

**The original documents are located in Box 3, folder “Auto Emissions” of the
Norman Ross Files, 1974-75
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THE WHITE HOUSE

WASHINGTON

June 14, 1975

MEMORANDUM FOR

JIM CANNON

FROM:

MIKE DUVAL

SUBJECT:

AUTO EMISSIONS

Attached is the auto emission package.

Tab A - Draft memo to the President and draft
Message to Congress.

Tab B - Draft Fact Sheet

Tab C - Q and A format which OMB is preparing as
a possible cover for the Fact Sheet.

If the President intends to raise this issue at Tuesday's Leadership meeting, I recommend that Tab A go to him Monday at 4:00 p.m. This means we should send it to the senior White House staff, plus Zarb, Coleman and Weinberger, for their comments and votes first thing Monday morning. I recommend that any copy taken outside the White House complex be hand-carried.

I will be available (reachable by the White House Operators) tomorrow except during church - 10-11:30 a.m.



A

DRAFT

THE WHITE HOUSE
WASHINGTON

DECISION

June 14, 1975

MEMORANDUM FOR THE PRESIDENT
FROM: JIM CANNON
SUBJECT: AUTO EMISSIONS

BACKGROUND

Just prior to your departure for Western Europe, you made two decisions concerning auto emissions.

1. Send to Congress a detailed statement of the environmental, energy, health and cost trade-offs concerning automobile emissions, but hold off making a specific recommendation for legislation until after committee hearings have been completed (this has not yet been implemented); and
2. On the substance of the issue, you indicated a preference for a five-year extension of the current emission standards.

The House Health and Environment Subcommittee (Rogers) and the Senate Environmental Pollution Subcommittee (Muskie) have both concluded their hearings on the auto emissions question, and neither committee reopened hearings after the recess to consider the trade-off between environment and energy. Both subcommittees are in the process of marking up an auto emissions bill and apparently will not consider the impact of auto emissions on fuel efficiency.

As you know, the House has included in the Ullman energy bill, a provision requiring a 50% improvement in automobile efficiencies by model year 1980, enforced by a relatively mild tax on automobiles which do not meet the goal.



ISSUES FOR DECISION

The purpose of this memorandum is to present two issues for your decision.

- A. Should you now transmit to Congress a statement on the auto emissions issue, along with legislative recommendations?
- B. If so, what form should it take?

If the auto emissions issue is to be discussed at your meeting with the Leadership on Tuesday, I recommend that you hold off any final decision on these two questions until after the meeting.

DISCUSSION

- 1. Should you transmit a Message on auto emissions, along with legislative recommendation, to continue the present standards for five years?

Arguments in Favor

It appears clear that neither the Senate nor the House will hold hearings at the subcommittee or committee level (as we had urged) on the difficult trade-offs involved between environment and energy. In both cases, they have discussed the health impact, and to a lesser extent, cost. Nevertheless, both committees appear headed towards recommending much tighter emission standards. We understand that the Rogers Committee may recommend

The Muskie Committee, according to our information, is likely to recommend that we adhere to the 1978 statutory standards.

If final Congressional action is anywhere near these positions, it will seriously jeopardize your energy goal of a 40% improvement in auto efficiency by 1980. Furthermore, such a decision raises substantial health questions concerning the emission of sulfuric acid mist. (See Tab A for draft Presidential Message which develops these arguments in some detail. This has not yet been reviewed by the speechwriters.)

If you are to have any influence on the auto emission legislation, it appears that now is the time to present your views to Congress. Submission at this time of a



Statement of Facts only, without a legislative recommendation, probably would not be viable because it would raise more questions than it would answer. If the committees are not going to hold additional hearings, in which they consider the energy impact of their emission decisions, there would be no forum to debate your Statement of Facts. Furthermore, Administration spokesmen could expect to be barraged with questions as to where you come out on the issue, and we could not make the response that you wanted to wait until additional evidence was heard by Congress. As a practical matter, a statement by you, along with a specific recommendation, is probably necessary if we are to have any influence on the final outcome.

You must also consider the potential adverse political impact if Congress does not provide legislative relief from the stricter standards and, as a result, injuries occur because of the sulfuric acid mist or other toxic pollutants which may result from pollution devices which the automobile manufacturers adopt to meet the strict standards.

Arguments Against

EPA's John Quarles (Russ Train is out of the country), argues that you should endorse the Train announcement of March 5, which would impose a set of standards which are stricter than the existing levels, but less strict than your "modified California" proposal in January. In essence, EPA is reraising the issue you decided prior to going to Europe. They argue that Congress is more likely to respond to the Administration recommendation if you and Train are together. However, Frank Zarb, Jim Lynn, and others, feel strongly that the Train position will prevent us from achieving our energy objectives.

We must consider how you are perceived by environmentalists and those who support their objectives. The Hathaway nomination, your strip mine veto, and position on the utilities bill have resulted in substantial criticism of your policies from environmentalists. There is no doubt that your decision on the auto emission question will be extremely controversial -- perhaps eclipsing the strip mine veto. Therefore, you may wish to separate yourself from this decision as much as possible by just issuing a generalized Statement of Facts and leaving specific recommendations up to other Administration officials.



2. If you decide to send a Message to Congress with specific recommendations, what form should it take?

This issue really raises two questions.

First, should you issue a statement personally, or should this be done by a subordinate?

Arguments That You Should Issue the Statement

This subject is of enormous importance to all Americans, as it touches their lives directly on a familiar issue. It involves the trade-off between conflicting national objectives, none of which fall under the sole responsibility of a subordinate official within your Administration. In short, this is exactly the type of inter-related decision involving many trade-offs which should be made by the President.

Arguments Against a Presidential Message

This is going to be a controversial decision, regardless of which way you come down. This matter involves a great deal of technical data and conclusions, much of which is in controversy, and much of the subject matter is simply unknown. Therefore, any Statement of Facts and conclusions are bound to be attacked as to their accuracy.

Second, if you decide to send a Message, should it be brief or detailed?

Arguments for a Detailed Message

If you issue a Message on this subject, the attack is likely to follow the line taken on your position concerning strip mining. Your position will be characterized as a cave-in to Detroit, based in part on bad information from your advisers. The best way to meet this is by showing the Members of Congress and the Press, the steps you went through and analysis you have made in reaching your decision. This is an extremely complex subject, but an understanding of the facts does lead logically to the conclusion you have made. The reaction to your statement should be one of recognition that you have gone through all the complex data and analysis and were driven to your decision on the basis of a detailed substantive review.



This is similar to your energy decision and involves a massive amount of conflicting and highly technical information which must be developed into a policy decision involving the balancing of conflicting national objectives. You should seek to make the point that you did not duck the complexities of this issue, but got into it personally and reached your own conclusion based on the best information available.

Arguments for a Brief Message Followed by Detailed Backup Information Released by Another Administration Official

Some will argue that, as President, you should not get into the details of a highly technical and scientific subject, especially when there is little agreement among the experts on the facts involved. Others should be required to defend the specifics, and you just take the higher road by issuing a Message based on final conclusions.

There is a great deal of conflicting scientific information, including a recent study under the aegis of the National Academy of Scientists, which concludes that stricter standards should be adopted than you have proposed. If you issue a detailed statement in this area, you will be taking on many in the scientific community who feel we should go to the statutory standards.

DECISION

1. Transmit Message to Congress with Statement of Facts and legislation freezing the current standards for five years.

Recommend: Cannon, Lynn

Approve _____ Disapprove _____

→ *Message of Train recommendation*

Transmit Message without recommended legislation.

Recommend: ~~EPA~~ (Quarles)

Approve _____ Disapprove _____



2. Transmit package as Presidential Message.

Recommend:

Approve _____ Disapprove _____

Transmit from the appropriate Cabinet official.

Recommend:

Approve _____ Disapprove _____

3. Use detailed format.

Recommend:

Approve _____ Disapprove _____

Use summary Message with details issued by the appropriate subordinate official.

Recommend:

Approve _____ Disapprove _____



DRAFT
6/11/75
1:00 p.m.

MASTER

MESSAGE TO CONGRESS

Four and a half months ago, I sent to Congress my proposed Energy Independence Act of 1975. As a part of that comprehensive legislative proposal, I recommended that the Congress modify the Clean Air Act of 1970, concerning emissions from automobiles. I proposed strict pollution levels which would still permit this Nation to achieve one of my energy goals, which is a 40% improvement in automobile fuel efficiency within four years.

Since that time, information has been disclosed concerning potential health hazards from automobile pollution control devices. In response to the serious issues raised by even the possibility of any such hazards, I ordered a ~~major~~ review of the questions raised within the Executive Branch. I asked my advisers to consider the various impacts of a range of emission alternatives on public health, energy goals, consumer prices and environmental objectives.

