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Public Hearing

before

SENATE ENVIRONMENT COMMITTEE
and
ASSEMBLY ENVIRONMENT COMMITTEE

"To receive testimony from the Department of Environmental Protection and Energy and various invited private and public interest groups and experts concerning the proposed implementation of a low emission vehicle (California car) program in New Jersey"

LOCATION: Committee Room 8
Legislative Office Building
Trenton, New Jersey

DATE: April 9, 1992
10:30 a.m.

MEMBERS OF SENATE COMMITTEE PRESENT:

Senator Henry P. McNamara, Co-Chairman
Senator Randy Corman, Vice-Chairman
Senator Jack Sinagra
Senator John H. Adler
Senator Ronald L. Rice

MEMBERS OF ASSEMBLY COMMITTEE PRESENT:

Assemblywoman Maureen Ogden, Co-Chairman
Assemblyman David C. Russo, Vice-Chairman
Assemblywoman Rose M. Heck
Assemblyman Jeff Warsh
Assemblyman David C. Kronick

ALSO PRESENT:

Raymond E. Cantor
Office of Legislative Services
Aide, Senate Environment Committee

Jeffrey T. Climpson
Office of Legislative Services
Aide, Assembly Environment Committee

Hearing Recorded and Transcribed by
The Office of Legislative Services, Public Information Office,
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NOTICE OF JOINT PUBLIC HEARING

The SENATE ENVIRONMENT COMMITTEE and the ASSEMBLY ENVIRONMENT COMMITTEE will hold a joint public hearing on the following matter:

The committees will receive testimony from the Department of Environmental Protection and Energy and various invited private and public interest groups and experts concerning the proposed implementation of a low emission vehicle (California car) program in New Jersey.

The joint hearing will be held on **Thursday, April 9, 1992 at 10:30 A.M. in Room 8, Legislative Office Building, Trenton, New Jersey.**

The public may address comments and questions to Raymond E. Cantor, Jeffrey T. Climpson, Judith L. Horowitz, or Spiros J. Caramalis, Committee Aides, or make scheduling inquiries to Elva Thomas or Carol Hendryx, secretaries, at (609) 292-7676. Those persons presenting written testimony should provide 25 copies to the committees on the day of the hearing.

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SENATOR HENRY P. McNAMARA (Co-Chairman): May I have your attention, please? Thank you. Good morning. I would like to welcome you to the second joint hearing of the Senate Environment Committee and the Assembly Environment Committee on the Clean Air Act and its effect on the State. Perhaps no other Federal environmental statute in the State given an either/or choice that once made might have a greater impact on the life-styles of its residents over the next decade and beyond.

The subject of the hearing today concerns whether we, as a State, choose to follow the Federal car standard or the California car standard.

I don't want to interrupt you folks in the back, but if there is going to be continued conversation, I will have to ask you to leave the room. Gentlemen, we are going to have a lot of people testifying today, and I am not going to put up with any interruptions.

We are attempting to determine what this choice will mean to our residents. We know that the Clean Air Act amendments will have significant impacts, but what we have yet to learn is whether the vehicle standard we choose will magnify that impact.

Additionally, we need to learn whether this choice, if it does magnify the impact, is worth the cost. I am concerned that the effort and money we spend for clean air is commensurate with the benefits we derive. If there is little cost differential between the California standard and the Federal standard, including the ripple in the economy that the choice will cause, and the impact on air quality is substantial and measurable, then the choice is clear. But if the cost is high and the results are not clear, then neither is the choice.

We will be hearing from representatives of the Department, the car manufacturers and dealers, the oil industry, and others. I look forward to a frank exchange of ideas, and believe these two Committees are up to the challenge.

Assemblywoman Ogden?

ASSEMBLYWOMAN MAUREEN OGDEN (Co-Chairman): Thank you very much, Hank. I would like to thank everyone who is here this morning and this afternoon, because this is obviously one of the key issues for the State of New Jersey; one of the most important issues that both of our Committees will be addressing this year.

We are going to begin, as Senator McNamara said, with the Department of Environmental Protection making its presentation on the California car standard. Then we have set particular time slots for everyone. We have allotted, for instance, a half-an-hour for DEPE; 45 minutes for the auto manufacturers; 30 minutes for the Petroleum Council. So, what we are attempting to do in the time constraints we have within this entire day-- We are hoping to take a short break in the middle of the day, and finish up somewhere between 3:30 and 4:00. Hopefully, we will have received the information we need to either persuade us to support the DEPE, to come up with a resolution supporting it, or other types of legislation making modifications, whichever way the members of the Committee decide to go.

I would like, just in dealing with ways in which we are holding this hearing, to suggest to Committee members -- to actually encourage Committee members during the presentations, because this is really an extremely complex issue, to ask questions of those who are testifying, or else jot them down and save them until the end. We want to make sure-- Obviously, the purpose of these hearings is to make sure that the members of the Committee totally understand the presentations and the implications of what is being proposed, or what is being objected to.

I would also like to request witnesses who are speaking without written statements to send them in to the Committee. We will keep the public record open, probably, for, I would say, two weeks, which is probably a suitable amount of time, for those who are here who do not have written testimony, or are not part of those who are scheduled for making presentations today, to send the Committee their written statements.

I don't want to take up any more time making comments myself, because the purpose today is to hear from those of you who are in the audience. Therefore, at this time, I would like to call the representatives from the DEPE to make their presentation.

N A N C Y W I T T E N B E R G: Good morning, Assemblywoman Ogden, Senator McNamara, members of the Committee. My name is Nancy Wittenberg. I am the Director of the Department of Environmental Protection's Office of Energy.

Before I begin this morning, I want to introduce a few other people from the Department who are here with me, who will also be available to answer questions: Dave West, who is the Chief of the Bureau of Transportation Control; John Elston, who is the Assistant Director of Air Quality Planning, and Rick Sinding, who is the Assistant Commissioner of Policy and Planning.

Last week, Commissioner Weiner walked us through sort of the analysis that the Department has been doing for compliance with the Clean Air Act in general. Where I want to start this morning is by sort of briefly reminding you of that analysis, because it opens up the discussion of how New Jersey got to even looking at the Low Emissions Vehicle Program. As Senator McNamara said, the Clean Air Act, in recognition of air quality problems in many of the states in the country, has given states an option when it comes to motor vehicle emission controls. There is something called the "Federal car," which you have also heard called the "Tier I car." I am going to try to keep the language as simple as possible, but this is very complex.

The other choice the states have is to opt into what is called the "California Program," or the "Low Emission Vehicle Program." California has been generating their own motor vehicle emissions standards for many years, and the Clean Air Act has allowed them to do that. So the Clean Air Act initially gives us a choice. To determine if the California cars made sense for New Jersey, we did the analysis which Commissioner Weiner presented last week. As a reminder, the charts are back, so you can see that again, when we looked at the minimum requirements of the Clean Air Act and figured out the ton reduction we would get, we fell short of what we needed to do. Then there were the options that we could use to close that gap. We looked at low emission vehicles as one of those options that made the most sense for New Jersey.

We felt it made the most sense for New Jersey for a number of reasons, which I am hoping I will be able to convince you of today. The Low Emissions Vehicle Program is a cost-effective approach to air quality control. It is also a way that will help to preserve the economic health of the State, which is so crucially important now.

Finally, and equally important, the Low Emissions Vehicle Program is a way that is least obtrusive to the life-styles of the residents of New Jersey. When you look at the other options for closing the gap, low emission vehicles is a good choice.

Some of the other options we went through last week that I know stuck in people's minds were: restricted use of recreational equipment; the controlling of barbecues; the controlling of lawn mowers; prohibiting student driving. These are the draconian measures that nobody really likes to talk about; controls on small sources, such as bakeries and dry cleaners. The impacts of those kinds of programs are very broad and can be felt throughout the economics of the State.

The other important reason why we get to LEV has to do with the Northeast region of this country. All the Governors and all the air quality directors of the Northeast states, from Virginia up to Maine, have agreed that the Low Emissions Vehicle Program makes sense for these states. It makes sense for us to go into this program as a region; it makes sense for us for air quality programs. So it is not just New Jersey which has come to this decision. Every state in the Northeast region has now reached the same conclusion; that low emission vehicles make sense.

Now, why do we talk about mobile source emissions? I know last week there were some questions about what the inventory is, and I know there are always complaints from the audience that we only have one set of charts. The State budget restricts having multiples, but they are in your handouts. This is the one with all the circles on it. I also understand there was a shortage of handouts. There are more on the way.

This is a summary of what New Jersey's total emissions inventory looks like. This is very important. The first circle you see here is called "Natural & Controllable," because as we mentioned last week, a portion of New Jersey's inventory comes from nature. It comes from trees. It is called biogenic. We cannot control it. It is not something we would put a strategy in place to control. So when you start looking at the controllable inventory, we take that piece out, because we just don't think that is something we can control.

When you are looking at the controllable inventory-- Again, we have broken it out into volatile organic compounds and nitrogen oxide, because those are the precursors that make ozone, and ozone is the attainment problem that we are really talking about when we talk about low emission vehicles.

You can see the ton numbers here. (pointing to chart) This is a 1990 estimated inventory, because we haven't completed it yet. It is based on our 1988 inventory, which was completed a number of years ago. Mobile sources, this spot, in both volatile organic compounds and nitrogen oxide compounds, encompasses close to half of the total controllable inventory. That is a big piece.

Off highway sources, that's 20 percent, 25 percent, and the rest is made up of both stationary and area sources. Area sources, again, include things like the small facilities that currently are not regulated. They include consumer products that are used. So this encompasses stationary sources and area sources, and these big pieces here are mobile sources. So you see that for us to have significant emission reductions in the volatile organic compounds and the nitrogen oxides, we must look at the mobile sources.

Now, where do mobile source emissions come from on a car, and how do we control those? The important thing to realize is that the Low Emission's Vehicle Program is one piece of a multiple strategy that we are looking at to control mobile source emissions. It is not the only piece. Emissions from cars come from a number of places. There are emissions when you refuel your car. The Clean Air Act requires what is called "Stage II vapor recovery." As you know, New Jersey has already done that.

Another way to control emissions from refueling is through a good inspection/maintenance program, because often people will tamper. They won't have a gas cap. All of these things help to control emissions when you refuel.

There is something called "evaporative" emissions. You are going to hear a lot about evaporative emissions today, and it is going to get very complicated. But the bottom line is -- and a lot of you will know this -- if you drive your car and you park it in a hot parking lot, there are emissions coming off your car. Fuel is evaporating and coming up in the air. While you are driving, there is fuel evaporating from your car. It is not just from the tail pipe.

Our estimates show that the evaporative emissions are about 36 percent of the total emissions from a car. How do you control evaporative emissions? Well again, inspection/maintenance to make sure a car is running properly; to make sure that you are doing good maintenance on your car. An evaporative canister, something that has gotten a lot of press lately when the President decided not to go ahead with an improved evaporative canister for a car-- Then there are tail pipe emissions, which our data show are about 60 percent of the total emissions from a car. That is what the low emission vehicle standards are a lot about, controlling tail pipe emissions. Those are the emissions standards.

Another way to control tail pipe emissions, as well as evaporative emissions, is by changing the fuel. That is something New Jersey has in the works for compliance with the Clean Air Act. That would be the reformulated gasoline that we talked about last week -- Federal reformulated gasoline. It is a mandate for New Jersey that we do that, and that will be coming in in 1995.

Inspection//maintenance again. Inspection/maintenance is important for all aspects of controlling mobile source emissions. New Jersey needs a good enhanced inspection/maintenance program. Last week it was one of our mandated measures that we were going ahead to implement. So, all of these control strategies together are crucial for controlling emissions from mobile sources. It is not just tail pipe control. That is one part of a multifaceted mobile source control strategy.

And overriding all of this, you must remember that the other way to control emissions from cars is to drive less. The Clean Air Act includes some mandates that we talked about less for controlling what is called "vehicle miles traveled." Those programs will also be in place. So we're looking at tightening up the emissions from cars, improving inspection/maintenance, improving the fuel, and driving less. All of those together make the comprehensive mobile source strategy that is crucial for New Jersey to meet the Clean Air Act requirements.

