explained the purpose of the survey and described an EMVR program in general terms. The second part was the actual survey itself. This part consisted of 10 questions, 8 multiple choice and two short answer questions. The questions were designed mainly to obtain information on the vehicle. Several of the questions were designed to obtain owner attitudes and personal data necessary to draw basic inferences from the data received.

General Response Profile

Over one third of the owners of 1968 through 1980 model year range vehicles indicated they would accept $700 to retire their vehicles voluntarily under an EMVR program. This represents a population of approximately 105,000 of the 320,000 vehicles in the 1968 through 1980 range. This vehicle population should enable the EMVR program, as proposed in the earlier SJR 104 subcommittee report submitted by the Vehicle Scrappage Advisory Committee, to reach its recommended vehicle retirement goals of 800 vehicles per year for a three year operational period.

Based on owner ratings, the large majority of the vehicles retired under the proposed program would most likely be in good or excellent condition, with mileages of 75,000 or more, most of which would be in the 1977 through 1980 model year range. These vehicles are most likely being currently used on a daily basis by owners with estimated total household incomes of $25,000 or more who are likely to be willing to pay less than $300 to repair their vehicle in order to have it pass a failed emissions inspection.

Please note that this profile assumes that the survey data is unbiased and statistically significant. Because of the nature of the survey, controls to determine bias and statistical significance were not used.

Survey Response Summary

1. Slightly more than one-third of the 792 responses (34.2%) indicated that they would accept $700 to retire their vehicle voluntarily under an EMVR program (Question 6); almost two-thirds (62.9%) would not.

2. Approximately 59% of the 805 responses indicated the mileage of the vehicle was over 100,000 miles or over (Question 3); almost 78% indicated it was 75,000 miles or more.

3. Almost half of the 810 responses indicated the condition of the vehicle was good (Question 4); over 73% indicated good or excellent.

4. Approximately 47% of the 810 responses indicated the vehicle was used daily (Question 5); over 70% indicated the vehicle was used daily or several times a week.

5. Of the 710 responses given, over 62% indicated the model year of the vehicle was in the 1977 through 1980 range, inclusive (Question 2); over 12% were in the 1968 through 1971 range, inclusive, and 25% were in the 1972 through 1976 range, inclusive.

6. Over 62% of the 749 responses indicated they would pay $199 or less for repairs in order to have the vehicle pass a failed emissions inspection (Question 7); almost 11% indicated they would pay $500 and over.

7. Of the 787 responses, almost 64% indicated high school attendance, almost 48% college attendance, and just under 20% graduate school attendance (Question 9).

8. Almost 48% of the 751 responses indicated estimated total household incomes at $35,000 and over per year (Question 10); just under 13% indicated incomes at under $15,000 per year.

Virginia Department of Motor Vehicles
Voluntary Early Motor Vehicle Retirement Program Survey

Purpose of Survey

This survey is being randomly sent to owners of vehicles that were built prior to 1981 and are registered in Virginia . The information being gathered by the survey will be used to develop a proposed voluntary Early Motor Vehicle Retirement (EMVR) program for the state. **The information you give will be held in strict confidence and can in no way be associated with you personally.**

What is an Early Motor Vehicle Retirement (EMVR) Program?

The federal government, through the Clean Air Act of 1990 and Environmental Protection Agency (EPA), is requiring all states to develop programs to reduce the amount of air pollution and improve overall air quality. In certain areas of the country, including parts of Virginia, vehicles are required to be inspected for exhaust emissions that pollute the atmosphere. If a vehicle fails this test, it must be repaired in order for it to remain in service.

Along with vehicle inspections, the EPA is permitting states to develop a variety of programs to improve air quality in these inspection areas. One of the programs recommended by the EPA as a way to significantly reduce motor vehicle pollution is an Early Motor Vehicle Retirement (EMVR) Program.