This review has now been completed. We have surveyed this entire subject matter, with many scientists and other experts, and find regrettably little agreement on the data or conclusions. There is, however, general agreement that we really cannot predict ^{with precision which} ~~what~~ adverse impacts are likely to result if we move to stricter automobile pollution standards. Most of the experts also agree that there is an interrelationship between the levels of pollutants emitted by our cars and their fuel efficiency and cost to the consumer.



It is relatively easy to state the problem. As the automobile manufacturers are required by government regulation to remove ~~certain~~^{some} pollutants from the car's exhaust, other pollutants with potentially serious health implications are being produced. ~~Some of~~^{The} devices which would help to correct some air pollution problems result in the creation or aggravation of others. Some of these same devices result in ~~serious~~ reductions in the automobile's fuel efficiency. The result of government-mandated changes to our automobiles could then be ~~a substantial~~^{further} increases in ~~its price~~^{their price} tag, without substantial environmental benefits and with possible risk to the Nation's health.

As a result of actions already taken, we are well on the road to cleaning the Nation's air. A major part of our task is behind us but, unfortunately, it was also the easiest part. We have now reached the point where the further incremental progress we all want can only be achieved ~~very~~ slowly, and at ~~great~~^{higher} cost, under ~~any~~^{most} of the possibilities reviewed. The relatively short distance remaining is a very rough road indeed.

I therefore urge Congress to consider how Federal laws mandating automobile fuel efficiency and emission control might work against each other, and how, cumulatively, they will impact on other national objectives such as public health and maintaining a strong economy.



In view of all of these considerations, I have decided that ~~even~~ the position my Administration has already taken in the Energy Independence Act must be revised. We simply cannot afford to be wrong, or hesitant, where such serious issues are at stake. I have concluded that we should maintain the current automobile emission standards for five years. This will enable us to ~~obtain~~^{achieve} the following objectives:

- Maintain strict control over the potential adverse health impacts of automobile emission devices by retaining current controls on known health hazards, such as carbon monoxide and hydrocarbons, without the risk of increasing imperfectly understood but potentially dangerous other pollutants.
- Achieve at least a 40% increase in automobile fuel efficiency by 1980.
- Achieve almost all the environmental objectives we would have achieved by going to the stricter standards I proposed in January.
- Minimize the inflationary impact of Federal regulations on the cost of automobiles to consumers.

I recognize that this position modifies the auto emission standards contained in my proposed Energy Independence Act of 1975 which I transmitted to Congress on January 30. However, as pointed out in recent ~~testimony~~ during Congressional hearings, the Administrator of the Environmental Protection Administration has already noted that it is necessary to adjust the strict emission standards that I proposed. Administrator Train con-



cluded after hearings conducted by EPA that sulfuric acid mist is emitted from cars equipped with a catalytic converter, which ^{most} ~~all~~ new cars have in order to meet the EPA emission standards. ^{The Administrator} ~~Mr. Train~~ and the Secretary of Health, Education and Welfare, concluded that this is a potentially serious health hazard.

Evidence brought out at the EPA hearings and by government reports, shows that ^{levels of emissions from} current catalytic mufflers ~~on~~ ~~cars in the field, except those sold in California,~~ do not emit sufficient sulfuric acid so as to constitute any immediate danger. However, if the auto emission standards are further lowered, as would be required if no change is made in the current law, then a different catalytic muffler is likely to have to be used. That device would produce substantially more sulfuric acid, and other possibly dangerous emissions as well. This would pose a health risk which my advisers conclude we should not accept.

The Nation needs a long-term automobile fuel and pollution policy so that we can begin to build cars which will meet responsible energy and environmental standards. By getting on with the job of replcing the current fleet, with these new cars, we will be making substantial progress towards our goals of better fuel efficiency, less pollution and economic recovery.

Nothing could be more intolerable than delay and continuing conflict between Federal energy and environmental policies and laws. Such delays will only contribute to further economic disruption and continuing unacceptable levels of unemployment.



Furthermore, lack of a comprehensive and balanced policy would allow one objective to go forward only at the expense of other critical national goals.

It may very well be that additional government standards, such as regulating the sulfuric acid emissions, will be required in future years. This is something which I have specifically directed the EPA and other government agencies to work on closely with the appropriate committees of Congress.

However, it is clear that we cannot duck our responsibility to make decisions now that establish realistic ground rules. We cannot afford to ignore the ^{sulfate} ~~sulfur~~ problem, but our response must be more than simply another government decree, setting another standard, that could create ~~another~~ another problem. We have a positive obligation to ensure that the steps we take today do not aggravate this potentially serious health hazard.

Our review demonstrates the difficulty of this decision and the interrelationships involved. I would like to briefly discuss some of the important background that went into this difficult decision.

At the outset, I think it is important to note that most of our current difficulties were not foreseeable when the Clean Air Act Amendments of 1970 set rigid standards and deadlines for the reduction of hydrocarbons, carbon monoxide and oxides of nitrogen. It has proved impossible to meet the original requirements, and the changes provided for the in



the Act have already been made. But the 1978 Statutory Standards still remain in the law, and will go into effect unless Congress acts.

The Executive Branch review considered the implications of a broad range of alternative automobile emission requirements which could be applied over the next five years. The following chart illustrates the alternatives considered:

	<u>Emissions in grams per mile</u>		
	<u>HC</u>	<u>CO</u>	<u>NOX</u>
Retain the statutory standards for 1978 models	0.41	3.4	0.4
Energy Independence Act proposal covering 1977-81 models	0.9	9.0	3.1
EPA's March 5 conclusions			
- for 1977-79 models	1.5	15.0	2.0
- for 1980-81 models	.9	9.0	2.0
Continue standards applicable to 1975-76 models through 1977-81	1.5	15.0	3.1
Adopt Canadian 1975-76 standards for 1977-81 models	2.0	25.0	3.1
Reimpose standards applicable to 1973-74 models through 1977-81	3.0	28.0	3.1

I have chosen the middle road of continuing the 1975-76 standards for the following reasons:

The principle reason for my recommendation regarding hydrocarbons and carbon monoxide is that there are unknown but potentially serious health effects associated with sulfuric



acid emitted from catalytic catalyst equipped vehicles, and this problem may be exasperated by the use of the more sophisticated catalysts necessary to reach the levels of stricter standards. In the absence of better data and agreement among the experts, any such potentially serious health effects must take precedent over the known but very small health effects that might result from the [slight] changes between my current recommendations and ^{the statutory standards} [my proposal of January 30].

Second, I have concluded that the nitrogen oxide standard should be retained at the current level because of the probable ^{significant} ~~major~~ fuel economy loss which would result from a tighter standard. In addition, a stricter NOX standard may require the use of air injected catalyst systems, which ^{is} also ^{likely to} ~~would~~ increase sulfuric acid emissions. These potential results are not balanced by the benefits of the very small change in the air quality and the imperceptible impact on health that could result from a tighter NOX standard.

Third, the marginal benefits ^(of improved ambient air quality) in a few metropolitan areas which result from tighter nationwide standards are very small. Based on the information now available, those benefits do not appear to justify the additional consumer and energy costs, not to mention the potential health danger ^(from catalyst-generated emissions). Furthermore, the standards I have proposed would preserve our options to adopt technological approaches to pollution control that are cheaper in terms of cost and fuel requirements. These alternatives would not be available if we have to adopt technology to reach ^{statutory} ~~stricter~~ standards now.

There are as many myths about auto pollution as there are generally accepted facts. The following are some of the significant factors which I considered as I reached my decision in this matter.

1. Existing controls on automobile emissions have produced significant benefits and will continue to do so in those areas that have auto-related pollution problems.

Lower pollutant levels in these areas can reduce adverse health effects and reduce smog and other esthetically unpleasant atmospheric conditions. Automobile related pollutants are a problem in a number of metropolitan areas, but the majority of the country does not have this problem. Nevertheless, the strict auto emission standards currently in the law apply to all parts of the country. Thus consumers everywhere must pay the cost of cleaning up a few heavily polluted cities. These added costs for pollution control show up not only in the initial price tag of the car, but in maintenance costs and lower gasoline mileage as well.

Considerable progress has already been made on automobile emissions since the 1970 Clean Air Act Amendments were enacted into law. In the case of hydrocarbons and carbon monoxide, the current standards reflect



an 83% reduction below pre-control levels. In the case of oxides of nitrogen, it is generally believed that stationary sources contribute more to this problem than automobiles, and there has been a 12% reduction already, compared to uncontrolled levels.