Now, let's talk about what a Low Emissions Vehicle Program is. Low emission vehicles are not really one car. It is a family of cars; actually, there are five cars. As the families change, the emissions controls get more and more stringent. The first car allowed in a Low Emissions Vehicle Program is a standard vehicle. It is the Federal car; the Tier I car I mentioned before. There are still allowed. They will still be able to be sold in New Jersey.

Then, there is something called the "TLEV." These are the cars you have heard called the LEVS or the LEV brothers. Commissioner Weiner called them the "Northeast LEVS." They are called "California cars." They are called a lot of things. There is a transitional low emission vehicle; then the low emission vehicle; the ultra low emission vehicle; and finally, the zero emission vehicle. All of these cars are low emission vehicles. All of these cars would be California cars.

Now, in your handouts you will see a chart called "Low Emission Vehicle Program." What it does is, it lists by category each of these cars and what the emission requirement for that car is. We put the current car on just for comparative purposes. You can see that even the difference between the current car and the Federal Tier I car is very big, and you will hear that today; that the car proposed by the Federal government is a much cleaner car than the car we have now.

Then as you go down from the TLEV and the LEV and the ULEV, and ultimately, the ZEV, these emission reductions are bigger and bigger. They are more stringent tail pipe controls. So that people don't get totally confused, you will see a heading up there called "Non-Methane Organic Compounds." For the purposes of this conversation, that is fundamentally volatile organic compounds. There are some chemistry differences that really do not impact any of our analyses. For the purposes of the California program, it is called "Non-Methane Organic Compounds." So, those are the volatiles.

You can see that NO_x numbers get more and more stringent as you go down, as well. So the Low Emission Vehicle Program defines these cars. Well, how do you become one of these cars? What makes it an approved car? There is a process in place. There is a process in place where motor vehicle manufacturers have to certify their cars to these standards. That certification is done by the State of California. They have to go to a lab. They test the car. They submit a stack of paperwork that the manufacturers tell me is about this big (demonstrates). California approves it, accepts it, and that car is then certified to meet these standards -- the TLEV, the LEV, the ULEV, or the ZEV. That is how it becomes a California car.

Other cars, cars that are not certified to these standards, but are certified to the Federal standards, go to EPA and get certified. They get an EPA certification. So it is a very similar process. It is just that for this one, the certification is done by California, and for the other cars it is done by the Environmental Protection Agency.

So we have these cars. They are certified to these different standards -- either certified by California for these standards -- and then the program goes one step further. The program says, "These are the cars we want you to make." You have to note that all that standard does is set up the emissions allowable, the tail pipe emissions allowable. It does not say how to do it. It does not say, "Motor vehicle manufacturer, we want you to do it by 'X' technology." It just sets the standard, and then they make the car that meets that standard.

Now, the second thing that the Low Emission Vehicle Program does is, it sets a fleet average standard. Now what this does, it says, "Okay, motor vehicle manufacturers, you can make TLEVS, LEVS, ULEVS, ZEVS. You can make them in any combination you want, so long as the fleet you sell in this State meets this average standard." So it gives them a lot of flexibility. On this bottom chart is one scenario of how they can meet a fleet average standard. So you can see, for 1997, they could have 25 percent LEVS, 2 percent ULEVS, and 73 percent still Federal cars. Or, they could do another arrangement: They could have some TLEVS and LEVS. But it gives great flexibility to the motor vehicle manufacturers on how they meet this standard.

So there are really two pieces here, and this is important. It defines the emissions from the car, and then it defines a fleet average. So there is flexibility in both parts of the program; both in how they meet the emissions and in how they meet the overall fleet average.

Now, there are a lot of things built into the program that don't just have to do with these numbers. The California program includes in it what I call "technology reviews." Every two years, California is going to sit down with the motor vehicle manufacturers and other interested parties, and review where they are in terms of progressing to meet these standards. It is sort of a fail-safe mechanism, a bailout. If California finds that for some reason the motor vehicle manufacturers can't meet the standards, they might build a delay into the program. They may change some of the dates. This is part of the California program, and it comes up every two years. Since we would be adopting the California program, that two-year review would impact New Jersey, as well.

SENATOR McNAMARA: Nancy, on that particular point, wouldn't it also be possible that if the California problem -- which is much worse than anything in any other state -- if it were not meeting the criteria, when they reviewed it they would make it more stringent?

MS. WITTENBERG: I don't think that is the intent of the review. I mean, the review specifically intended to see where they are technologically. For California to go with an entirely new set of standards, they would have to go to a rule-making process as they did when they changed their standards this time. This is about, due to concerns from the motor vehicle manufacturers, sitting down to see if, in fact, this technology-forcing program had forced too hard, because that was a concern raised by the motor vehicle manufacturers. It is not about changing the standards, which they would do through a formal rule-making process.

SENATOR McNAMARA: If they did change the standards, because of New Jersey adopting their regulations by reference, does that lock in New Jersey to what they are doing because we have adopted their regs?

MS. WITTENBERG: It locks us in as far as if we were to stay in the program, we would have to do what they do. In our rule proposal, we have allowed for whenever they make a significant change, we would go through a public hearing process here, and we would have the option of getting out. Now, if we get out, we're out. We would have to go back to the Federal program. Every time they change, we would go through sort of an adoption kind of process in New Jersey, subject to public hearing as with all rule proposals, and we could get out. You can get out.

SENATOR McNAMARA: You can get out?

MS. WITTENBERG: Yes. Once you are in, you can get out.

ASSEMBLYWOMAN OGDEN: Of course, all the other states around us could be doing a similar thing. You know, if they all got out, that could have a really adverse impact on what we are trying to do.

MS. WITTENBERG: That is why working with the Ozone Transport Commission and working regionally has been so important. That is something we are going to continue to do. New Jersey would not make a decision alone. In the basis and background document for the rule proposal, that comes up very often, where we say, in fact, certain sections we have not proposed at this time. We want to work with the region to make sure that we are consistent. The Ozone Transport Commission has committed to taking that approach, because, frankly and obviously, this is not the kind of program that one state can do. It is a regional strategy, and one where we need the support of other states -- neighboring states, bordering states -- to make it work; to make it work both for air quality and to make it work economically for New Jersey and for the motor vehicle manufacturers and the dealers. So it will require regional strategy, which I realize is something that has not been done a lot in the past. But the Ozone Transport Commission was created by Congress. It has authority to implement strategies which are binding. We believe that is the way for this particular strategy -- to ensure that it works. There would have to be procedures in place for the region to review changes to the program, so that as a region we would decide, as we decided to try to adopt it in the first place, where we would make changes in the road.

SENATOR McNAMARA: When, in fact, if all of the-- How many states out create a problem for New Jersey?

MS. WITTENBERG: Well, that is something we were hoping through the public hearings that are coming up in this process of going through this program that we could discuss with the motor vehicle manufacturers, because that is really an important issue for them. Later, I am going to show you a map and we will talk about percentages of the national fleet that New Jersey represents; that the Northeast represents; that Massachusetts, New York, and New Jersey represent, and where the cutoff is.

SENATOR McNAMARA: Well, but besides the fleet, wouldn't the air quality be more severely affected if Pennsylvania, Maryland, and Virginia did not participate--

MS. WITTENBERG: Yes.

SENATOR McNAMARA: --and we participated?

MS. WITTENBERG: Yes, but--

SENATOR McNAMARA: We would get the updraft, so--

MS. WITTENBERG: Yes, we would, right.

SENATOR McNAMARA: --our air quality would still be bad, and we would be at a competitive disadvantage.

MS. WITTENBERG: The 25-ton number that we talked about last week -- and I will go through the benefit in a minute-- That is New Jersey alone. We didn't assume any benefit in other states; we didn't assume transport for that. That is a minimum benefit. If New Jersey did LEV, that is the benefit that New Jersey would get. But, yes, we would get an improved benefit with the other states in.

ASSEMBLYWOMAN HECK: Senator?

SENATOR RICE: Mr. Chairman? Oh, I'm sorry.

SENATOR McNAMARA: Yes?

ASSEMBLYWOMAN HECK: It has been brought to the attention of our legislative office that Pontiac is intending to do an across-the-board, you know, manufacturing change to adhere to the California standards, so that they don't run into difficulties. Has anyone checked this out?

SENATOR McNAMARA: The manufacturers will be testifying next, right after the Department.

ASSEMBLYWOMAN HECK: They will be testifying, very good. Thank you.

SENATOR RICE: Mr. Chairman, even if they went across-the-board, let me just remind this Committee that California is not New Jersey. When we plan it out, we have to put some variables in, such as weather conditions, geographics, and a lot of other things. You mentioned the term "stringent." I happened to have done, over the last 10 or 11 years, a lot of networking with California legislators both at the state and local levels. I worked with their environmental groups nationally. My wife happens to be from California, Berkeley at that. Let me just say, I can assure you that with the proposition of Initiative and Referendum in place, the environmentalists and the Berkeley types out there, if, in fact, during the review process they are not satisfied, it is going to cost a whole lot of headaches and money, because the danger in the proposition out there and the danger in the environmentalists' lobbying group, and the dollars to distort some of the real issues, is going to put a burden--

So, if we are caught up in the situation that you indicated, based on what is done out there, the impact back here, I have real serious problems with that. I am not so sure, given the three options that were mentioned, that we will still look, in New Jersey, at all there is to look to. I don't like the idea that the region and other Governors, with their own problems which are similar to ours, are going to now majority dictate in our direction. I am not so sure if cities across this country agree with state government in the first place. I can say that because I wear both hats. I am very protective of local government, just as with State government from the Feds.

I just wanted to remind you that New Jersey, with the exception of maybe some of the shore community areas, is not high-rise, public housing types, urban cities California.

SENATOR McNAMARA: Ron, I have the same concerns about California. They gave us Jerry Brown. That is why I have to-- (laughter) Will you please continue?

MS. WITTENBERG: I am not commenting on Jerry Brown.

SENATOR RICE: It's closer to Arkansas. (laughter)

MS. WITTENBERG: Okay. Let me talk briefly about how this program would be implemented in New Jersey.

Now, the California Air Resources Board has the laboratories in place; the analysis in place. They do the certification. We would not duplicate that. That would be duplicative expense in government and duplicative expense for the motor vehicle manufacturers that have to submit. We would accept that certification. So we do not have to duplicate that.

In terms of enforcement, our car registration system, which is already in effect-- When you go in to register a new car, the vehicle identification number, the VIN number, for California cars will have California written on it, or there will be some way that that is how it will show. You will go in to register your new car and on the California VIN number it will be acceptable. So this will not require significant changes to State government to implement.

The other point I want to talk about briefly before we move on to the benefits and the cost, is how these standards will be met. You will hear a lot about this today. What will the technology be? Now, you have to remember we are proposing because we want this to come into place in New Jersey in model year '96, and then the program gets phased in, as I told you before, with the more technology-forcing issues later on in the decade so there is some time for this technology to develop. According to California, for the transitional low emission vehicle and the low emission vehicle, there will have to be some engine modifications, a lot of things that have to do with the air fuel ratio in your engine. I am not a mechanic and I am not a car expert, but I have read more about this than any human being should have to, and I actually understand it. But it is about engine modifications. If you have a cleaner, more efficiently burning engine, it has less emissions.

As you get further out towards those ultra low emission vehicles, it is looking like one of the technologies that could meet that standard is something called an "electrically heated catalytic converter." That is something you will hear about today, because that is where we get into some concerns about price and some differences in what this car will cost, which is very important. But this heated catalytic converter is just-- When you start your car, that is called "cold start" emissions. And if your catalytic converter heats up more quickly, there are less of those. That is what that technology is about.

But the point of this is, we are not talking about a different car. We are not talking about a different kind of engine. We are talking about the cars that we are all used to, with some minor modifications to the engine, or some modifications to the emission control systems we currently have. Cars are not going to look different. It is going to be the car that we are all used to.

Now, I want to talk a little bit about the emission benefits of the Low Emission Vehicle Program, the numbers that we presented last week. You will hear very different numbers from different people today. The difference between the LEV program and what I call the Federal Tier I program-- We have graphed out to show you how this changes with time, and how it is important to us in the later years. We recognize that because of the phased-in approach and the flexibility in the early years, where there is still allowed to be a large number of Federal cars -- '96, '97, '98 -- we won't see a big difference. As the fleet turns over and more new cars come in, and more low emission vehicles and ultra lows come in, the benefits get greater and greater. You must remember, the Clean Air Act requires us to make 3 percent annual reductions in our volatile organic compound emissions in '97, '98, '99, 2000, 2001, 2, 3, 4, and 5; every year 3 percent. As you get further and further out, those emissions get harder and harder to find.