Under an EMVR program, older model year vehicles are taken off the road (retired) voluntarily by purchasing them from their owners at a fair market price. These vehicles are then taken out of service by removing the engine and other emissions system components while salvaging the usable interior and body parts. EMVR programs generally target vehicles that were built before 1981 because vehicles built in those model years produce much more pollution than those built in later model years.

Thank you for participating in this survey. The information you provide will be a valuable asset in developing a proposed EMVR program in Virginia.

Please complete survey on back and return it to DMV in the envelope provided

Department of Motor Vehicles
Proposed Early Motor Vehicle Retirement (EMVR) Program Survey

Please answer all of the following questions:

(1) Your vehicle's model year and make are shown on the mailing label. Is that information correct?

☐Yes ☐No

(2) Please indicate the model year of the vehicle: _____

(3) What is the estimated mileage on the vehicle?

☐under 25,000 miles
☐between 25,000 and 49,999 miles
☐between 50,000 and 74,999 miles
☐between 75,000 and 99,999 miles
☐100,000 miles and over

(4) What is the condition of the vehicle?

☐Excellent ☐Good ☐Fair ☐Poor

(5) How often is your vehicle used?

☐Used daily
☐Used several times a week
☐Used several times a month
☐Vehicle is seldom used
☐Vehicle cannot be driven

(6) Would you accept $700 to retire your vehicle voluntarily under an EMVR program?

☐Yes ☐No

(7) How much would you be willing to pay for repairs in order to have your vehicle pass a failed emissions inspection?

☐less than $100
☐between $100 and $199
☐between $200 and $299
☐between $300 and $399
☐between $400 and $499
☐$500 and over

(8) Please indicate the model years of any other vehicles owned and operated by you and other members of your household.

_____

_____

(9) Please indicate which of the following schools you have attended (check all applicable boxes):

☐High School ☐College ☐Graduate School ☐Trade School ☐None of the above

(10) Please indicate the estimated total income earned by your household per year:

☐under $15,000
☐between $15,000 and $24,999
☐between $25,000 and $34,999
☐between $35,000 and $44,999
☐between $45,000 and $54,999
☐$55,000 and over

Thank you for taking the time to complete this survey. Your answers are strictly confidential and can in no way be associated with you personally.

Please return the completed survey to DMV in the enclosed stamped, *self-addressed envelope*

Attachment G

Estimates of Reductions in Vehicle Pollution

EARLY VEHICLE RETIREMENT PROGRAM

ESTIMATES OF POLLUTION REDUCTION

- An average pre-1981 car emits about 70 lbs. of VOC pollution per year
- EPA model provides total credits over a three year period of about 186 lbs. per vehicle
- Retiring 1,000 cars would reduce pollution 90 tons over three years, or 0.07 tons per day
- Cost, including administration and emission testing, approx. $800,000

Scrappage Programs
EPA MODEL FOR POLLUTION REDUCTION

	YEAR 1	YEAR 2	YEAR 3
1. VOC from scrap vehicle	8.87g/mi.	9.06	9.26
2. VOC from replacement	- 2.20 g/mi.	2.09	2.00
3. VOC reduction	= 6.67 g/mi.	6.97	7.26
4. VMT per scrap vehicle	x 5182 mi.	4920	4680
5. Grams / vehicle / year	34564	34292	33977
6. Number of vehicles	x 10,000	8,000	6,400
7. Conversion (grams-tons)	x .000001102	#	#
8. Tons per year	381	305	244 = 930 tons

EPA m[illegible] assumes 10,000 pre-'80 cars scrapped in 1993

Attachment H

Cost and Pollution Reduction Estimates for Continuous Programs

NORTHERN VIRGINIA VEHICLE RETIREMENT SCENARIO

The following figures represent the maximum reductions we believe are obtainable from an early vehicle retirement program based on the number of vehicles that could be expected to be "super-emitters," that is, those that would fail an I&M test twice and would then have to either be scrapped, repaired, or qualify for a waiver. Essentially, these are waiver-eligible vehicles. EPA estimates that approximately 23% of the vehicles tested each year will initially fail the first cycle of an enhanced I&M program. This percentage will decrease to 19% over the next couple of cycles. Of these initial failures, no more than 3% are expected to be waivered. Although owners of other cars may be interested in participating in a vehicle retirement program, their cars, having passed the I&M test, would be significantly cleaner. The assumed grams/mile emissions of the average scrappped car would have to be adjusted downward to reflect this difference.