Importantly, it makes very little difference in terms of air quality based on hydrocarbons, carbon monoxide and oxides of nitrogen which alternative, among the ranges I considered, is ultimately selected over the next five years. This is because of the progress that has already been made in controlling these pollutants from automobiles, and because the automobile is not the principle source of the pollutants involved. The contributions of HC, CO and NOX from automobiles will continue to decline as more and more cars meeting existing standards replace older models. In the case of carbon monoxide, concentrations in metropolitan areas around the country have been declining steadily. Hydrocarbon emissions, which are a major ingredient of the photochemical oxidants which produce what is commonly called smog, have also been declining, but less rapidly than carbon monoxide. This is because automobile exhaust emissions account for only about 25% of the hydrocarbons in the atmosphere. ~~Most hydrocarbons come from natural sources, such as~~

In the case of oxides of nitrogen, three metropolitan areas in the country experience concentrations which exceed National air quality standards. This number may increase to nine or ten in the next decade, but that growth will be due primarily to stationary sources -- not the automobile.



Significantly, if our energy conservation steps result in less driving by Americans, the benefits in terms of auto pollution could far exceed anything obtainable by a tightening of standards.

2. Controlling automobile pollutants is a technologically complex problem. The fact is that steps taken to reduce certain pollutants result in creating or increasing other pollutants. For example, controls to reduce hydrocarbons tend to increase emissions of oxide nitrogen, ~~and the reverse is also true.~~ The sulfuric acid mist is another example of unforeseen consequences, and if the tougher 1978 standards are imposed along with the sulfuric acid standard, we may end up with an anti-pollution device which, under abnormal conditions, could emit such toxic pollutants as hydrogen sulfide, carbon disulfate and hydrogen cyanide.

Concerning the sulfuric acid mist problem, it is clear that there is a divergence of opinion among the scientific community. There is, however, general agreement that there could be an adverse and potentially serious health impact because of the sulfuric acid mist that is emitted from catalyst equipped cars. The seriousness of this problem will depend on the amount of emissions per car, the extent to which they disperse or concentrate in areas which could impact on the public, and whether or not there is a threshold below which sulfuric acid is not injurious



While there is uncertainty in this area, the Administrator of EPA and the Secretary of HEW have made it clear to me that they believe there is a potential for a significant health risk that cannot be dismissed ^{based upon} ~~with~~ information now available. This assessment led the Administrator of EPA to conclude on March 5, that hydrocarbons and carbon monoxide standards should not be tightened at this time because tighter standards would likely force the use of ^{modified} ~~new~~ catalysts which will increase the amount of sulfuric acid emitted.

One of the reasons for concern in this area is the lack of knowledge of just what kind of technological devices will be realistically available for automobile manufacturers to use in meeting stricter standards. Our current testing shows that more sulfuric acid mist is emitted from catalytic equipped cars sold in California, which are designed to meet the tougher pollution standards which exist in that State compared to the rest of the country. Thus we know that there is a strong possibility that as the pollution standards are made tougher, our sulfuric acid problem may substantially increase.

3. Our auto emission laws have had a significant negative impact on fuel economy. Emission controls applied to automobiles between the years 1968 and 1974 caused a ~~very~~ significant reduction in miles per gallon of

gasoline. The use of the catalytic mufflers on 1975 cars permitted engine adjustments which helped regain some of this loss in gasoline mileage. The higher levels of pollution created by the retuned engine (which gets better mileage) are captured and changed chemically by the catalytic mufflers.

However, there continue to be some offsets in this area. Cars which must meet the tighter emission standards applied in California generally get lower mileage than similar models produced for other States. An additional impact on petroleum demands comes from the need to use unleaded gasoline for catalyst equipped cars. The production of unleaded gasoline requires changes in the refinery process which slightly increases the quantity of crude oil required to produce each gallon of gasoline at the required octane level.

4. [Insert impact on cost to consumer paragraph.]
5. Maintaining the current automobile emission standards will open up a range of technological alternatives available to meet pollution and fuel efficiency requirements. For example, the so-called stratified charge and diesel engines, "lean-burn" technologies and other internal combustion engine modifications will be possible. Under the stricter 1978 statutory standards,



^{some}
~~many~~ alternatives to the catalytic muffler will be eliminated.

Other technical information was brought to my attention as I reached my automobile emissions decision. In addition to a Statement of Facts, which I am making public today, I have ~~asked~~ ^{instructed} my key advisers in this area to consult with the appropriate members of Congress, particularly the ~~sub~~committees now considering legislation in this field. They will be available to discuss these complex and interrelated issues and to provide all the detailed information available to the Executive Branch.

I urge the Congress to carefully consider all the issue involved in the potential conflict that one national objective, attaining clean air, might have on our efforts to reach other goals.



B

EMBARGOED FOR RELEASE
UNTIL 1:00 P.M. EDT

6/13/75
June , 1975

Office of the White House Press Secretary

THE WHITE HOUSE

FACT SHEET

The President today recommended legislation to the Congress which would amend the Clean Air Act by extending the current automobile emission standards from 1977 until 1981.

While this action will have no significant impact on our attempt to achieve the objectives of the Clean Air Act, the proposed modifications are necessary to (1) avoid certain recently recognized potential health risks associated with the catalytic converter and (2) permit substantially greater fuel efficiencies over the next five years.

Background

This proposal supercedes Section 503, Title V, of the President's Energy Independence Act of 1975 which he sent to Congress on January 30, 1975. At that time, the President proposed emission standards based on a modification of the current California standards.

After submitting the Energy Independence Act to the Congress, the Environmental Protection Agency held public hearings related to five-year emission levels. The hearings established that the catalytic converter, used to meet the HC and CO standards for 1975 and 1976 model year vehicles, produces sulfuric acid in amounts that can pose a significant public health risk.

In addition, because of the technology likely to be used to achieve these tighter standards, automobile emissions of sulfuric acid may double if the more stringent HC and CO standards proposed in the Energy Independence Act are imposed for 1977 and subsequent years.

Accordingly, the President directed an interagency ^{review} task force to undertake a major review of the public health, energy and consumer cost implications of several widely discussed levels of automobile emission standards.

The President's decision is based upon this review. Some of the more significant considerations which led to the President's recommendation are contained in his statement released today. Additional information on those considerations is outlined below.

← The Interagency Review

The review by Executive Branch agencies considered the implications of a range of alternative automobile emission requirements which might be applied to 1977 through 1981 model automobiles. Specifically, the following standards, applicable to hydrocarbons (HC), carbon monoxide (CO) and oxides of nitrogen (NOX) emissions, have been considered:



	<u>Emissions in grams per mile</u>		
	<u>HC</u>	<u>CO</u>	<u>NOX</u>
Retain statutory standards which will apply to 1978 models	0.41	3.4	0.4
Energy Independence Act proposal covering 1977-81 models	0.9	9.0	3.1
Mr. Train's ^{EPA's} March 5 conclusions			
- for 1977-79 models	1.5	15.0	2.0
- for 1980-81 models	.9	9.0	2.0
Continue standards applicable to 1975-76 models for 1977-81	1.5	15.0	3.1
Adopt Canadian 1975-76 standards for 1977-81 models	2.0	25.0	3.1
Reimpose standards applicable to 1973-74 models for 1977-81	3.0	28.0	3.1

Based upon this review, the following conclusions were reached:

1. Controls on automobiles necessary to meet the current standards have reduced ambient concentration levels in those areas that have auto-related HC and CO problems; and have reduced the rate at which NOX concentrations have increased.
2. Through the year 1985, tighter or looser standards, in the range being considered, for HC, CO and NOX will make little difference in the air quality in those areas that have an auto-related pollution problem, although many parts of the country have no auto-related pollution problem.
3. Present data are not sufficient to make specific calculations or final judgments on what sulfuric acid emission levels would be safe from a public health perspective. However, it is known that sulfuric acid emissions could prove to be a significant public health risk and that emissions could double if standards more stringent than the 1975 interim standards are adopted.
4. Further mandated reductions in emissions from internal combustion engines may have the effect of increasing or creating pollutants other than CO, HC and NOX.
5. Auto emission standards have had an impact on fuel economy and, therefore, on our nation's total petroleum demands and reliance on foreign sources. Standards tighter than the 1975 interim will result in higher initial car costs and higher operating costs.



6. The basic philosophy and approach to future auto emission controls need to be reconsidered in light of current conditions.
 - (a) Significantly tighter standards at this time may preclude continued development of some technologies.
 - (b) Actions to reduce auto emissions must take into account other sources of the same pollutant.
7. Prompt Congressional action is needed on auto emission standards in order to establish a five year emission program which is compatible with a strict fuel efficiency program.