This shows you the emission benefits from the low emission vehicle. -- both volatile organic compounds and the nitrogen oxide compounds, because there is a benefit from both. We started in the year 2000. The top line is the Federal car. (witness using charts to demonstrate)

It would be nice if somebody asked me the question I really like to hear: "Why does this line go up?" Well, the reason this line goes up is because the Federal car sets an emission standard. Boom, this is the standard. You meet it. Well, we keep driving more and more and more in this State, and at some point that emission standard just isn't enough to keep us coming down any more, and emissions will start to go up.

California emission standards get more and more stringent, so we don't have that problem. So the difference gets greater. It gets greater because of that offsetting issue, as well as the fact that the cars are getting cleaner and cleaner because we are phasing in those ultra low emission vehicles.

Now, the numbers that we talked about last week were 2005 numbers. That is the 25 tons of volatile organic compounds. That's the difference.

SENATOR McNAMARA: Is that comparison based on the fact of the California car using the Federal fuel?

MS. WITTENBERG: Yes. What we did was, and I am going to try to--

SENATOR McNAMARA: I would really like you to, you know, explain it, for the simple reason-- The California car, is that completed as far as their standards as to what the emissions are? I mean, is that-- Is it in existence today -- something that the Department has reviewed?

MS. WITTENBERG: The car?

SENATOR McNAMARA: Their method of reaching their emission level--

MS. WITTENBERG: Yes?

SENATOR McNAMARA: --with their vehicle, with their newly reformulated fuel, because we are not going to be using--

MS. WITTENBERG: No, we're not.

SENATOR McNAMARA: --the California fuel?

MS. WITTENBERG: Let me explain to you how we did this. This is done based on an EPA model. It is called "Mobile 4.1." You will hear about it. What we did was, we took the two programs and we modeled everything identical. We assumed federally reformulated gasoline. We assumed enhanced inspection/maintenance. We assumed typical temperatures for New Jersey; typical car speeds for New Jersey; everything the same. Everything the way it will be in response to the Clean Air Act.

For this one, the only difference was we assumed an emission factor that is defined for the Federal car, which reflects the emission standards for that car. For this one, we put in the LEV standards, the ones I showed you before -- those emission standards, what that emission factor is. Everything else in the two models was the same. The only difference was the emission standard for the car.

SENATOR McNAMARA: Okay. What year does that emission standard change on your top chart where the Federal car goes down to a point, and then your California car decreases further?

MS. WITTENBERG: The Federal car comes in in 1996. That is when the Federal standard comes out. Then this is around 2005. (demonstrates) Is it this point you are asking me about, Senator? (no response) Then our model shows it is going to start to increase.

Now you have to--

SENATOR McNAMARA: So the number you have, or you're using-- You are assuming the use of the Phase 2 gasoline?

MS. WITTENBERG: Yes -- the Federal Phase 2.

SENATOR McNAMARA: The Federal Phase 2.

MS. WITTENBERG: For both, yes; yes.

SENATOR McNAMARA: Okay.

MS. WITTENBERG: So these are the graphic representations of what we talked about last week. The emission benefits from the low emission vehicle.

ASSEMBLYWOMAN OGDEN: And this factors in the new fuel standard for the Federal gas that starts in 2000?

MS. WITTENBERG: Yes. It factors in all controlled strategies related to cars, that we are going to have to do for the Clean Air Act; held identical for the two runs. The only thing we changed was the difference in tail pipe emissions based on the Federal car or the LEV lead average.

ASSEMBLYMAN KRONICK: Are you using an oxygenated fuel here?

MS. WITTENBERG: Oxygenated fuel has to do with carbon monoxide emissions.

ASSEMBLYMAN KRONICK: Right.

MS. WITTENBERG: It does not impact these emissions.

ASSEMBLYMAN KRONICK: It does not.

MS. WITTENBERG: So we assume we're formulated gasoline, which is a control mechanism for ozone.

ASSEMBLYMAN KRONICK: Just explain to me the difference between reformulated and oxygenated.

MS. WITTENBERG: Okay. Oxygenated fuels will be a wintertime fuel in New Jersey, as required by the Clean Air Act. It is about adding oxygenate to the fuel so that there is less carbon monoxide out the tail pipe. Actually, that would be an ozone problem to complicate things even further.

In the summer, it will be reformulated gasoline to help with the ozone problem.

ASSEMBLYMAN KRONICK: What does that encompass? When you say "reformulated," what would we be doing to the gasoline?

MS. WITTENBERG: You probably would be better suited talking in detail to the petroleum industry on that, but what the Clean Air Act does-- It says it has to be 15 percent cleaner. They have to make a cleaner burning fuel. And then there was a negotiation as to how that fuel would be made. But that is a Clean Air Act basic requirement for reformulated gasoline, which then in the year 2000 gets even more stringent. It changes again, as required by the Act.

ASSEMBLYMAN KRONICK: So that reformulated gas will be used across the country?

MS. WITTENBERG: No, it will only be used in nonattainment areas in the country. If you don't have an ozone problem, you don't have to use it.

ASSEMBLYMAN KRONICK: And it has no impact on the car. So, if you are driving across country, you can switch from one to the other and have no bearing on how the car operates?

MS. WITTENBERG: No impact on the car; no.

SENATOR RICE: Mr. Chairman? Is that true? Is the data that mature that you can make that statement with confidence? You know, a year, two years, three years, is not enough time to measure out anything, whether it is boot camp, cars, or what have you. You have to give it a chance to work.

You said "nonattainment." New Jersey is not a nonattainment State. There are areas in New Jersey that are nonattainment in terms of heavy concentrations. Are you telling me that there are parts of New Jersey that would go -- that wouldn't necessarily have to have the reformulated stuff, and other parts would have to have it, and some people are fortunate enough not to have that impact? If they are going to modify some pieces-- Every car I have had has been recalled for different things, and we haven't changed anything. That is a hardship.

So, where are you getting the data from to tell us that, "There aren't going to be any problems. You know, the cars, the way they are going to make them--" They haven't even made all these cars yet. Where is this data coming from? Is this California data?

MS. WITTENBERG: First of all, we are talking about federally reformulated gasoline, so the data comes from the United States Environmental Protection Agency--

SENATOR RICE: Okay.

MS. WITTENBERG: --and the petroleum industry.

SENATOR RICE: Right.

MS. WITTENBERG: I just want to clarify one thing, Senator: All of New Jersey is nonattainment for ozone.

SENATOR RICE: Well, for ozone, but--

MS. WITTENBERG: And that is what we are talking about. Eighteen of the 21 counties are in severe nonattainment.

SENATOR RICE: For now. That is what you are talking about now, and then you will come back with the carbon side and you are going to say we have to modify that in a different way, too, even though they both come from similar sources sometimes.

My point is, how new is this data?

MS. WITTENBERG: The data about reformulated gasoline?

SENATOR RICE: Yes. How has it been measured out? What areas has it been measured out in, in terms of-- I mean, is that in documents, or are you just going by what the Feds tell you -- what the EPA tells you?

MS. WITTENBERG: I don't want to put this question off, but I think you would be better suited to ask the petroleum industry, which is going to come up to speak after me. It is my understanding that they, along with the Environmental Protection Agency, are very comfortable with the reforumlated fuel. But I think you could probably get better data -- specific data -- from them.

SENATOR RICE: They are comfortable with the fuel, but somebody is going to have to tell us the impact on these "new modified vehicles," because that is the question I am raising. You said if we go to this end of the State--

SENATOR McNAMARA: Senator, that might be better to ask the automobile manufacturers, and they are coming on afterward, too. So I think that--

SENATOR RICE: I have no problem asking them, Mr. Chairman, but let me say this: If the State is going to come in and make representation on behalf of the administration as to what direction they want to go, and they want our approval, they better damned well check this stuff out. The petroleum industry and other industries out there-- Those are not nonprofit businesses. As long as the bottom line works, it's good. See, that is my concern.

SENATOR McNAMARA: Senator, that is why we are having these hearings. The State has not taken the attitude that they have to ask our approval. They have taken the attitude that they don't need our approval.

SENATOR RICE: Well, that's my point.

SENATOR McNAMARA: We're here so that maybe we can change the attitude.

ASSEMBLYWOMAN HECK: That's right.

SENATOR McNAMARA: So, Nancy, will you continue, please?

MS. WITTENBERG: There are some other differences between the two programs that I just wanted to make you all aware of. The Low Emission Vehicle Program has a better warranty. They are more concerned with in-use compliance, how the car runs for 50,000 miles, for 100,000 miles. There is a more comprehensive defect reporting and recall provision, and there is something called "on-board diagnostics," which is literally a computer in the engine of the car that tells you when your emission system fails. On the low emission vehicles, that is a more comprehensive computer than the one on the Federal car. So there is a little bit more to the program than just the tail pipe standards, and those parameters have to do with warranty and recall.

I want to talk briefly about the cost of the car, and I am going to talk more about it later. You are going to hear very different cost estimates today. California's estimate has been $170. In today's dollars, they recently put out a new estimate which was about $270, which they think will come down as the technology develops. You will hear $1000 a car, and I am going to talk a little bit about that later. I am going to try to move through this quickly, because we did lose some time to questions.

How was the program developed? I just want to make it clear that New Jersey didn't just decide on its own without talking to anybody that this was the right thing to do. The California Air Resources Board studied this for three years. They have years of experience in doing emissions standards. There is a company called "Pechan" which did an analysis specific to the Northeast on the benefits of this program, which was made available to you last week. We did our own analysis, which we discussed today and last week. We also had numerous meetings with interested parties, mostly motor vehicle manufacturers, the American Petroleum Institute, the New Jersey Petroleum Council, the petroleum refiners, and the car dealers. We met with them on many occasions, as a State through DEPE workshops and meetings, through the Ozone Transport Commission, through a Northeast air directors' organization called "N.E.S.C.A.U.M.," and through the Coalition of Northeast Governors' Energy Working Group, so we are very aware of their concerns. We have studied them closely.

What I am going to do is walk you through their concerns, because you are going to hear them today. I want you to understand that we heard them, and in many cases we listened to them. Commissioner Weiner said last week that he has been asking to have our opponents come to the table with us to talk about how to make this program work. Well, what I just showed you was, we have been at the table with them, but really the argument has been whether to do the program or not; not how to do a program that will work. So we offered to sit down and discuss making this more acceptable if they still have problems with its stance.

Now, the issues of contention: fuel uncertainty; California reformulated gasoline. New Jersey is not proposing California reformulated gasoline -- period. It is not in our rule proposal. We have never said it; we have never implied it. We have opted into the Federal reformulated program to the Environmental Protection Agency in writing. This is a program for us about the car. It is not about the fuel. We are not going to propose California reformulated gasoline -- period.

You are going to hear that New Jersey doesn't need the Low Emission Vehicle Program. You are going to hear, and you have already heard today, that New Jersey is not California. Well, New Jersey is not California, but that does not make our air quality problem any less severe. It does not mean we are going to do everything that California does. But in this particular instance, it makes sense. Congress recognized that this was going to make sense for other states. This is why they have given us the option here to do this.

You will also hear that New Jersey is not California-- Their climate is different. Well, I, too, lived in California, and their climate is very diverse. My favorite trip in California used to be to ride from L.A. by the beach where it was sunny and warm up through the mountains where there was snow, and down into the desert. Well, that is a very diverse climate, as we also have in the Northeast.

So, yes, New Jersey is not California, but that does not mean we don't need to take actions to control our emissions in this State, and this is a good strategy. It is not a California strategy; it is a car control strategy. It is not about doing something to the cars that will make them work better in California. It is just about making a cleaner burning car that will work in California; it will work in New Jersey. It won't work anywhere.

SENATOR RICE: But, Mr. Chairman, that may not necessarily be done using the California model. That is all I'm saying. We agree, you know, that we have to do something, but I am not certain that is the best way. The people in New Jersey, their mentality, whether you like to believe it or not, is a little bit different than the mentality in California. We are all lovely people, but they are different for different reasons. I married one. (laughter)

SENATOR McNAMARA: Enough said, Senator Rice. Let Nancy continue.