The resultant emissions (credits) in tons per day are then decreased by 20% each year to reflect the fact that some of these vehicles would naturally retire each year anyway. If the program were continuous, there would always be credits in their first year of retirement, their second, and third. The reductions from vehicles in each of the three cycles would be available and would therefore be added to provide the reduction credits available daily from a continuous program.

1996

Vehicle Population - 1.5 million
Vehicles tested each year - 750,000
Waiver-eligible vehicles - 5175
VMT from scrapped vehicle - 5500
VMT from replacement vehicle - 8417
Emissions per scrapped vehicle - 10 g/mi.
Emissions per replacement vehicle - 1.104 g/mi.

Total emissions from scrapped vehicles - 10 g/mi. X 5500 mi. X 5175 vehicles X .000001102 = 313.66 tons/year = .859 tons/day
Total emissions from replacements - 1.104 X 8417 X 5175 X .000001102 = 52.99 = .145 tons/day
.714 tons/day

Emission reductions available in the first year of the cycle -	.71 tons/day
Second year	.57
Third year	.45
Total available daily from a continuous, annual program	**1.73 tons per day**

Cost - 5175 vehicles X $850 vehicle (includes program administration and emissions testing costs) = $4.4 million/year
Cost per ton of pollution removed each year - 1.73 X 365 divided into $4.4 million = **$6970/ton**

1999

Emission reductions available in the first year of the cycle -	.74 tons/day
Second year	.59
Third year	.47
Total available daily from a continuous, annual program	**1.8 tons per day**

Cost - 5198 vehicles X $900 vehicle (includes program administration and emissions testing costs) = $4.68 million/year
Cost per ton of pollution removed each year - 1.8 X 365 divided into $4.68 million = **$7120/ton**

2010

Emission reductions available in the first year of the cycle -	.767 tons/day
Second year	.614
Third year	.491
Total available daily from a continuous, annual program	**1.872 tons per day**

Cost - 5130 vehicles X $1120 vehicle (includes program administration and emissions testing costs) = $5.75 million/year
Cost per ton of pollution removed each year - 1.87 X 365 divided into $5.75 million = **$8400/ton**

RICHMOND AREA VEHICLE RETIREMENT SCENARIO

The following figures represent the maximum reductions we believe are obtainable from an early vehicle retirement program based on the number of vehicles that could be expected to be "super-emitters," that is, those that would fail an I&M test twice and would then have to either be scrapped, repaired, or qualify for a waiver. Essentially, these are waiver-eligible vehicles. The figures below apply the same percentage of waivers to the total number of vehicles tested which currently exists in the I&M program in Northern Virginia. Currently, approximately 0.6% of vehicles tested each year eventually qualify for waivers. Although owners of other cars may be interested in participating in a vehicle retirement program, their cars, having passed the I&M test, would be significantly cleaner. The assumed grams/mile emissions of the average scrappped car would have to be adjusted downward to reflect this difference.

The resultant emissions (credits) in tons per day are then decreased by 20% each year to reflect the fact that some of these vehicles would naturally retire each year anyway. If the program were continuous, there would always be credits in their first year of retirement, their second, and third. The reductions from vehicles in each of the three cycles would be available and would therefore be added to provide the reduction credits available daily from a continuous program.

1996

Vehicle Population - 650,000
Vehicles tested each year - 325,000
Waiver-eligible vehicles - 2100
VMT from scrapped vehicle - 5500
VMT from replacement vehicle - 8417
Emissions per scrapped vehicle - 10 g/mi.
Emissions per replacement vehicle - 1.104 g/mi.