DISCUSSION

1. Controls on automobiles necessary to meet the current standards have reduced ambient concentration levels in those areas that have auto-related HC and CO problems; and have reduced the rate at which NOX concentrations have increased.
2. Many parts of the country have no auto-related pollution problem. Through the year 1985, tighter or looser standards for HC, CO and NOX in the range being considered, will make little difference in the air quality in those areas that have an auto-related pollution problem.

The Clean Air Act has imposed increasingly more stringent automobile emission limitations. 1973-74 vehicles produce about 65 percent less HC and CO than uncontrol (pre-1968) vehicles. 1975 vehicles, meeting the current standards, produce 83 percent less HC and CO and 11 percent less NOX than uncontrolled vehicles. The existing law, however, requires that these automobiles emissions be reduced even further beginning with model year 1977 for NOX and model year 1978 for HC and CO.

The attached tables show the direction and magnitude of change in ambient concentration levels for HC, CO, and NOX which would result from adopting standards which are less (or more) stringent than those proposed in the Energy Independence Act. The ambient standards are used as criteria because they are the health-related pollutant limits in each air quality region, toward which reductions in both automobile and stationary emissions contribute. Thus the levels shown are the result of mobile and stationary source emissions. Three points should be noted:

- First, though the tables assume that the statutory standards will be in force after the 1981 model year, if any of the options were kept through model year 1990, the concentration levels for each region would change very little and the conclusions reached remain basically the same.
- Second, because the concentration levels are projected through modeling techniques marginal changes in the concentration levels, whether increases or decreases, are often within the range of statistical error.



- Third, the estimates of total auto pollution emitted are based on historical growth rates for vehicle miles traveled and auto fuel economy. No compensation has been assumed for the higher cost of gasoline and the higher price of standard automobiles - both of which have already affected total pollutants through reductions in vehicle miles traveled and through changes in the mix of new cars on the road in favor of smaller cars which emit less pollutants per mile. The auto-caused ambient pollution levels are therefore likely to be overstated in 1981 - 1985.

Hydrocarbons

Out of the thirty regions considered to have an HC problem, twenty are projected to exceed the ambient standard in 1985, regardless of the automobile emission level chosen. More importantly, all of the regions projected to have concentration levels below the ambient standard in 1985 at the statutory vehicle limitation level are also projected to be below the ambient standard if any of the other less stringent automobile emission standards shown is chosen instead.

Only 25 percent of total hydrocarbon emissions are generated by automobile exhaust. Therefore, hydrocarbon ambient air concentrations tend to be much less sensitive than carbon monoxide to the level of vehicle emission control.

Attachment 1 shows the limited differential impact that vehicle hydrocarbon limitations more stringent than the 1975 (Interim) standard would have on ambient air quality by 1985 in those areas considered to have a hydrocarbon problem. The measure of air quality is photochemical oxidants to which hydrocarbons are converted and in which form HC most adversely affects air quality.

Carbon Monoxide

Carbon monoxide levels in the atmosphere are much more sensitive to changes in automobile emission controls than either HC or NOX. Unlike those pollutants, the growth of stationary sources over the next ten years will have little effect on CO air quality.

Attachment 2 shows 1985 projected concentration levels for twenty-six problem regions for each of the alternatives presented. The most important conclusion is that air quality is improving rapidly and will continue to improve until 1985 under all of the emission control options presented. This is because older uncontrolled cars are being replaced by newer controlled cars. The asterisked regions are those which would still exceed the ambient standard if an automobile CO standard were adopted that was less stringent than either the statutory standard or the one proposed in the Energy Independence Act.



First, there is only a limited difference in ambient concentration levels for all of the standards presented, but the difference is particularly small when comparing the statutory standard (3.4 grams/mile) with either the Energy Independence Act proposal (9.0 grams/mile), EPA's recommended standard (15 grams/mile until 1979 and 9.0 grams/mile from 1979 to 1981), or the current standard (15 grams/mile) extended until 1981. By 1985, the average ambient levels for this pollutant will have been reduced about 70 percent below 1970 levels regardless of which option is chosen.

Second, the choice of option will not significantly affect any single area's ability to achieve or maintain the ambient standard by 1985. When comparing all the alternatives (except the 1974 or Canadian Standards), those areas below the ambient standard in 1985 will be below it regardless of the automobile emission standard chosen, with the sole exception of Denver. The adoption of the Canadian Standard would mean that only two additional areas (Portland, Oregon and Puget Sound) would still be above the ambient standard in 1985 by a marginal amount.

Nitrogen Oxides

Federal Government and independent scientists predict that a steady increase in ambient nitrogen dioxide concentrations will occur in metropolitan areas over the next ten years regardless of the auto emission limit chosen. This is because stationary sources emit most NOX pollution and the technology for controlling stationary sources is very limited. Attachment 3(B) shows the average percentage increases in NO2 ambient concentration levels that will occur for each of the auto emission alternatives studied (3.1, 2.0 and 0.4 grams/mile) under varying assumptions about the auto standard after 1981.

When comparing the 2.0 and 3.1 auto emission alternatives, Chart 3(B) shows that as long as the 2.0 NOX standard were implemented after 1981, no significant difference in the predicted increases of NO2 concentration levels would occur in either 1980 or 1985, as a result of maintaining the 3.1 grams/mile standard through the 1981 model year (columns 2 and 3).

Though the statutory standard would have a significant effect on the overall predicted increase, the differential effect of a more stringent automobile standard than currently in force on the ambient concentration levels in those areas with nitrogen dioxide problems is much less pronounced. This is shown in Attachment 3(A), which displays ambient projected concentration levels in the ten problem areas for 1985 under various automobile emission standards.

With the exception of San Francisco, by 1985 all ten regions are predicted to have concentration levels above the ambient standard if either the 3.1 or 2.0 grams per mile limitation is placed on automobiles through the year 1990 (columns 1 and 3). San Francisco would remain below the standard if the more stringent emission limitation is adopted and, in fact, California has the more stringent limitation in force as a State regulation.



It should also be noted that regardless of whether the 3.1 or the 2.0 limitation is imposed through 1981, and even if the statutory standard (.4) is imposed after 1981, only one additional region (Phoenix) would be brought into compliance with the ambient standard (columns 4 and 5). In fact, implementing the statutory standard in 1978 would result in only two additional areas (Phoenix and Baltimore) meeting the standard (column 6).

It is thus clear that the projected increases in nitrogen dioxide cannot be stopped without major technological innovations in stationary source control. Therefore, regardless of how stringent the automobile standard, the future concentration levels in major metropolitan areas will primarily be a function of stationary source emissions.



- health.
3. With present data expects generally agree that standards which are tighter or looser than those currently in force would have minimal differential impacts-especially for HC and CO. However, present data are not sufficient to make specific calculations on final judgements on what sulfuric acid emission levels would be safe from a public perspective. It is only known that sulfuric acid emissions could prove to be a significant public health risk and that emissions could double if standards more stringent than the 1975 interim standards are adopted.
 4. Further mandated reductions in emissions from internal combustion engines may have the effect of increasing existing pollutants or creating other pollutants.

Based upon existing air quality data, there are no measurable health risks associated with the application of HC and CO emission standards (within the range of options presented) which are less stringent than those in the Energy Independence Act or the statutory standards.

The application of the 3.1 NOX level will not greatly increase health risks nationwide. With an ambient air quality standard of 100 ug/m³ health data suggests that the level at which people would have an increased risk for excess respiratory disease is 200 ug/m³. Los Angeles is the only area which is expected to approach the 200 ug/m³ level by 1985, and California has the lower 2.0 grams/mile level in effect as a State regulation.

Though ambient carbon monoxide and hydrocarbon concentration levels are not significantly affected by the range of automobile emission standards presented, the concentrations of sulfuric acid are affected.

Gasoline contains sulfur which, after combustion, is released as sulfur dioxide. In the process of removing other pollutants the catalytic converter changes some of the sulfur dioxide into sulfuric acid mist.

Current estimates indicate that with existing automobile emission technology, emission standards for hydrocarbons and carbon monoxide of .9 and 9.0, will require the use of an air-injected oxidation catalyst. This catalyst results in a doubling of sulfuric acid emissions. Though there are several catalytic and non-catalytic technologies which can potentially meet the stricter HC, CO and NOX emission limitation without significant sulfuric acid emissions, there is little production potential for using these systems in the near term. (~~See discussion~~)

While all scientists agree that sulfuric acid is a toxic and potentially dangerous pollutant, there is still disagreement on the quantities of emissions needed to pose a health risk and on how long it would take for the buildup in concentration levels to occur.