MS. WITTENBERG: You may hear today that the Clean Air Act mandates are enough. We don't need low emission vehicles. I think we made a very convincing argument to you last week that it is not enough. We do have to look for other options. You are going to hear that we should look at other options -- scrappage, enhanced inspection/maintenance. We have. We put them on the table. We think they are options we should do, but even with those options, we still believe we need more ton reduction, and low emission vehicles is a good place to get it.

You will most likely hear that there will be a limited benefit from low emission vehicles. Commissioner Weiner referred to it as a shell game last week. I sat with motor vehicle manufacturers. I have gone through this presentation with them. They will show you that we will get less than a 1 percent control of volatile organic emissions. But what I will remind you to keep in mind, is that we are talking about a requirement of tons per day. If you hear a number that is given in a percent, ask that it be converted into tons per day. If you are shown a graph where they are showing you changes in grams per mile, ask to see it in tons per day. Numbers can be deceiving. We have to show ton-per-day reductions, not percents. It has to come down to tons per day.

SENATOR McNAMARA: Nancy, with all due respect, and I hear what you're saying, I think the Committee is astute enough to pick up on that. I'm sure if we had the vehicle manufacturers on first, they would have been saying how to look at your charts, too.

MS. WITTENBERG: Absolutely. I just wanted to remind you of where the differences come from. The numbers at the bottom line will all be the same, or close to the same -- 25 tons per day at 2005.

Perhaps the most crucial issue is the cost impact issue. We provided you with a copy of a report that had been made available to us. It is a DRI/McGraw-Hill report. It is an economic analysis. It shows that if New Jersey goes ahead with LEV, there will be a significant job loss and a significant financial impact on the State. This is a cost study. This is not a cost benefit study. All it looks at is cost. I would just like to point out a few things from that report that we feel do not accurately reflect the program, because we do not believe low emission vehicles in New Jersey will mean that sort of a disastrous picture that was painted.

The DRI/McGraw-Hill report does not incorporate any of the benefits of low emission vehicles. Please remember, this is about health; this is about health. You heard Bernie Goldstein last week talking about ozone and health. Health impacts are very costly to the State. When we have healthier air, there will be cost benefits -- significant cost benefits. The DRI/McGraw-Hill report assumes a higher car cost than we assume. It assumes a higher fuel cost than we assume. All of these things will make the numbers significantly different. It does not incorporate--

SENATOR McNAMARA: Nancy, while you are mentioning that, I read somewhere that in Connecticut the Governor had a study done by the state on the question of the cost benefit, and deferred the implementation of the California program until 1998 to see if, in fact, the improvement in the air quality with other things they could do would be more cost-efficient. Do you have a copy of that report?

MS. WITTENBERG: I have a copy of the California position and a copy of--

SENATOR McNAMARA: Of the Connecticut study?

MS. WITTENBERG: Oh, of Connecticut, I'm sorry. I have never seen a report they did. I have seen some internal documentation.

SENATOR McNAMARA: Well, I would suggest, if we are going to be fair and equitable in the way we are going through the process, that it would be mandatory that DEP would acquire a copy of the--

MS. WITTENBERG: I am not sure there actually is a Connecticut report. I know they did an internal staff review when originally Governor Weicker said, "No," to LEV. Then they said, "Yes," in '98. Connecticut was the only state on the Ozone Transport Commission which originally said no, or didn't say yes, depending on how you look at it.

SENATOR McNAMARA: I would suggest that there is going to be this magnanimous cooperation from all the Governors of the Northeast region. One might start it off by asking for copies of their internal staff memos.

MS. WITTENBERG: But we have met at length with Connecticut. I am very familiar with the internal analysis that they looked at, at the time--

SENATOR McNAMARA: Well, does that fly in the fact of the report you are referring to, or is it--

MS. WITTENBERG: It is the report I am referring to. When they originally said no, they had gotten that report and had great concerns about it. Since then, they have done some more analysis on it and have come a little closer. Now they have said, in fact, that they are going to sign on with the Ozone Transport Commission states for '98 implementation. I don't know that they have done their own independent study. I will most certainly check.

SENATOR McNAMARA: Would you, please, because our staff indicates that they may have?

MS. WITTENBERG: Okay.

The economic study we are talking about does not incorporate the economic impact of Federal sanctions should we not meet the requirements of the Clean Air Act. It does not incorporate the economic impact of the other strategy that we would have to use in place of low emission vehicles, which will obviously also have a cost. There are no free strategies. Everything has a cost. If you are going to estimate the cost of one, you have to assume that if you don't do it, there will be the cost of another, which we believe will be higher.

It makes some technical assumptions that we do not believe are true, assuming that we are going to go with an even more stringent car in the year 2003, and that we are going to use California reformulated gasoline in 2007.

But the most important thing about that report, is that it is a cost study. It is not a cost benefit study. It just tells you what it is going to cost, and then projects straight out. I think it is misleadisng and frightening.

You will hear about technological uncertainties. We discussed them a little bit. It is a technology-forcing program; I admit to that. I think that is a good thing to do. It is what New Jersey and other states have been doing to stationary sources for years. We have been forcing them to be cleaner and cleaner. We are now turning and looking at the source of 50 percent of our inventory, and saying, "All right, we are going to force you to be cleaner now, too." It is consistent. Nobody ever likes it.

You will hear that California doesn't have EPA approval for their program yet. They don't, but it is not because they have been denied; it is because they just did their hearing for their approval for this program in February, and EPA is not the quickest moving agency.

You may hear that New Jersey could need a $20 million bureaucracy to implement this program, because that is what California's bureaucracy is. As I mentioned before, we do not plan to duplicate their bureaucracy. We plan to use it, so we will not have to have a California -- a resource for it in New Jersey. We are not going to New Jersey certify cars; we are going to accept California's certification.

The bottom line of what you are going to hear is that we should wait; we should delay. There are a number of reasons why I don't think that makes sense right now. First, as Commissioner Weiner said last week, we want to open up the discussion; we want to move ahead. We want to be a leader in the region to try to help get all the other states on board, as a regional strategy. The LEV program has the two-year technology reviews built into it as a sort of fail-safe.

You will see in your handouts where we calculated the emission benefit loss if we wait two years. That is the chart that says, "Impact of LEV Delay." You will see that the top line is the Federal car; the bottom line is the proposal to implement, starting in 1996; and the middle line, as if we waited two years and implemented in '98. If you look out towards around the year 2002, 2003, you will see the difference there. We are talking about five tons, six tons.

Now, that probably doesn't sound like a big number, but a typical oil refinery in New Jersey emits about three tons a day. So five tons a day is a big number to make up. We need to get that 3 percent reduction every year. I know these numbers sound small, but they are really not. A big refinery emits about three tons a day, and we are talking about a five-ton loss. So there is an emission benefit loss due to waiting.

ASSEMBLYWOMAN OGDEN: If we were to get more than the 3 percent a year, would we be given credit the next year, or would we be told-- I mean, if we were to -- you know, an unlikely case -- but if we were to go to 5 percent, would we be told the next year that we would still have to go 3 percent again, as opposed to being given credit for 2 percent over?

MS. WITTENBERG: I am not 100 percent sure this is right, but we have to do 3 percent per year. If we did 5 percent in one year and only took credit for the 3, I think we could carry the other 2 over. But it would sort of be like a math game in terms of the credit, which is based on modeling. It is based on what we show as a reduction. What you have to remember is that we have to model all of this as we have done here to show the emission reductions, but the bottom line is, in order to prove we met the standard, we have to test the air, and we have to do air quality planning. So, showing we are meeting the numbers is one thing. We have to actually show air quality improvement.

The last thing I want to leave you with is just that, our analysis has shown that this is a cost-effective way to achieve a significant air quality benefit. We believe the program is flexible. It has mechanisms built into it to be good for industry -- the fleet average, the different cars. We went through an open process to date of having these discussions with impacted parties. We are going to continue that open process with the two hearings coming up. We continue to look forward to more imput about how to make this program work. We are very concerned about the region and, as I said earlier, we are working closely with the other states to make this a regional strategy, not a New Jersey strategy.

Thank you.

SENATOR McNAMARA: The fact that you are not going to use the California fuel--

MS. WITTENBERG: Right.

SENATOR McNAMARA: Do we have the legal authority to adopt the emission standards and not the California fuel program?

MS. WITTENBERG: Yes.

SENATOR McNAMARA: Do we have an Attorney General's opinion on that?

MS. WITTENBERG: Yes, we do.

SENATOR McNAMARA: Would you please submit that to the Chairman?

MS. WITTENBERG: Sure.

SENATOR McNAMARA: We have the flexibility, not using the fuel, giving the choice to the consumer. How do you get the fleet average to attain what you want, if the choice is to the consumer? I think that was one of the proposed rules; that you are going to leave it as consumer choice so it is less impact on the residents of the State.

MS. WITTENBERG: Actually less impact on the motor vehicle manufacturers and dealers, as well. So it needs to be very flexible.

SENATOR McNAMARA: But let me tell you something: The consumer is the one that tells them what they manufacture. The manufacturer may want to manufacture all the smallest, least emission vehicles going. If the buyers won't buy them-- According to our program they can wait and buy a used one with 7500 miles on it. It doesn't count as a new car. That is a standard vehicle, and that is going to throw the hell out of your program, too.

MS. WITTENBERG: It might, but there are some things that are going to help the program. As we said last week, there is another Clean Air Act requirement called the "Clean

Fuel Fleet" requirement. Fleet vehicles have to meet these standards. They are going to buy the cars. That will help.

As more and more cars come into the population, hopefully they will be more accepted. This is a phased-in strategy. That is why we like the long sort of phase-in time -- another reason why we don't want to delay -- to slowly bring these cars into the marketplace so that they can be accepted. These cars are not going to be different. They are just going to be cleaner. It is sort of like people have the choice for the high efficiency cars or the low efficiency cars, not with (indiscernible) standards.

SENATOR McNAMARA: Yes, but in California they are mandating that if the manufacturer decides to build vehicles that will only use propane gas, that the state will see to it that there is an infrastructure in place to deliver that product to the people so they can use it as an automobile. In New Jersey, we are not going to do that.

MS. WITTENBERG: No.

SENATOR McNAMARA: So, you know, I guess I have a problem reconciling the mandate and the freedom at the same time, and actually having goals that are met, you know, because there has to be some terrific hypotheticals built into this program.

MS. WITTENBERG: Well, there is also in the basis and background document and the other issue we wanted to get some public input on, incentives; incentives to buy the car. I mean, we believe that will help to start to push people toward a cleaner car. With an incentive program in place and the fleets starting to come in, and if the cars are on the showroom floor and people see that they are not different cars, they are just cleaner burning cars-- I mean, it may be naive, but I think people will buy the cars. I think there is some percentage--

SENATOR McNAMARA: Depending on the incentive.

MS. WITTENBERG: And there is some percentage of just environmentally conscious people who will buy the cars. That is a naive personal opinion, but I believe there are some of those, as well.

SENATOR McNAMARA: I believe there are a number, but I am not so sure it is enough to get us down 3 percent a year through the year 2007, because there are not that many-- If you went out in the parking lot right now, you would be amazed at the amount of gas burners you have out there.

ASSEMBLYWOMAN OGDEN: And the incentives-- You're saying that you are looking to the public and the automobile manufacturers to make the recommendations, and the Legislature?

MS. WITTENBERG: Yes.

SENATOR McNAMARA: Senator Rice?

SENATOR RICE: You mentioned that the economics -- that it was really a cost study, not a cost benefits analysis study. Do you all intend to do the cost benefits analysis aspect, because, see, without the social variables and those other variables plugged in-- You know, sometimes cheap isn't less. Do you know what I mean?

MS. WITTENBERG: Yes, we are going to do that.

SENATOR RICE: And that is before anything will happen with this LEV concept?

MS. WITTENBERG: Yes.

SENATOR RICE: Would you make sure that, through the Chair, the Committee gets a copy of that?

MS. WITTENBERG: Yes.

SENATOR RICE: Would you also give us information on the model you use to come up with that cost benefits analysis, all the data that went into it and all the thinking, so we can make sure you are not eliminating anything?