Total emissions from scrapped vehicles - 10 g/mi. X 5500 mi. X 2100 vehicles X .000001102 = 127.28 tons/year = .35 tons/day
Total emissions from replacements - 1.104 X 8417 X 2100 X .000001102 = 21.50 = .06 tons/day
.29 tons/day

Emission reductions available in the first year of the cycle -	.29 tons/day
Second year	.23
Third year	.19
Total available daily from a continuous, annual program	**.71 tons per day**

Cost - 2100 vehicles X $850 vehicle (includes program administration and emissions testing costs) = $1.8 million/year
Cost per ton of pollution removed each year - .71 X 365 divided into $1.8 million = **$6900/ton**

1999

Emission reductions available in the first year of the cycle -	.32 tons/day
Second year	.26
Third year	.20
Total available daily from a continuous, annual program	**.78 tons per day**

Cost - 2250 vehicles X $900 vehicle (includes program administration and emissions testing costs) = $2.03 million/year
Cost per ton of pollution removed each year - .78 X 365 divided into $2.03 million = **$7130/ton**

2005

Emission reductions available in the first year of the cycle -	.38 tons/day
Second year	.30
Third year	.24
Total available daily from a continuous, annual program	**.92 tons per day**

Cost - 2550 vehicles X $1120 vehicle (includes program administration and emissions testing costs) = $2.86 million/year
Cost per ton of pollution removed each year - .92 X 365 divided into $2.86 million = **$8500/ton**

Attachment I

References

REFERENCES

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** Additional sources can be found in the bibliography section of the ACCELERATED RETIREMENT publication.

Attachment J

Copy of House Joint Resolution 144

GENERAL ASSEMBLY OF VIRGINIA--1992 SESSION

HOUSE JOINT RESOLUTION NO. 144

Requesting the Department of Air Pollution Control and the Department of Motor Vehicles to conduct a joint study of the desirability and feasibility of providing incentives for the replacement of older motor vehicles.

Agreed to by the House of Delegates, March 5, 1992
Agreed to by the Senate, March 4, 1992

WHEREAS, by the end of calendar year 1990, there were 4,985,438 registered motor vehicles in Virginia; and

WHEREAS, in June 1991, exclusive of motorcycles, 737,035 of these vehicles were manufactured for model year 1976 or earlier, 644,830 were manufactured for model years 1977 through 1979, and 426,500 were manufactured for model years 1980 and 1981; and

WHEREAS, since the mid-1970s, improvements in automotive pollution-control technology and laws requiring use of this technology have resulted in cleaner-running motor vehicles; and

WHEREAS, one of the major sources of air pollution in Virginia is exhaust emissions from motor vehicles; and

WHEREAS, efforts to combat air pollution caused by motor vehicles have concentrated on the benefits to be derived from ensuring that new motor vehicles meet ever more stringent air pollution standards and have paid relatively little attention to the air quality benefits which might be realized by the elimination of older, "dirtier" vehicles; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Department of Air Pollution Control and the Department of Motor Vehicles be requested to conduct a joint study of the desirability and feasibility of providing incentives for the replacement of older motor vehicles. Such study shall include, but not be limited to, (i) an identification of that segment of Virginia's motor vehicle population which, by reason of age and equipment, is likely to be responsible for a disproportionate share of Virginia's air pollution attributable to motor vehicles, (ii) an estimation of the cost of removing the amount of air pollution attributable to these vehicles through strategies, programs, and plans already in place or scheduled for implementation, and (iii) a cost/benefit analysis of providing some form of "bounty" or other incentive to owners of older motor vehicles as an inducement to their replacement of these older, "dirtier" vehicles with newer, "cleaner" vehicles.

The Departments are requested to consult with and report to the joint subcommittee created pursuant to Senate Joint Resolution No. 104 (1992), which is studying cost-effective measures to enable Virginia to comply with the 1990 Clean Air Act.

The Department of Air Pollution Control and the Department of Motor Vehicles shall complete their work in time to submit their findings and recommendations to the Governor and the 1993 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.