Major studies by government and industry have already begun in order to resolve some of these uncertainties. Much of the unknown about sulfuric acid results from our current inability to precisely measure how much sulfuric acid is being emitted by vehicles and our inability to precisely measure how much emitted sulfuric acid is being concentrated in the breathing zone.



To improve vehicle measurements, EPA is developing a new test driving cycle which will more accurately reflect emission of sulfuric acid and is jointly working with private industries on the relationship of catalysts and other control options to sulfuric acid. To improve our knowledge of the disposition of sulfuric acid once emitted into the air, EPA has instituted a long run trend study on one major highway and has jointed with State government agencies to measure roadside concentrations on other highways as well. EPA is also working with the State agencies to determine the change in sulfuric acid emissions ~~as~~ catalyst equipped vehicles age and accumulate mileage.

Until these and other studies are completed no final judgements on the potential health impacts of sulfuric acid emissions can be made. However, recent information presented in EPA's "Estimated Public Health Impact as a Result of Equipping Light Duty Motor Vehicles With Oxidation Catalysts" (January 30, 1975) suggested the following estimates of the years in which sulfuric acid emission levels from automobiles could pose a serious threat to public health.

<u>Standard</u>	<u>Model Year 1/ in which Sulfuric Acid could pose a serious health problem</u>	
	<u>Average Meteorological Conditions</u>	<u>Adverse Meteorological Conditions 2/</u>
1975 Interim Standards	1981	1979
1975 California Standards		
In 49 States	1979	1977
In California 3/	1978	1977

1/ The data assumes that there are no emissions of sulfates from stationary sources, and that 70 percent and 90 percent of the fleet in 1975 and 1976 respectively will utilize catalysts.

2/ Adverse meteorological conditions would occur in large metropolitan areas on an average, of 6-7 days a year.

3/ The dates for reaching a critical problem are earlier in California than the remaining 49 States because California utilizes higher sulfur gasoline.

In interpreting the preceding table the following factors should be noted. Data available to date do not take into account "background" emissions of sulfates from stationary sources, e.g., coal-fired generating plants. Therefore, the table represents only the potential health effects of emissions from mobile sources. The extent to which sulfate emissions from stationary sources add to the potential health risk associated with sulfuric acid emissions from automobiles is not known at this time. However, most health analyses treat stationary and mobile emissions of sulfates independently. This is primarily because (1) the particle size of sulfates from stationary sources is much larger than sulfuric acid mist and is not absorbed as deeply into the



respiratory system; (2) the toxicity of sulfate emissions from stationary sources is generally much less than sulfuric acid; and (3) emissions from stationary sources do not occur in the breathing zone as do automobile emissions.

Short Term Actions-Available for Localized Sulfuric Acid Problems

Under certain adverse meteorological conditions localized sulfuric acid problems could occur. There are two short-term actions available to offset this possibility. While possibly feasible, both have drawbacks.

- Gasoline blending - catalyst equipped vehicles could be provided with lead-free low-sulfur fuel. This would reduce emissions of sulfuric acid, but would impose an allocation problem on the industry. Refiners have also indicated that sufficient quantities would not be available to meet widespread problems beyond 1977 or 1978.
- Desulfurization of oil - technically possible at this time. Desulfurization would require substantial additional capital investment, at a time when refiners are attempting to expand domestic capacity. It would also require an increase in crude oil consumption due to additional refining. Increases in the price of gasoline would occur. Nationwide, the capital cost of desulfurization would range between \$2 and \$4 billion, crude oil consumption would increase .5 percent and the price of gasoline would increase by 1 to 2 cents per gallon.

It is generally agreed that reducing NOX emissions will result in an increase in the emissions of HC from engines. To reduce that increment manufacturers may increase the use of the air-injected oxidation catalyst -- even to meet the Federal Interim HC and CO standards. If this were the case, then nearly twice as much sulfuric acid would be generated as projected. At this time it is not known definitely whether manufacturers could achieve reductions of the HC increment through the use of engine modifications or modified catalyst equipment instead of the air-injected catalysts in 1977-78. However, if the HC and CO standards are also lowered after model year 1978 there is a high probability that the air-injection catalyst would be retained throughout the entire period.

There are other [anecdotal] problems with the converters such as potential fire hazards, hydrogen sulfide emissions and the creation of other potentially hazardous compounds, but none of these has been proven a significant risk.

Mandated reductions in the automobile emission standard will also narrow the choice of technological options to abate the three regulated pollutants. For example, if a sulfuric acid standard were set for model year 1979, implementation of the statutory standards for HC, CO and NOX in 1978 would, in essence, dictate the use of either a "dual" or "three-way" catalyst technologies on most vehicles. While these catalysts have promise as abatement technologies they are still in the early stages of development and their premature implementation could possibly have adverse health effects far in excess of the benefits of reducing HC, CO and NOX.



Based on existing data, the dual catalyst system appears to be the most promising technology for meeting the statutory emission standards. However, its ability to limit sulfuric acid emissions to low concentrations, and thus meet a sulfuric acid standard, is still in question since an integral component of the dual catalyst system is an oxidation catalyst like those currently in use for 1975 model vehicles. Sulfuric acid emissions would increase if, to meet the statutory HC and CO standards, an air-injected oxidation catalyst were used.

If the statutory standards are in effect in 1978, along with a sulfuric acid standard in 1979, then it appears that the most likely technology to be used is the three-way catalyst -- a single retrofit device that simultaneously abates HC, CO and NOX. + sulfates ?

However, to achieve these simultaneous reductions, extensive redesign and control of the carburetion system must be undertaken because the three-way catalyst must be operated at stoichiometric (no excess air) conditions. In fact, the permitted margin of error is so narrow (on the order of ± 0.25 percent of the exact air to fuel ratio needed, as compared to normal production variations of ± 7 to 10 percent) that the use of an oxygen sensor and a feedback system are required to regulate the air mixture for either a carburetor or fuel-injection process.

When operating at the stoichiometric conditions, sulfate emissions would be no greater than emissions from non-catalyst cars. However, if variations from that condition occur, severe adverse health effects may be generated. Three-way catalysts applied to exhausts from engines operated outside the carburetion design limits (variations greater than ± 0.25 percent from stoichiometric) have a potential for emitting dangerous quantities of such toxic pollutants as hydrogen sulfide, carbon disulfide, carbon disulfide and hydrogen cyanide.

disregard -
govt. mandated
risk

It should be emphasized that only the most preliminary data exists on the total emissions from three-way catalysts and no firm judgment can be made on whether or not such emissions will occur in normal use, or in what quantities they will occur. However, they must be treated as potential risks until there is firm evidence that demonstrates otherwise. The development of this technology has not progressed to the stage where firm conclusions on their long run health impacts are possible.

The long run durability of this technology is also unproven at this time and several more years of testing and development seem needed before full scale introduction of three-way catalysts should be undertaken regardless of the emission standard mandated.



It seems clear, that given the limited health benefits derived from instituting the statutory standards (see #2 above) and given the unknown but potentially adverse health effects of introducing a technology which has not been thoroughly tested, the wiser choice is to avoid forcing either of these catalyst technologies into mass production at this time.

5. Auto emission standards have had an impact on fuel economy and, therefore, on our Nation's total petroleum demands and reliance on foreign sources.

The options presented will have differential fuel economy impacts. A recent Columbia University study indicates that the fuel economy penalty caused by reducing NOX will be even larger than the one used in the table below.

Impact on 40 percent fuel economy goal

<u>Alternatives</u>	<u>% over 1974</u>	<u>Shortfall (-) or excess (+) over President's goal</u>
Energy Independence Act	40%	--
EPA Recommendation	36%	- 4%
1975 Standards thru 1981	46%	+ 6%
Canadian and 1974 Standards thru 1981	40%	+10%
Statutory Standards after 1977	30%	-10%

<u>Alternatives*</u>	<u>Barrels per day (in 1980)</u>
Statutory Standards after 1977	208,000 (loss)
Energy Independence Act	85,000 (loss)
EPA Recommendation	137,000 (loss)
1975 Standards thru 1981	0
Canadian and 1974 Standards thru 1981	27,000 (gain)

* Base is 1975 model year automobiles meeting 1975 interim emission standards.

Energy implications for lowering NOX to 2.0 grams/mile

It is generally agreed that a reduction in the NOX emission levels from 3.1 to 2.0 grams/mile will require a variety of engine modifications. It is estimated that these modifications will cause a fuel economy penalty of 3-4 percent on the average in 1980. If a 3 percent fuel penalty is assumed, an additional requirement of 85,000 barrels of oil per day will occur nationwide in 1980.