MS. WITTENBERG: Yes.

SENATOR RICE: That we may academically be aware of what we can remind you of?

MS. WITTENBERG: Sure.

SENATOR RICE: Very good.

ASSEMBLYWOMAN OGDEN: Jeff?

ASSEMBLYMAN KRONICK: Thank you, Madam Chairman.

You mentioned that one of your--

SENATOR McNAMARA: I apologize, Jeff. I sort of-- (two Assemblymen trying to speak at once)

ASSEMBLYMAN KRONICK: You mentioned that you would try to encourage people to drive less. I was wondering how you would go about that. That sort of relates to, in this State, the dire need for a good mass transit, nonpolluting system, vis-a-vis light rail, etc. How are we going to get people to drive less in a State where the people are married to their cars?

MS. WITTENBERG: Well, it is a country where people are married to their cars.

ASSEMBLYMAN KRONICK: Yes, country.

MS. WITTENBERG: It is a significant problem, which is why these other control strategies become so crucial. When you think about reducing driving, it is one of the most difficult things I can conceive of doing. We always try to compare it to recycling, where we were so successful in New Jersey, but this is very different. I know when I talk to people about, "Would you carpool to work?" the list of reasons why nobody wants to carpool to work is incredible.

But you are 100 percent right. And the long-term solution, which is improving mass transit and getting more public transportation in place, is ideal. But we can't do that to meet the Clean Air Act goals in 2003 and 2005. Most of New Jersey is just developed in such a sprawled fashion that there is no ideal public transportation solution.

ASSEMBLYMAN KRONICK: If we had the will, we could. It could be done in five to ten years.

But, another question: Does this address trucking, also? You are talking passengers in cars. You are not incorporating trucks, which probably contribute more than cars do, and the transportation system, vis-a-vis buses?

MS. WITTENBERG: Diesel trucks and buses -- and I am glad you asked that-- When you see the big black smoke coming out of the stack, that is another problem. It has almost no impact on ozone. That's particulate; that's diesel. And, yes, the Clean Air Act addresses those separately. There will be cleaner diesel fuel. New diesel vehicles will be cleaner. But that is a whole separate problem.

ASSEMBLYMAN KRONICK: Going on simultaneously, but on a different timetable?

MS. WITTENBERG: Yes, and a Federal program. New Jersey does nothing. It is a Federal program.

ASSEMBLYMAN KRONICK: I see. Thank you.

SENATOR McNAMARA: Now, Jeff?

ASSEMBLYWOMAN OGDEN: Jeff, and he will be the last one.

ASSEMBLYMAN WARSH: Project: Clean Air lists inspection/maintenance as a first priority, and in your testimony you indicated that you are attempting to embark on a more stringent inspection/maintenance program. Can you indicate to the Committee what specific steps you are taking?

MS. WITTENBERG: The Clean Air Act mandates an enhanced inspection/maintenance program, which they still have not clearly defined. But we have been working very closely with the Environmental Protection Agency and Motor Vehicle Services to design a more -- an enhanced inspection/maintenance program, with a better emissions test; one that reflects driving conditions more accurately; one that will sort of take the car through different paces to show how your emissions go when you are speeding up, when you are slowing down. That is the kind of test we are trying to design and put into place.

ASSEMBLYMAN WARSH: What is the time frame on that, because, see, we have heard about this for years? My research shows that New Jersey was one of the first states in the nation to institute inspection/maintenance, and then we just kind of basically dropped the ball on it. What is the time frame on instituting that more high-tech testing procedure?

MS. WITTENBERG: This November we have to tell EPA when we are going to do it. As soon as we either get final guidance from EPA or get them to accept our proposal, which will come after this November, then there will be a contract bid to get the changes made. I would assume, hopefully, within a year's time frame from there, that that would come into place. Enhanced inspection/maintenance is a very important strategy for the State for mobile sources.

ASSEMBLYMAN WARSH: I just have one last question: One of the serious concerns I have about the California emissions program deals with Section 177. Is it true that if we adopt the California standards, that new regulations that California passes, New Jersey will automatically have to adopt?

MS. WITTENBERG: As I said before, if we want to stay in the program, if they make a change to the program, to the Low Emission Vehicle Program, and we want to continue being in that program, yes, we have to accept that change. But we don't have to stay in.

ASSEMBLYMAN WARSH: So, in other words, California, and their free-for-all system out there-- The populace of the State of California can, through Initiative and Referendum, pass enhancements to their program, and we would have to adopt them in the State of New Jersey?

MS. WITTENBERG: I am not sure that Initiative and Referendum tells the California Air Resources Board what to do. I would have to check that. I think they are an independent--

ASSEMBLYMAN WARSH: Let's say it is just the California state legislature, or the California executive branch. They would promulgate regulations, they would be adopted, and they would become law in the State of New Jersey also?

MS. WITTENBERG: Yes.

ASSEMBLYMAN WARSH: Frightening.

MS. WITTENBERG: We would go through a hearing process and decide if we wanted to do that.

ASSEMBLYMAN WARSH: Well, for what it is worth, that is the most frightening thing I have heard in my tenure.

MS. WITTENBERG: This only has to do with emissions from cars. If they change the emission standard, it would change for all the states that are in that program.

ASSEMBLYMAN WARSH: Do you think it is a good idea for us to cede control over New Jersey State laws to another state?

MS. WITTENBERG: I think it is a good idea for us to go into a program that has been developed by people with technical expertise, who have been developing emission standard programs for 30 years. I think that what they have done over the years-- None of it has ever been odd; none of it has ever been nutty, as people often say about California. They are requiring a car that will burn cleaner. They are not requiring a car that is going to have a different kind of an engine. They are just requiring a cleaner burning car, and I don't have a problem with that.

ASSEMBLYWOMAN OGDEN: Just one other question along that line: You said we are only dealing with emission standards in terms of being committed to what California -- the changes California makes.

MS. WITTENBERG: Right.

ASSEMBLYWOMAN OGDEN: If California were to decide, in the year 2003, that it is not enough to have zero emissions --

10 percent -- but they wanted to go to 20 percent, say, in whatever time period, then we are committed to that?

MS. WITTENBERG: Yes.

SENATOR McNAMARA: If we want to stay in the program.

ASSEMBLYWOMAN OGDEN: If we want to stay in the program.

MS. WITTENBERG: We would go through our own process to decide if we wanted to do that, yes. If we decided no, then we would get out.

ASSEMBLYWOMAN OGDEN: If we got out of the program, where would that leave us?

MS. WITTENBERG: In the year 2005, if we got out of the program because California--

ASSEMBLYWOMAN OGDEN: And all the other states around us.

MS. WITTENBERG: Well, as I said before, we would do it as a region. You know, if California did something bizarre, like, say, we had to have a car with one wheel, that way it wouldn't move at all and we would have no emissions, then the region could decide not to go on. We would be out, and we would go back to Federal cars.

SENATOR McNAMARA: But you also then-- If Pennsylvania, Virginia, and Maryland decided to opt out, without the region going along, you could opt out. You know, again, you look at the way the wind blows. New York is in, Massachusetts is in, and what other one is in?

MS. WITTENBERG: Those are the only two that are in -- that have adopted.

SENATOR McNAMARA: Okay, all right. We have the ones that are going to have the most impact on our air quality not in.

MS. WITTENBERG: Right. Pennsylvania is not in yet. All the states in the Northeast are moving ahead.

SENATOR McNAMARA: So the rules you are proposing, if, in fact, they don't opt it, are you going to put a time limit, so that if they don't opt in by '94, that our '96 date will not be valid, and push it back to '98?

MS. WITTENBERG: What Maryland has done, and what we are considering doing, is to work with the automobile manufacturers to find out at what point, as a region, it doesn't work for us or for them. What Maryland has done, and what we are looking to do, is to build that into the commitment -- to build that into our rule proposal; that if such a percentage of the State-- If the bordering states do not come in for whatever reason, because they can't get the legislation, then we wouldn't, because, frankly, it just wouldn't make sense. So, yes. That is what Maryland has proceeded to do.

SENATOR McNAMARA: Okay.

ASSEMBLYWOMAN OGDEN: Since you brought up the automobile manufacturers, I think it is probably time to give them their say. You are going to be staying all day, are you not?

MS. WITTENBERG: I will be here, yes.

ASSEMBLYWOMAN OGDEN: In case we have questions to ask.

MS. WITTENBERG: Thank you very much.

SENATOR McNAMARA: Thank you very much, Nancy.

ASSEMBLYWOMAN OGDEN: Next we will have representatives of General Motors, Ford, the importers, and the UAW, speaking as a group.

R O B E R T V I K E: (speaking off mike) Madam Chair, Mr. Chairman, my name is Bob Vike. Good morning. I represent the Motor Vehicle Manufacturers Association of the United States. We have as members all of the domestic manufacturers of cars. We have with us today a representative of the importers, a representative of the two companies you mentioned, a representative of the MVMA.

SENATOR McNAMARA: Will you please use the mike?

MR. VIKE: Oh, I beg your pardon. I am just going to introduce them, and then get out of here. And the United Auto Workers, as well.

It was interesting that last week, and today, you were told what we were going to say. I just want to tell you how much I appreciate your allowing us to say what we want to say on this issue. So I will give it over to Greg Dana, from the inporters' association, to start the presentation. We hope there will be no redundancies.

GREGORY DANA: Thank you very much. Good morning. As Bob said, my name is Greg Dana. I am representing the Association of International Automobile Manufacturers. I represent the European and Asian carmakers who import and sell in this country. With me, again, are representatives from Ford and GM, representing MVMA. Together we represent virtually all of the manufacturers and importers of motor vehicles sold in this country.

We appreciate the opportunity to offer our comments to this joint legislative Committee on the Department of Environmental Protection and Energy's proposed rule to adopt the California low emission vehicle standards.

First, it is crucial to recognize at the outset that New Jersey's ozone problem is not as severe as California's. Much of southern California is classified as an "extreme" nonattainment area -- the only one in the country. While the bulk of New Jersey's counties are severe ozone nonattainment areas, it does not have California's climate, geography, or mix of particular precursor emissions. As Nancy Wittenberg has said, "New Jersey is not California." What is done in California may not be the best solution for New Jersey.

This attainment situation bears strongly on whether there is a need for a California-type control program for this State. For the six southern counties, which are rated as

Severe I ozone nonattainment areas, attainment must be achieved by 2005. The 12 northern counties, which are Severe II, must achieve attainment by 2007. The impact of any California motor vehicle emissions control program will do very little to assist in meeting this attainment need. This is due to the long time needed to turn over the fleet and the fact that this program only addresses new light-duty motor vehicles, a very small part of the mobile source emissions problem.

This fact is borne out by the report done by E.H. Pechan & Associates for the Northeast States for Coordinated Air Use Management, or N.E.S.C.A.U.M. This report estimates a wide range of possible benefits from adoption of California standards depending on the assumptions made, but little benefit by the time attainment must be achieved.

The benefits the report does claim for the years after 2000 are questionable, given a major fault in the report of assuming that the Tier II Federal standards will not take effect. The Clean Air Act amendments of 1990 specify:

The Administrator of the EPA shall rule whether there is need for the reductions; whether the technology for meeting these reductions and stringent standards is available; and whether obtaining further reductions will be needed and cost-effective.

Given the past intransigence of ozone, and the fact that EPA's decision will be based on air quality data from the mid- to late-1990s, it is almost assured that if ozone nonattainment remains a problem, then the first trigger for adoption of Tier II standards will be met. The technology forcing California LEV standards and manufacturer response to them will probably provide EPA with the basis for objectively assessing technological feasibility.

The Tier II standards, while allowing marginally higher hydrocarbon emissions than California, match the California ultra low emission vehicle standards -- the ULEV standards -- for carbon monoxide and nitrogen oxides. Imposition of these Federal standards should reduce considerably the already small benefits shown in the Pechan analysis in the year 2005 and later. Assuming the more realistic deterioration scenario suggested by EPA, which is Alternative B in the Pechan analysis, and even accepting at face value the other assumptions in the Pechan analysis, for states adopting these standards, the benefit, if any, in controlling ozone will be small and will not occur until after the attainment deadline has passed.

In addition, the Pechan analysis does not consider fuel effects and evaporative emissions, which represent the largest source of current motor vehicle hydrocarbon emissions. This will be discussed later in our presentation.

The states must also consider that EPA's decision on the magnitude of SIP credits -- that's State Implementation Plan credits -- that will be granted for adopting the California program will not likely be based on CARB's view of deterioration, but rather EPA's, regardless of what the Pechan report suggests. Comments by EPA indicate that these would be small. EPA has stated that it expects a 30 percent reduction in emissions for enhanced I/M, 15 percent for reformulated gasoline, and only 1 percent to 2 percent for California standards.

Moreover, the cost of this program will be significant. Again referring to the Pechan analysis, the cost estimate provided by CAMET, the manufacturer of the heated catalysts that will be needed to meet the LEV standards, is up to $295 per vehicle at the start of the program. However, this is the cost anticipated by the catalyst supplier, and does not represent the final retail cost of the entire system needed to comply with these standards. A recent report from the Automotive Consulting Group claims a final retail cost to the consumer of up to $1010 for meeting California LEV standards.

We will discuss these costs in our presentation; however, it is clear that the cost of this program to residents of New Jersey will be significant.

A fundamental problem with adopting the California program is that it is not yet complete and is subject to further change. At its November Board meeting, CARB considered the adoption of reactivity adjustment factors for alternative fuels. Reactivity adjustment factors reflect the ozone-forming potential of different fuels and, in essence, set a higher or lower standard based on the fuel chosen. For this reason, these factors are critical in a manufacturer's decision process on the fuel of choice. The reactivity factors adopted by California are incomplete, representing only one of at least four possible fuels -- methanol -- and only for the TLEV level. No reactivity factors have yet been adopted for the LEV or ELEV levels. The still incomplete nature of the ARB program precludes New Jersey from legally adopting the California standards until California has determined what they may be.

Also, New Jersey must be prepared to regulate the fuel infrastructure and have its citizens accept the consequent significant costs, if it intends to require California cars. The lack of discussion in this proposal and Commissioner Weiner's adamant statement last week, make it clear that the DEPE has no intention to provide adequate supplies of fuel that may be needed in a timely manner.

New Jersey must also be concerned about the effect on the automobile dealers in the State. While the administrative branches of the Ozone Transport Commission states have stated they plan to adopt these standards, legislative initiatives in Delaware, Virginia, and Maryland have failed this year, and Pennsylvania has yet to act. Therefore, dealers in most sections of the State bordering other jurisdictions will be faced with higher priced vehicles against cross border competition. This will require higher vehicle stocks to service both the California and non-California vehicle buyers. If New Jersey persists in its efforts to adopt these standards and other states in the region lag behind or do not adopt standards, the vehicle distribution problem will become serious, presenting economic problems for the State's auto dealers.

Finally, the Legislature must weigh what benefit will be achieved and at significant cost to the citizens of New Jersey if this program is to be adopted. There is ample time to delay adoption of these standards until California's standards are finalized and more is known about the actual benefits of implementing these standards in the State.

I would like to now turn it over to Mike Schwarz, from Ford, to do a more detailed analysis of the issue.

M I C H A E L S C H W A R Z: We will be projecting overhead transparencies. We have brought copies which may be helpful to you in note taking. I am glad to pass them on to you.

ASSEMBLYWOMAN OGDEN: For the purpose of recording this public hearing fully, would you give -- before you start -- your name and your affiliation? Thank you.

MR. SCHWARZ: My name is Mike Schwarz. I am the Manager of Emission Control Analysis and Planning for the Ford Motor Company. I am presenting information based on our trade association, the Motor Vehicle Manufacturers Association.

Before starting, I would like to clarify that the motor vehicle manufacturers recognize that we are a significant portion of the ozone problem, and we are determined to be a significant portion of the solution. I think you will see that that is inevitable; that whether or not New Jersey goes to the Low Emission Vehicle Program, we are going to play a major role in helping the State to achieve its standards.

The first thing to remember-- This is our statement on one slide. If ever pressed to that amount of time, we can spit it out quickly. First, the nature and magnitude of the ozone problems in New Jersey do not compare to Los Angeles, and we will have more information on that point. Major uncertainties about the benefits of the program make adoption at this time premature.

We heard a lot of promises about how quickly the State can bail out of the California program. It can just as quickly get into the California program at a point when the uncertainties are less. Despite the uncertainties, it is apparent that benefits over the Federal program are extremely small and generally would be expected to occur well after the ozone attainment deadlines set forth in the Federal statute. The program will be very costly to consumers, and New Jersey will forgo no significant benefit by delaying consideration for a few years while those uncertainties are reduced.

This is a graphic representation of the size of the problem in southern California versus New Jersey. This is a listing of the number of exceedance days in the May to October period in 1988, the worst ozone season in recent history. This is a ratio of roughly 10/1, meaning that approximately 10 times as often does southern California have an hour in its day when it is over the standard as what happens in New Jersey. The levels, which are not shown on that slide -- the worst levels in California are about 50 percent higher than the worst levels in New Jersey. New Jersey levels are about 60 percent of California's, depending on which direction you are going.

This tabulation takes a look at whether there is any significant impact of not having 1988 in consideration. The year 1988 really influenced the classification of areas in the Federal statute that was adopted in 1990. Those classifications were made based on the period of 1987, '88, '89. The key one for your consideration is that New York, at that time, had a design value of .201 against the standard of .12. In recent data-- The most recent three-year runout says it is down to .175. Is Philadelphia on there?

MR. DANA: Yeah, Philadelphia.

MR. SCHWARZ: Philadelphia is the third one on the list. It has come down from .187 to .151. So there is some good news in recent data. Certain of these have made about half of the trip that they need to from their Clean Air Act design level to where they need to be.

California regulations are not complete. They had a very aggressive timetable when they first adopted a portion of the regs in 1990, and they have not been able to keep up with that timetable; not due to any lack of effort, it was just an impossible task for the technical staff at the Air Resources Board.

These question marks represent open issues. The most significant one is in the area of reactivity adjustment factors. May I have the next one? (asking associate for next slide)

For the first time, fuels are brought seriously into the motor vehicle certification and compliance process; that is, reactivity factors are associated with fuels, and an emission test is run, a level is measured, and it is multiplied by a factor to take into account how reactive those emissions will be in the air.

This is a matrix of the reactivity adjustment factors that the California Air Resources Board must provide to our industry so that we have a fuel neutral program where we can select among Phase II gasoline, methanol, compressed natural gas, or liquified petroleum gas. This is our choice. We have so far only one of these numbers, the number for methanol, and we really need to know these at this point in order to identify systems for the 1997 model year. So we have big problems with the California program as a result of their adopting an incomplete program and having an unrealistic timetable for being able to fill in that information. That information was all supposed to be done in September of '91.

I would like to address the costs and benefits of the program. The annual budget for the California Air Resources Board is $23 million. That is split between regulatory development of about $7 million, and enforcement, which includes certification, of about $16 million. We have heard assurances from the DEPE that it won't do anything, but it is going to require some level of staffing. If we take out the regulatory development on the assumption that the California Air Resources Board will be developing all standards, and that a state need only enforce, then you are still left with quite a burden on the taxpayers.

Probably the most controversial issue in the whole debate is the cost of an electrically heated catalyst system. The California Air Resources Board, as you heard earlier, started with an estimate of $170. It upped that to $270, but has projected that it will come down with experience.

SENATOR McNAMARA: May I interrupt you for one minute? That last chart that you had up there-- The enforcement, I note underneath it, includes certification -- the $16.5 million figure. New Jersey does not intend to certify. They intend to do car inspections, but they already have in place a car inspection system.

MR. SCHWARZ: The way I would read their proposed regulations, there is certainly a certification. There is a process of us sending them information, and them giving a head nod; being involved in the judgment--

SENATOR McNAMARA: That would be contrary to the testimony that Nancy gave just before, I believe.

MR. SCHWARZ: Perhaps not contrary. It might be just a matter of semantics; I mean--

SENATOR McNAMARA: All right. Well, that is an area that we definitely ought to have our staff take a look at. Thank you.

AL WEAVERSTAD: The intention of that slide was not to infer that they would have to spend the entire $16 million, but that somewhere between $0 and $16 million would be the cost.

SENATOR McNAMARA: Well, I mean, it is like going out for lunch and knowing it is going to be between $2 and $280. You know, you--

ASSEMBLYMAN KRONICK: That is for the entire State of California, right?

MR. WEAVERSTAD: That is what the State of California spends on enforcement. The State of New Jersey could do something less than that, and they would really be best able to answer that.

ASSEMBLYMAN KRONICK: Mr. Chairman, may I ask a question, if it is appropriate right now?

SENATOR McNAMARA: Yes, you may.

ASSEMBLYMAN KRONICK: This cost factor you have of $1000, where we heard it is $170 to $270-- Is this based on a start-up producing "X" number, or is this projecting out when we've got "X" million cars out there, and obviously the cost comes down? What is the number of vehicles you are basing this on?

MR. SCHWARZ: The consultant did this based on a California volume.

ASSEMBLYMAN KRONICK: A California volume?

MR. SCHWARZ: In other words, approximately 7 percent to 10 percent of the nation's volume being this kind of vehicle.

MR. WEAVERSTAD: A point to make there, though, is, if you increase the volume, the early costs will actually increase because it takes more capital equipment to make the additional componentry. Ultimately, increased volume does result in a lower piece price, but it will require a higher investment.

ASSEMBLYWOMAN OGDEN: For the record, would you please identify yourself?

MR. WEAVERSTAD: My name is Al Weaverstad. I am with the General Motors Corporation. I am Manager of Exhaust Emission Compliance.

SENATOR McNAMARA: I guess maybe another question: I have seen another chart where that $170 figure is. I think the reason is that it is missing several of the components that you have listed in that chart; based on the assumption that a remote starter would not be needed, you know, batteries are more than adequate as they are presently produced to meet the criteria. It is hard to filter out where I read it in the last seven days. I feel like Nancy. I haven't reached the expert level yet, but I am fed up with reading about it. (laughter)

But I do remember that the chart did not have-- I don't think it had the air pump, the battery, the wiring cables, the remote starter, and I don't know what else, to get you back down to $170. How necessary are all of these components?

MR. WEAVERSTAD: Let me try to answer that question: First of all, what we did was assume what the State of California told us was the necessary system to meet the standards. We have not met the standards yet. We had to start somewhere, and we figured that was probably the least controversial. So we went to our people and said, "How would you make this work?" Let me give you an idea of what we are trying to do.

The catalytic converter underneath the car is expected to go from whatever the ambient temperature is -- on a cold day, maybe 20 degrees -- to 600 degrees Fahrenheit in approximately 20 seconds. Now, if you can imagine the amount of energy needed to be downloaded into a catalytic converter to heat it up to 600 degrees, you know it is going to take a considerable energy source and additional battery, and some fairly sophisticated controls equipment and wiring to get that to it. That is what the costs involve.

They also involve storage of that extra battery, because we can't make one battery big enough to do that. It will require the alternator to keep that battery charged, because you will totally drain the battery to make this much energy, and then you will need to build that back up while the person drives the car.

We at General Motors, in particular, had a great deal of negative background when we went to diesel cars and people had to wait 30 seconds, or a minute, when the diesel plugs were warming up. We had numerous complaints. People absolutely hated that. We learned our lesson and we said, "We are not going to make that mistake again. We'll give the guy a remote starter." So he pushes a button when he walks out the door, and by the time he gets to the car, the 20 seconds have gone away. That is a significant portion of the cost -- $152. But that is where these costs come from and why the difference is really there.

SENATOR McNAMARA: By the way, Assemblywoman Heck raised a question before. She heard that Pontiac was going to build all their cars to the California standard.

MR. WEAVERSTAD: I can answer that question: Pontiac is a Division of General Motors, and all of its engines come from our General Motors power train organization. So, the power train organization will be the people assigned the job of making these low emission vehicles. If that were the case, it would be across the entire General Motors line, not just Pontiac. But I will point out to you that it is not our intention to make Pontiacs all low emission vehicles. We don't know how to do it right now. Our intention is to meet the standards in California with the mix that California requires. But, Pontiac on its own-- It is not the plan of General Motors that Pontiac will be a lead division with all low emission vehicles.