This estimated fuel penalty figure is the subject of debate, however, on two grounds. First, it has been argued that fuel penalties in 1980 assume that certain advanced engine technologies will be introduced over the next five years. However, these advanced technologies would not be available in the first two years. Therefore, at the year of introduction, initial fuel penalty resulting from lower NOX emission standards would be substantially greater. A range of between 5 and 7 percent, i.e., from 120,000 to 150,000 barrels per day is estimated, if the 2.0 grams/mile standard were adopted.



The second argument revolves around the very sensitive relationship that exists between fuel economy and NOX emissions at more stringent NOX standards than currently required. For a given level of HC emissions a dramatic drop in fuel economy is required to meet a NOX standard below 2.0 grams/mile. Because of mass productive variations, to ensure that emission standards are met, manufacturers must design their emission systems well below the Federal standards -- about 23 percent lower. Thus, to meet a 3.1 gram/mile limitation, vehicles are designed to achieve 2.4 grams/mile and to achieve a 2.0 level, vehicles are designed to emit not more than 1.3 to 1.5 grams/mile. (To meet the statutory .4 grams/mile vehicles would have to be designed to meet about .3 grams/mile.) Thus, designing vehicles to meet even the 2.0 standard places the fuel economy loss well within the sensitive range at which fuel economy begins to drop most rapidly. Attachment 4(A) illustrates the general relationship between fuel economy and NOX emissions for all spark ignition engines while 4(B) shows the situation for a specific class of V-8 engines.

Energy implications of HC and CO standards tighter than those currently in force.

Assuming a 3.1 gram/mile NOX standard, a fuel economy penalty of 3 to 5 percent is associated with emission standards for hydrocarbons and carbon monoxide of .9 and 9.0 grams/mile when compared to extending the current standards of 1.5 and 15 (i.e., 85 barrels of oil per day in 1980). Retention of the 1.5 (CO) and 15 (HC) levels until 1979 would avoid most of the penalty. Retention of the current standards through 1981 would allow continued fuel economy improvements as would the adoption of the Canadian standards.

Energy implications of the statutory standards for HC, CO, and NOX

With either the dual or 3-way catalyst, a single retrofit system is used to abate all three regulated pollutants. Thus, at the statutory standards the energy impacts are not measured separately for NOX and HC/CO. On the average, the adoption of the statutory standard in 1978 would result in a fuel penalty of about 7% by 1980 over 1975 vehicles. This would mean an energy loss of 208,000 barrels of oil per day in 1980.

Attachment 5 shows the specific fuel economy losses (or gains) associated with each of the options presented (and the anticipated costs) with respect to model year 1974.



Standards tighter than the 1975 interim will result in higher initial car costs and higher operating cost due to associated fuel penalties.

The options presented will impose varying cost burdens on the consumer. Also, separate costs are associated with actions on NOX and actions on HC and CO, except for meeting the statutory standards with a dual or 3-way catalyst system.

NOX:

Consumers will face sticker price and operating cost increases over the 1975 model vehicles if a 2.0 gram/mile limitation is imposed. Estimates range from \$10-25 for front-end costs per vehicle and from \$0-25 in operating costs over 50,000 miles. In addition, the consumers will pay the costs of increased fuel consumption associated with this lower standard, which rough estimates place at \$1.7 million per day, or over 600 million dollars per year.

HC and CO:

The costs of adopting the more stringent hydrocarbon and carbon monoxide standards (.9 and 9.0) as proposed in the Energy Independence Act is estimated to be \$50 per vehicle over 1975 automobiles. This would represent the additional costs of using the air-injected oxidation catalyst. Additional operating costs which would result from the increased consumption of gasoline that maintaining this option implies are estimated at \$1.7 million per day, or over 600 million dollars per year.

Adoption of the statutory standards would result in a sticker price increase of \$230 to \$270 per vehicle over 1975 model cars. This would represent the average costs of using a mix of the dual ^{and} 3-way catalyst systems. Operating costs resulting from the associated fuel penalties of this alternative would roughly be \$4 million per day or over \$1.5 billion per year.

6. The basic philosophy and approach to future auto emission controls needs to be reconsidered in light of current conditions.

While the choice of emission standards must represent a balance among public health, air quality, esthetic, energy and cost considerations, the problems currently confronting the Nation are different from those prevailing in 1970 when the Clean Air Act was passed. Inflation, unemployment, and the added cost and reduced availability of energy call for reassessment of the relative weights accorded to various factors other than measures necessary to health. The high cost and fuel penalties caused by further tightening of the standards; and the emergence of the sulfuric acid problem, compared to the marginal improvement in HC, CO and NOX air quality also call for careful reconsideration.



- (a) Significantly tighter standards at this time may preclude continued development of some technologies.

There is substantial evidence that by model year 1991 new "lean-burn" or "stratified charge" engines would permit meeting the lower (2.0) NOX standard. However, standards more stringent than 2.0 would preclude introduction of those technologies. In fact, unless application of the current statutory NOX standard (.4 grams/mile) is delayed through at least 1990, the industry will not (and cannot) shift to a lean-burn or stratified charge engine, as far as can be foreseen.

- (b) Actions to reduce auto emissions must take into account other sources of the same pollutant.

Only 25 percent of total HC emissions are generated by automobiles. Therefore, HC ambient air concentrations tend to be much less sensitive to the level of vehicle emission control than is carbon monoxide.

The projected increases in NOX cannot be stopped without major technological innovations in stationary source control. Therefore, regardless of how stringent an automobile standard is applied, the future concentration levels in major metropolitan areas will primarily be a function of stationary source emissions.

CO levels in the atmosphere are much more sensitive to changes in automobile emission controls than either HC or NOX. Unlike those pollutants, the growth of stationary sources over the next ten years all have little effect on CO air quality.

7. Prompt congressional action is needed on auto emission standards.

In order to meet deadlines for emission testing and certification of 1977 model cars, the automobile industry will need to know 1977 emission standards by early August so that there will be time to complete designing and engineering, build prototypes, complete emissions testing such as 50,000 endurance tests, and finally to produce new cars in adequate quantity to meet the demand from the American public.

*[add need for foreign
decision - energy]*



Predicted Ambient Oxidant Concentration Levels in 1985
(In parts per million)
Ambient Standard = .08 ppm*

HC Automobile Emission Standard

Region	1974 and Canadian Standards through 1981	Current Std's through 1981	EPA's Recom- mended Std's	Energy Independ- ence Act Proposal	Statutory Std's 1977-1990	Base 1974-73
Birmingham	.12	.12	.11	.11	.11	.22
Mobile-Pensacola	.04	.04	.04	.04	.04	.11
Clark-Mohave	.13	.12	.12	.12	.12	.22
Phoenix-Tucson	.16	.16	.16	.16	.16	.19
Los Angeles	.43	.42	.42	.41	.41	.62
Sacramento Valley	.21	.20	.20	.20	.20	.24
San Diego	.20	.20	.20	.19	.19	.30
San Francisco	.23	.23	.23	.23	.23	.30
San Joaquin	.22	.21	.21	.21	.21	.26
S.E. Desert	.32	.32	.32	.32	.32	.28
Denver	.17	.16	.16	.16	.16	.28
NY-NJ-Conn.	.14	.13	.13	.13	.13	.26
Philadelphia	.10	.10	.10	.10	.10	.20
National Capital	.26	.26	.25	.25	.25	.38
Cincinnati	.12	.11	.11	.11	.11	.17
Indianapolis	.08	.08	.08	.08	.08	.14
S. Lou.-S.E. Texas	.20	.20	.19	.19	.19	.32
Boston	.11	.10	.10	.10	.10	.21
Toledo	.07	.07	.07	.07	.07	.14
El Paso-Las Cruces	.06	.06	.05	.05	.05	.13
Genessee-Finger Lakes	.08	.08	.08	.08	.07	.15
Dayton	.13	.12	.12	.12	.12	.18
Portland, Oregon	.08	.08	.08	.08	.08	.14
S.W. Penn.	.12	.12	.11	.11	.11	.21
Austin-Waco	.07	.07	.07	.07	.07	.16
Corpus-Christi	.14	.14	.14	.14	.14	.19
Dallas-Ft. Worth	.05	.05	.05	.05	.04	.13
Houston-Galveston	.27	.27	.27	.27	.26	.32
San Antonio	.07	.07	.07	.07	.06	.15
Puget Sound	.08	.08	.08	.08	.08	.16

* The projected concentration levels assume the continuance of historic growth rates in the central business districts in each region.