ASSEMBLYWOMAN HECK: Don't you feel a little bit leery making a statement like that with the Asian and European markets listening to you? (laughter)

MR. WEAVERSTAD: I'm sorry?

ASSEMBLYWOMAN HECK: You don't know how to build a low emission vehicle, is what I'm saying. I was joking.

MR. WEAVERSTAD: Quite honestly, I think you could ask them the question, and they would answer similarly.

MR. DANA: I think you have to understand. The point we are trying to make here is, every manufacturer in a very competitive market -- and that means all the importers, as well as GM and Ford -- because of California's requirement, will do their best to achieve what California has set out for us. We all want to compete in the marketplace and sell cars.

Right now, I don't know of anybody -- any manufacturer, foreign or domestic -- who knows how to reach the low levels that California wants us to meet. I think we could all say that the TLEV levels are something that are achievable at this point in time. I am not saying that there won't be some technological breakthrough three years, five years, seven years from now. That may happen. We don't know that right now. What we know about technology right at this point in time, in the time frame that CARB has set up for us-- We don't know how to get there.

MR. WEAVERSTAD: That is not to say that we won't.

ASSEMBLYWOMAN HECK: I know that. That goes without saying.

SENATOR RICE: Based on these costs, my concern -- and I want to get into the whole cost benefits analysis stuff later-- The costs, just the things that are listed here, okay? Where are we presently making all of these? Are these some of your import items right now? It seems to me that every time we put a car together, whether it is American or what have you, we are starting to bring in these overseas costs. The more demands the Federal government and the rest of us place on you, the more you all have to see how to get them. When you find out how to get them, you wind up going overseas with it, and our U.S. citizens wind up unemployed.

Are these costs right now locked into the American market?

MR. WEAVERSTAD: Not necessarily; they will be a mix.

SENATOR McNAMARA: Continue.

ASSEMBLYMAN KRONICK: I have one more question: Was there any thought-- You're using the California standard in this scenario. Was there ever any thinking about a compromise between, I'll call it the "dramatic changeover" to something, you know, with Jersey on the other spectrum to somewhere in between? Was there that kind of thinking in this process?

SENATOR McNAMARA: You're not allowed a third car, Assemblyman. (laughter) The Federal law allows either the California car, because of their peculiar problems, and/or the Federal car. They could not come up with a third car that would be good for the Northeast. Federal law does not allow it. California legislators were much more effective than those from the Northeast.

ASSEMBLYMAN KRONICK: I guess so.

MR. WEAVERSTAD: I might point out that the 1990 Clean Air Act reduced the tail pipe emission standard from .41 grams per mile to .25 grams per mile. That is the Federal program. It is being reduced at some considerable cost to all of the manufacturers. The intention of the 1990 Clean Air Act was to bring states like New Jersey into compliance. The intention of that reduction was to bring New Jersey and other states into compliance. So that compromise really was the Clean Air Act of 1990.

MR. SCHWARZ: Implicit with the use of the electrically heated catalyst, also is a fuel economy penalty. That energy that Al talked about is only made-- The only source you have on the vehicle for energy is in the fuel tank. You have to use the engine to run the alternator to produce the energy to heat the catalyst. That energy, plus the extra weight added by the system, will penalize fuel economy. That same contractor -- automotive consulting group -- which generated the cost estimate of $1000, estimated that the fuel impact, when you also considered the cost of California fuel, was about $1500 over the lifetime of the vehicle. So, the purchaser of this vehicle has one penalty when he buys it and another as he operates it.

So, what impact might this have on sales? The consultant took a look at that, considered the added cost and the potential for the customer rejecting the technology because he couldn't patiently wait for the start, and estimated that there might be a 10 percent to 15 percent decline in new vehicle sales as a result.

When new car sales decline, there are a couple of impacts. Of course, less vehicles being produced has an impact on employment. But it also has an important environmental impact, because old vehicles emit more than new vehicles.

Dealerships will be gravely affected by an adoption of the program, particularly if adjacent states do not adopt it. One solution that someone not familiar with the dealership end of the business might say, is, "Well, let that dealer order from the factory either a California car or a Federal car." A simple solution. The problem with that is, very few vehicles are sold that way. That is what this exhibit shows. On the order of 90 percent to 95 percent of vehicle sales occur from lot inventory. Only a very small portion are sold by special order. You would know this better than I, I suppose.

SENATOR McNAMARA: That is one of the reasons why I got out of the business. (laughter)

MR. SCHWARZ: Well, yes. Let me finish the point: If you have to keep two inventories on the lot, your inventory cost goes out of control.

We have taken a look at the situation with the inventory, and we don't have big differences at the starting point with the Department. We find that on the order of 26 percent of the 1988 inventory, based on information in the regional ozident model -- EPA's model -- that about 26 percent comes from nature, and about 74 percent man-made. Then when we break down that man-made portion, about 36 percent is from highway mobile vehicles, and 38 percent from off highway and stationary. When you take the nature out of it, that means about 50 percent of the man-made emissions are coming from highway vehicles. This is for volatile organic compounds.

SENATOR McNAMARA: It's nice to see one point of agreement.

MR. SCHWARZ: Sure, sure. Now, it is important to recognize that -- to look further and see where those emissions come from. They come from evaporation, as Nancy described earlier, and from vehicle exhaust. This is roughly the split: about 26 percent from evap; 9.5 percent from exhaust.

SENATOR McNAMARA: Are you going to go further into that, because that is hard to believe?

MR. SCHWARZ: I am not sure we do go into that further.

SENATOR McNAMARA: If you would get some supporting data, and submit that through the Chair--

MR. SCHWARZ: Okay.

SENATOR McNAMARA: --because that is a hard number to swallow, with our own limited experiences with automobiles.

MR. SCHWARZ: Yes. The Federal EPA would have found it a very hard number to swallow five years ago, but all kinds of new discoveries were made in this area. We realized that vehicles operate at higher temperatures than the Federal test procedure was set up to represent, and that the Federal test procedure only required you to control evaporative emissions through one warm day, where it goes from, say, 60 degrees to 84 degrees. They found that a significant number of vehicles sit at rest for several days. In a family, often two cars get used all week, and then on the weekend husbands and wives do things together, and one of the cars sits in the garage making evaporative emissions. Vehicles at airports while you are on a business trip make evaporative emissions.

So, it is being addressed, now that the problem has been identified. The Federal government and California have parallel programs which will correct the evaporative emissions problem. It will be great for the environment. It is the single most effective measure we can take on new motor vehicles.

This is the results of a (indiscernible) made rerun of the contractor analysis -- the Pechan analysis. We changed very little in it. It compares vehicle emissions from 1988 base year to the year 2010. We find that the Federal program, with enhanced inspection/maintenance, will reduce emissions from the average motor vehicle by 88.5 percent, and that adding the increment from the California emissions will take that number up to 90.1 percent.

If you look at the bars in 2010 under the two scenarios, you notice that the portion attributed to evaporative emissions, shown in red, is identical under the two programs, whereas there is a difference in the exhaust emissions. Under the California program it is lower. But I have to point out here that this analysis assumed California fuels in New Jersey.

MR. WEAVERSTAD: I might point--

SENATOR McNAMARA: If you go back-- Your chart showing 26 percent is evaporated emissions really would represent 75 percent of the car emissions.

MR. WEAVERSTAD: That is correct.

SENATOR McNAMARA: DEP's chart shows the total of car emissions being 36 percent, and I assume with the Federal formulated fuel. Nancy, is that correct?

MS. WITTENBERG: (speaking from audience) Yes, Federal-- (remainder indiscernible; no microphone)

SENATOR McNAMARA: Now, so we can try to get one apple looking something similar to the other apple, and we are apart by some 40 percent already-- Using the Federal formulated fuel, what does that do to your percentile?

MR. WEAVERSTAD: It doesn't do anything to our percentage.

SENATOR McNAMARA: Because you used the California fuel in this?

MR. WEAVERSTAD: The number we are showing here is the 1988 inventory's, prior to the reformulated fuel.

SENATOR McNAMARA: Oh, okay.

MR. WEAVERSTAD: All right. Now, we are going to show you a slide further on where you will be in 2010, where it will be reduced. Our numbers actually come from EPA modeling techniques. They mention--

SENATOR McNAMARA: Well, so do--

MR. WEAVERSTAD: They use Mobile 4.1; so do we. We also use a modified version of Mobile 4.1, which we expect to be similar to Mobile 5.0 for our 2010 estimates. One of the things we would be happy to do is, we would be happy to bring our modeler down to go through all of the details of what numbers we chose, and why we chose them, or we could send them to you in writing, if you would prefer.

SENATOR McNAMARA: Does DEP have that already, Nancy?

MS. WITTENBERG: (speaking from audience) Do we have-- I'm sorry.

SENATOR McNAMARA: The information that he just discussed from their modeling program?

MS. WITTENBERG: No.

SENATOR McNAMARA: Would you please submit it through the Chair so we can then give it to the DEP?

MR. WEAVERSTAD: We would be happy to.

SENATOR McNAMARA: Thank you.

MR. SCHWARZ: The report by the consultant, E.H. Pechan, contracted by N.E.S.C.A.U.M., and on which the DEPE proposal depends, was very controversial. We commented on an early draft. Major revisions were made to it. The draft still had problems. A fellow named Tom Austin, who is the Senior Executive of Sierra Research, Inc. in California, the former Executive Officer of the California Air Resources Board, did an earlier analysis for the Northeast states, and in response to a letter from the administrator of N.E.S.C.A.U.M., provided feedback on the program. As you can see from the material you were given, he expressed great concern about any state relying on this report in order to make a decision whether to implement the program.

SENATOR RICE: I don't believe, Mr. Chairman, we have that particular document.

ASSEMBLYWOMAN OGDEN: No, we haven't.

SENATOR McNAMARA: That particular letter that you just-- That is not part of your packet.

MR. SCHWARZ: I'm sorry. We will supply it to you. Would you like it on the screen longer? Or, would you like me to read it to you?

ASSEMBLYWOMAN OGDEN: No.

SENATOR RICE: We'll read it.

MR. SCHWARZ: Okay. This is what the output of the models we have all been talking about looks like. That is a Mobile 4.1 model, or EPA's updated version that will come out this summer of Mobile 5.0. It gives you an average gram per mile number for the motor vehicle fleet by calendar year. We exercised the model with the updates that EPA is working on to make it 5.0, and we ran two scenarios: EPA deterioration rates; California deterioration rates. The reason this is important is because the contractor -- Pechan -- ran two scenarios: with optimistic deterioration rates, that is saying that emissions continue to stay low over the life of the vehicle; and pessimistic deterioration rates. Well, those pessimistic deterioration rates are right in line with what the Environmental Protection Agency projects for this kind of technology, and they have said that in response to direct questions at EPA/industry meetings.

EPA ultimately is in the judgment seat on this. The State must submit its State Implementation Plan to EPA for approval, and if it has benefits that EPA does not accept, then it won't bless the report. It will require a revision to the report. This shows that there is very little difference between the green line -- the Clean Air Act -- and the California program, even with the optimistic deterioration scenario.

ASSEMBLYWOMAN OGDEN: Is there a way of us not talking about apples and oranges? We're talking about grams per mile and the DEPE is talking about tons per day.

MR. WEAVERSTAD: We have that at the end of the presentation.

MR. SCHWARZ: Looking forward to the year 2010 and doing a projection on these inventories, we would expect that motor vehicles--

SENATOR McNAMARA: Excuse me. There is a request from one of our members.

SENATOR ADLER: Can we have an answer now? The Assemblywoman asked a question.

MR. WEAVERSTAD: Okay. The tons per day is nine tons per day under our calculation.

MR. SCHWARZ: In 2010.

MR. WEAVERSTAD: In the year 2010.

SENATOR McNAMARA: Compared to what?

MR. WEAVERSTAD: The Low Emission Vehicle Program, in the year 2010, in the State of New Jersey, will provide a benefit of nine tons per day.

MR. SCHWARZ: We'll do some comparisons in a few moments, since you said, "Compared to what?"

SENATOR McNAMARA: As opposed to the Federal car, or--

MR. WEAVERSTAD: As opposed to the Federal car.

MR. SCHWARZ: Yes.

SENATOR McNAMARA: But what about opposed to the California car which is being proposed by the DEP?