Predicted Ambient Carbon Monoxide Concentration Levels in 1985

(In parts per million)

Ambient standard = 9 ppm

CO Automobile Emission Standard

Region	1974 and Canadian Standards through 1981	Current Stds through 1981	EPA's Recom- mended Stds	Energy Independ- ence Act Proposal	Statutory Stds 1977-1990	Base ¹ 1971-73
Birmingham	6	5	5	5	4	18
North Alaska	11	11	11	11	11	35
Clark-Mohave	6	6	5	5	5	15
Phoenix-Tucson	16	14	14	13	12	42
Los Angeles	13	12	11	11	10	41
Sacramento Valley	7	6	6	6	5	22
San Diego	5	5	5	5	4	15
San Francisco	6	6	6	6	6	18
San Joaquin	4	3	3	3	3	13
Denver*	11	11	9	9	8	33
Hartford-New Haven	9	9	7	7	7	27
NY-NJ-Conn.	15	13	13	13	11	51
Philadelphia	9	8	8	8	8	32
National Capital E. Washington-	7	6	6	6	6	20
N. Idaho	7	7	6	6	6	18
Chicago	7	6	6	5	5	23
Indianapolis	5	4	4	4	4	15
Kansas City	6	5	5	5	4	15
Baltimore	7	7	7	7	6	18
Boston	6	5	5	5	4	18
Minneapolis-						
St. Paul	9	8	8	7	7	22
Central New York	5	4	4	4	4	15
Portland, Oregon**	10	8	8	8	7	26
S.W. Penn.	7	6	6	6	5	22
Wasatch Front	15	13	13	13	11	41
Puget Sound**	10	8	8	8	7	24

*Would not meet the ambient standard in 1985 if the Current Interim, 1974 or Canadian CO standard for vehicles were adopted through 1981

**Would meet the ambient standard under all options except the 1974 or Canadian vehicle CO standard



Chart A displays ambient concentration levels in 1985 for NO₂ in the ten problem regions under various NO_x auto-emission standards. For example, column 1 shows that if a 3.0 gr/mile auto-NO_x standard were in force from 1977 to 1990, Philadelphia's ambient NO₂ concentration levels in 1985 are predicted to be 121 ug/m³. Column 5 shows that if an NO_x standard of 2.0 gr/mile were adopted for the 1977-1981 period, followed by the statutory (.4) standard until 1990, then Philadelphia's ambient NO₂ level in 1985 is predicted to be 113 ug/m³.

Chart B shows the average percentage increases in NO₂ concentration levels for all ten regions for each alternative NO_x level. For example, column 2 shows that if the NO_x emission level were 3.1 gr/mile from 1977-1981 and 2.0 gr/mile from 1982-1990, the NO₂ concentration levels are predicted to increase by 16% in 1980 and by 26% in 1985. Column 3 shows that if the NO_x standard were 2.0 from 1977 to 1990, NO₂ levels are predicted to increase by 12% and 22% in 1980 and 1985 respectively.

A. Predicted Ambient Nitrogen Dioxide Concentrations in 1985
(In micrograms per cubic meter)
Ambient standard is 100 micrograms per cubic meter*

Effective Date of Standard	(NO _x Emission Standard (in grams per mile))					
	(1)	(2)	(3)	(4)	(5)	(6)
1977-1981	3.1	3.1	2.0	3.1	2.0	0.4(1978)
1982-1990	3.1	2.0	2.0	.4	.4	0.4
<u>Region</u>						
Phoenix	111	105	100	98	93	87
Los Angeles	194	183	173	167	157	145
San Francisco	102	96	92	89	83	77
Denver	135	129	125	123	117	112
NY-NJ-Conn.	144	139	136	132	129	124
Philadelphia	121	119	117	115	113	109
National Capital	116	111	107	105	101	96
Chicago	152	148	145	143	139	134
Baltimore	116	112	109	107	103	99
Wasatch Front	137	131	124	121	115	108

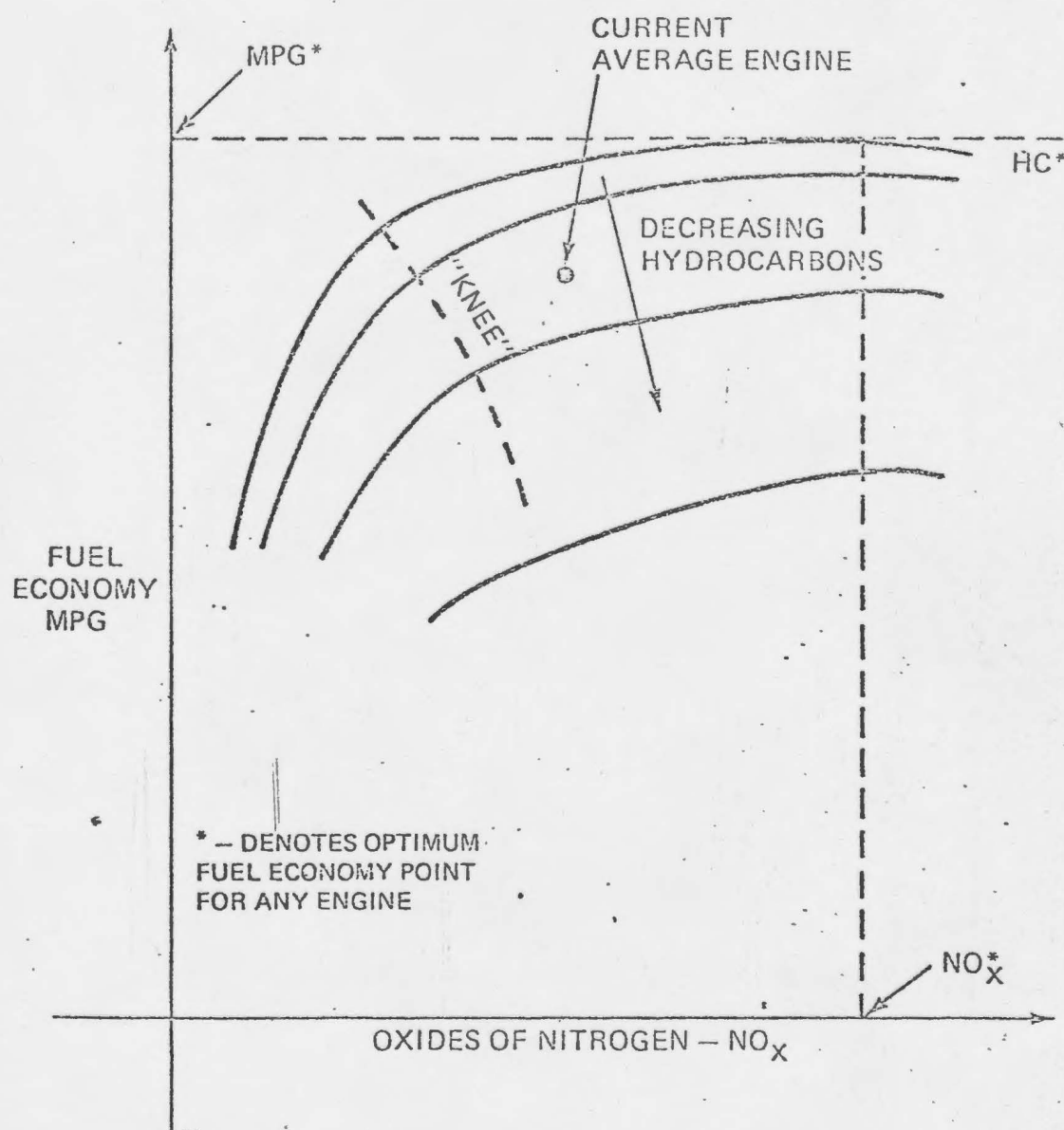
B. Increases in Concentration Levels in 1980 and 1985

Average per-	1980	16	16	12	16	12	6
cent increase							
in air quality	1985	32	26	22	19	14	8
concentrations							

*The projected concentration levels assume the continuance of historic growth rates for the central business districts in each region

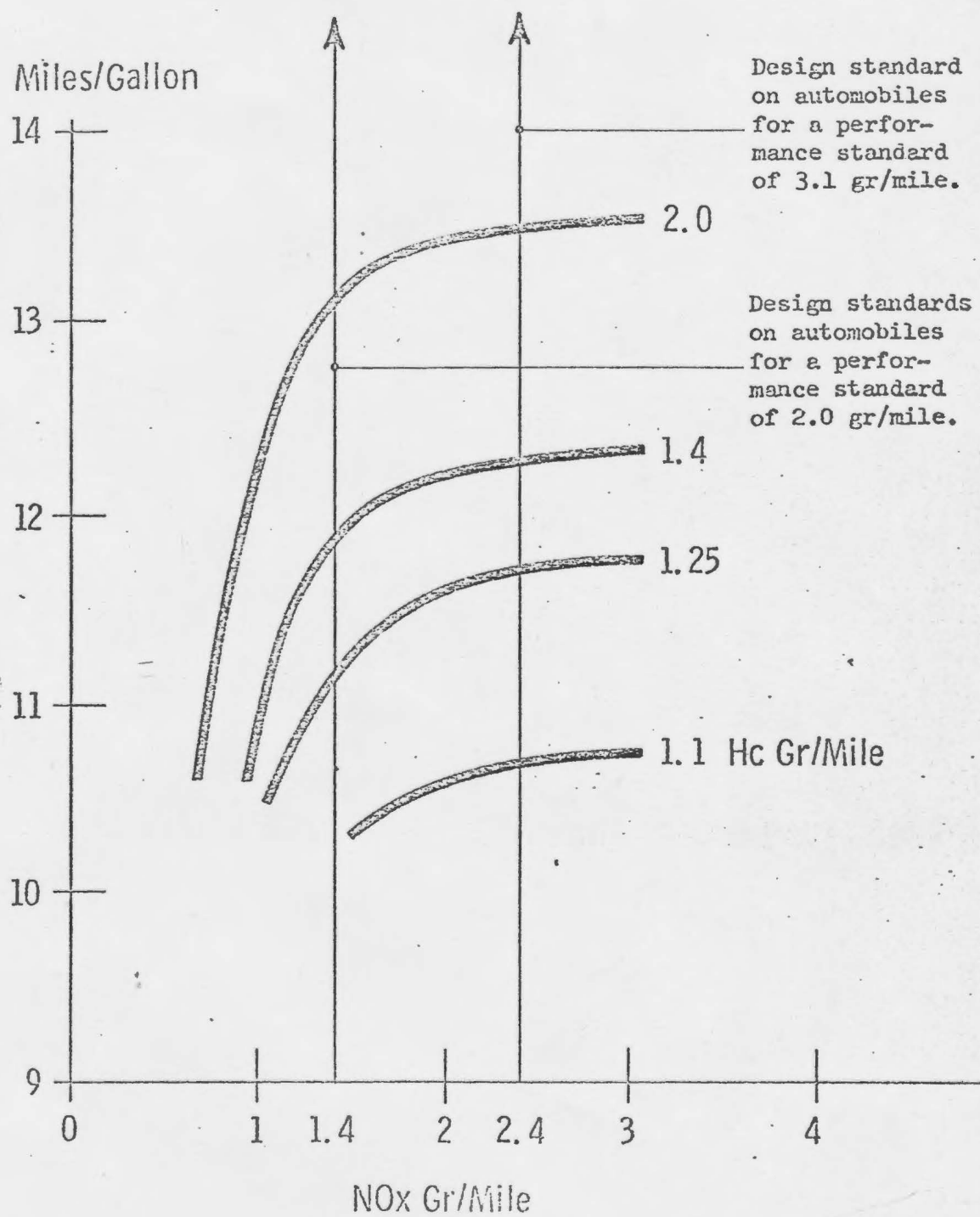


MAXIMUM FUEL ECONOMY POTENTIAL VERSUS EMISSIONS
FOR 1980 ENGINES UNDER OPTIMAL CONTROL



- NOTE: 1. CURVE SHAPES ARE REPRESENTATIVE OF MOST ALL SPARK IGNITION ENGINES.
2. STATUTORY NO_x STANDARD IS BELOW THE "KNEE" FOR ALL ENGINES CAPABLE OF LARGE SCALE PRODUCTION THROUGH THE MID 1980's
3. THE OPTIMUM-MPG* AND RESULTING NO_x* AND HC* ARE SIGNIFICANTLY GREATER THAN THE ENGINE OUT PERFORMANCE OF 1975 CARS.



FUEL-ECONOMY-NOX EMISSION TRADE OFF

1980 New Car Fuel Economy and Cost
Versus Emission Standards

Emission Standards For 1977-1981	Cost Per New Car For Emission Controls Compared to 1974 Cars		New Car Average Fuel Economy in 1980			
	Cost	Uncertainty	MPG	% Over 1974	Uncertainty Range in % Over 1974 Due to	
					Engine Technology	Sales Mix
1. Statutory Standards after 1977 (three-way catalyst or dual catalyst)	\$350	\$215-\$450	18.0	30%	-4% to + 8%	-4% to +7%
2. Best - 15/2.0 or 9.0/3.1 With Catalysts	120	\$ 90-\$150	19.6	40%	-3% to + 3%	
No Catalysts	50	\$ 40-\$100	18.4	31%	-4% to + 8%	-4% to +7%
3. EPA Proposal						
With Catalysts	135	\$100-\$170	19.0	36%	-5% to + 8%	
No Catalysts	65	\$ 50-\$110	17.8	27%	-4% to +12%	-4% to +7%
4. 1975 Standards						
With Catalysts	95	\$ 70-\$110	20.4	46%	-2% to + 2%	
No Catalysts	35	\$ 25-\$ 65	19.2	37%	-3% to + 7%	-4% to +7%
5. Canadian or 1974 Standards						
With or Without Catalysts	25	\$ 5-\$ 35	20.8	50%	-2% to + 1%	-4% to +7%

c

QUESTION AND ANSWERS

An Amendment to Title V of the Proposed Energy Independence Act of 1975

1. What did the President announce today?

The President announced that he was proposing that the Congress change existing law with respect to auto emission standards so as to continue existing 1975 standards through the model year for 1981. These standards require emission levels not greater than:

<u>Hydrocarbons</u>	<u>Carbon Monoxide</u>	<u>Nitrogen Oxide</u>
	(Grams/Mile)	
1.5	15.0	3.1

2. What are hydrocarbons, carbon monoxide, and nitrogen oxides?

Hydrocarbons(HC) are
High levels of HC emissions can result in

Carbon monoxide (CO) is
High levels of CO emissions can result in

Nitrogen oxides (NOX) are
High levels of NOX emissions can result in

3. How do HC, CO and NOX relate to EPA's "Ambient Air Quality Standards"?

Under the Clean Air Act of 197 , the Environmental Protection Agency (EPA) is required to promulgate



(X)

these standards prescribing the amount of HC, CO and NOX in such air by 19__ and 19__. While most of the CO in the air is the result of auto emissions, only 25% of HC and __% of NOX that is emitted comes from automobiles. Accordingly, although the Clean Air Act of 1970 prescribes the amounts of HC, CO and NOX that automobiles are permitted to emit in various years, there is no assurance, without comparable control on stationary sources, that the ambient air standards for HC and NOX can be met.

4. Isn't the President changing a recommendation he made six months ago?

Yes. On January __, 1975, the President proposed emission levels throughout the model year for 1981 not greater than

<u>Hydrocarbons</u>	<u>Carbon Monoxide</u> (Grams/Mile)	<u>Nitrogen Oxide</u>
.9	9.0	3.1

Without any change, existing law would require

1977	1.5	15.0	2.0
1978-1981	.41	3.4	.4

In January the President emphasized that a change was necessary in existing law because

(X)

5. Why has the President modified his January proposals for changes in the requirements?

The President has modified his January proposals because of increasing concern with the problem of sulfuric acid emission. Changes in catalytic convertors required to meet the standards the President proposed in January have now been found to result in doubling the current emission rate of sulfuric acid. While the precise effect of such increased sulfuric acid emissions is not yet known, health authorities are agreed that such emissions can cause a very serious danger to
Pending the receipt of detailed information concerning the sulfuric emission problem, the President decided not to increase sulfulic acid emission levels.



6. Won't the change the President has proposed prevent communities from meeting EPA's ambient air quality standards?

Generally speaking, the changes the President has proposed will have very little effect on the ability of communities to meet EPA's ambient air quality standards.

(insert detail)

7. Isn't it possible to develop a catalytic convertor which does not increase sulfuric acid emissions or change the sulfur content in the gasoline burned?

(State the problem of 3-way catalyst)
State problem with gasoline blending and desulfurization of oil.

8. Didn't the National Academy of Sciences issue a report urging retention of the statutory standards in stating that the sulfuric acid emissions were not a problem?

The National Academy of Sciences ...

However, the Academy report ...

9. Would the President's proposal have any effect on consumer costs or energy conservation?

Yes ...

10. How much have the current 1975 auto emission standards reduced pollutants from 1968, uncontrolled levels?

average