MR. WEAVERSTAD: That is what the nine tons per day improvement is. The Low Emission Vehicle Program would provide nine tons per day benefit to the State of New Jersey over the Federal program.

SENATOR McNAMARA: Oh, okay, over the Federal program. Okay.

MR. WEAVERSTAD: Those two lines in 2010 where you saw the largest difference is equivalent to nine tons per day.

SENATOR McNAMARA: Okay.

MR. SCHWARZ: We have an exhibit that shows vehicle emissions between 1988 and 2010 coming down approximately 90 percent under either scenario. As a result of that, in the year 2010, evaporative and highway exhaust emissions constitute 18 percent of the inventory.

MR. WEAVERSTAD: It is important to recognize that a big portion of that is evaporative emissions, and that evaporative emissions are not something that are on the table here. The program being proposed does not take different action on evap than the Federal program.

MR. SCHWARZ: So we are affecting only that 5 percent wedge. When we take out of that consideration of vehicles that have prematurely broken or been tampered with, and when we take out the fuel effect, even from the federally reformulated gasoline program, we are left with a sliver of the inventory of about 2 percent that can be affected by the Low Emission Vehicle Program.

We have busily gone about the business of trying to analyze the information that was presented a week ago by the Department. On the top of the slide is a look at DOC inventory projected for New Jersey in the year 2005. We have 1990 on the left side; 2005 on the right. We have merely accepted, for the purposes of this analysis, the DEP's assessment of the total inventory in 1990 from man-made sources. We inserted a biogenic number that is very close to what we saw the Department present today.

In the year 2005, we show a difference in the man-made emissions of 85 tons per day. Slide it upward, and the lower portion of this slide shows where that comes from. We have found in discussion at staff level of the Department that in analyzing Tier I -- that is the name for Federal Clean Air Act changes to the motor vehicle program -- the impact of on board diagnostics was overlooked, which is an impact of about 10 tons per day, and that nothing was booked for evaporative emissions, where the most progress is going to be made on motor vehicle emissions. That estimate, based on EPA's model, is about 74 tons per day.

In terms of reformulated gasoline and inspection/maintenance, we did not reanalyze the Department's data. In the upper portion of this page, we use the 58 and the 74 numbers the Department used. We believe there is a likely benefit from Federal Tier II, a slight one, in the year 2005.

On inspection/maintenance, we would point out that this, we understand, is a Level III I/M program. EPA has outlined options and there is one option that could net greater reductions than the 74 tons per day.

SENATOR ADLER: Before you turn the page, I lost you in the very first pair of numbers. What are import diagnostics?

MR. SCHWARZ: It's "on board" vehicle diagnostics. Okay? They are a system that will be installed on all Federal and California vehicles on a phase-in basis -- 1994, '95, '96 model year -- that require that the electronic system on the vehicle identify when a component has gone bad, or when a calibration has drifted, and will light a light on the dashboard in the vehicle so that the customer can get quick repair.

MR. DANA: If I may point out, some of you may have cars now which have little "check engine" lights on the dash. This is a lot more sophisticated system we are talking about than that current "check engine" light.

SENATOR McNAMARA: What is it going to do, shut off the car after it drives another 100 miles? I'll tell you what: I have gotten into cars where I have seen that check -- not my own, but where other people were driving and I said, "Gee, aren't you concerned? Your red light is on." They said, "No, it's always on." (laughter)

MR. DANA: We understand. It is just important to understand that the difference here is significant. There is a lot of very, very sophisticated technology being developed to look at things like misfire and other problems with vehicles. We are going to build systems in new cars to do that in the future.

SENATOR McNAMARA: Hold it for a minute, because I don't think the Senator is finished with his question.

Your assumptions are also taking in the Federal Tier II car?

MR. SCHWARZ: That's right.

SENATOR McNAMARA: Which we are not assuming--

MR. WEAVERSTAD: It's the smallest benefit on the chart. The furthest right column shows what we would include for Tier II. We believe the State of New Jersey shows no benefit for that.

MR. SCHWARZ: It doesn't have a big impact here, but we would argue that Tier II belongs in the baseline. The reason for that is, the way the Federal statute is written it is the default outcome. If EPA does not take some action, then the Federal Tier II happens.

Another reason it belongs in the baseline for consideration of this, is that you can depend on it because EPA must make its final decision in 1999. If it is going to decide that, "No, the nation does not need this second tier of Federal vehicles," then clearly a state at that point could plug that hole -- that emission reduction that they were depending on -- by adopting the California Low Emission Vehicle Program. So it is there, in any event.

MR. DANA: Recognize, too, Senator, that the small portion here is partly due to the fact that this is the year 2005 analysis. The Federal Tier II standard, as a default, would go into effect in 200--

SENATOR McNAMARA: In 2007, I think, isn't it?

MR. DANA: In 2003. So that represents only a small portion of the turnover of the fleet. It will get larger over time.

SENATOR McNAMARA: Senator Adler, did you want to proceed with questions?

SENATOR ADLER: I am going to ask somebody to explain it in more detail. I don't want to hold up the rest of the Committee.

SENATOR McNAMARA: Okay.

ASSEMBLYWOMAN HECK: May I have some clarification on a point?

SENATOR McNAMARA: Yes.

ASSEMBLYWOMAN HECK: On the VOC inventory in urban New Jersey you talked about a stationary and off highway evaporative emissions of 38.0 percent. Am I correct?

MR. SCHWARZ: Okay.

ASSEMBLYWOMAN HECK: I'm sure that is what you were talking about. Then on this particular piece, you mentioned that you see solutions coming more quickly in the evaporative emissions area. Am I correct? Did I hear that correctly?

MR. SCHWARZ: That is correct.

ASSEMBLYWOMAN HECK: What are you doing, or what kind of a time frame are we looking at for solutions to that particular problem?

MR. SCHWARZ: That particular problem-- The new test procedures and standards that will bring about the major reduction in evaporative emissions will be phased in in model years 1995 through 1998.

ASSEMBLYWOMAN HECK: Nothing sooner than that?

MR. SCHWARZ: Neither in California nor federally. That is the same timetable at both places.

ASSEMBLYWOMAN HECK: But you have recognized it. You have pinpointed it, but you don't have anything that you could put into action more quickly?

MR. SCHWARZ: No. That is kind of the way the business works; when you discover something major, it is not easy to fix. That is why the lead time is necessary. We will have to do things like insulating the fuel tanks to keep them from getting hot. We will have to have a much more sophisticated system on the vehicle for pulling the stored vapors from the evaporative canister into the engine.

A quick explanation of how this system works is, vapors are driven off the fuel tank, either by the temperature change during the day or by operation of the vehicle on a hot day. They are routed to an evaporative canister, a fairly small one today; a very large one when we get into these regulations. Then, you can't indefinitely keep storing vapors in a canister. They will just spill out when they reach a point. So you use the engine as a vacuum pump. You route the vapors from that to the engine so that it pulls them in and burns them.

ASSEMBLYWOMAN HECK: Do you have a guesstimate as to how you will impact on that solution? I mean, will it be a 50 percent reduction in evaporative emissions? What are you looking for as a goal -- a reasonable goal in reduction?

MR. WEAVERSTAD: We can show you a rough estimate with one of our charts. I would point out that those things that are easily done will be done. For example, our purge rate -- the rate at which we empty the canisters -- is being improved. Things that we have learned. When we went to test the vehicles in actual use, we found problems. Certain designs of canisters have been found to be better than others. We are implementing those sooner.

The point is, in order to do the entire implementation and meet this more severe test does take us some evaluation time, to make sure it works.

ASSEMBLYWOMAN HECK: I also have--

MR. SCHWARZ: You've got your answer.

ASSEMBLYWOMAN HECK: --one other question: Is the industry looking towards educating the consumer in reducing emissions? In other words, are you giving data when you sell a new car that emissions will be lessened if you do such and such; if you have your car serviced; and such and such a checklist examined? Are you doing that now?

MR. WEAVERSTAD: Yes. It is in the owner's manual.

SENATOR McNAMARA: A good salesman will do it to try to sell his car over the competitor's product.

The canisters you are referring to are not the ones that the Bush administration just said--

MR. SCHWARZ: No. A good question. We need the opportunity to clarify that.

SENATOR McNAMARA: Okay. I just wanted to make sure.

MR. WEAVERSTAD: These are canisters that are already on your car. What we have found is that certain designs work better than other designs. That is what we are talking about.

This is the difference you are talking about. The bar that is in red-- That is where we were in '88. The bar in red under 2010 is where we plan to be in 2010. So that is a dramatic reduction.

MR. SCHWARZ: The answer is somewhere between 98 percent and 99 percent. The 2.6 drops to .19. So the evaporative emissions are really going to be reduced.

ASSEMBLYWOMAN HECK: Significantly. Thank you, Mr. Chairman.

MR. DANA: Understand, too, Assemblywoman, that CARB has already adopted their procedure. EPA is in the process of just now finalizing its regulations that we would have to operate from to control evaporative emissions. So it is very close to being in the final stage. Again, it would go into effect in '95, or as soon as we could possibly do that.

ASSEMBLYWOMAN HECK: Thank you very much.

SENATOR McNAMARA: Okay, Ron.

SENATOR RICE: Hey, you know, that is why I get paid; to comment on your last question. I'll stay here until 12:00 at night. Is import diagnostic the strange thing that is going to give us the thing that is going to stay red all the time? Import because it is going to be imported?

MR. SCHWARZ: No, it is "on board." That is the word, "on board diagnostic."

SENATOR RICE: All right, with the on-board piece, these electronic things usually aren't done as well or as "cheaply" here. Is that another one of those items that may very well generate jobs in an overseas market? Or because the Asian community is doing a good job of pretty much owning California, so economically it is going to be produced there, would you know? Where do you get your diagnostic--

MR. SCHWARZ: Again, it is a combination. The electronic control module on Ford vehicles is designed and produced by the Electronics Division within the company. In fact, we sell them to Mazda, to a Japanese manufacturer. But there are a number of sensors required in that system, and the decisions of where to source them have to be made on the basis of the capability of the various vendors and the cost of the component. So, again, it will be a combination of imported and OEM designed parts.

SENATOR RICE: Mr. Chairman, before we go any further, I would just like to let the Chair know -- the Co-Chair people -- that I apologize for the type of questions I asked, and so many, but that is just the way I am by nature. We have different interests in this sometimes; sometimes common ones. I don't come to rush myself home on a Senate day.

SENATOR McNAMARA: Senator Rice, I have served with you long enough to let you know that I can vouch to every Committee person--

SENATOR RICE: You've been good.

SENATOR McNAMARA: Don't worry about your rushing.

SENATOR RICE: Sure. I didn't want you to decide to feel uncomfortable with the things I said.

SENATOR McNAMARA: No. I told them to calm down. (laughter) Please continue.

MR. SCHWARZ: Okay. Taking that information that we had on the differences in the Federal program, particularly on evaporative emissions and on board diagnostics, we find that the DEPE analysis, which would indicate that all of the Federal measures and the list of proposed options that they went through last week, which included the Low Emission Vehicle Program, leave you short of your required reduction in the year 2005.

Now, making the corrections that we have, on the right side of the page is the redo of the analysis. We see that the mandatory portions net you 467 tons per day, or a delta of 85 additional tons over what was in the DEPE analysis. On the proposed options, we did not do a reanalysis, except on the Low

Emission Vehicle Program, where we would estimate that in 2005 it has a benefit of nine tons per day, rather than the 25 that the Department said. Part of that comes from moving the baseline. We, of course, have found reductions in the Federal program that they had not recognized. So when you are comparing it to the California program, the differential shrinks.

The point of all this is, we think it is wrong to say that every reasonable proposed option can be adopted and you would still fall short of objective. We think there are a lot of good reasons why the Low Emission Vehicle Program should not be adopted right now, and we think it doesn't look like indefinite postponement of that. Never doing it makes it impossible to meet the 2005 objective.

SENATOR McNAMARA: Senator Adler?

SENATOR ADLER: You lost me again on this chart. Can you explain to me again how, assuming all the same federally mandated changes are made, you get another--

MR. SCHWARZ: Eighty-five.

SENATOR ADLER: Eighty-five, is it -- mostly evaporative--

MR. SCHWARZ: Yes, it's from the first page. There is a 74 difference on evap.

SENATOR ADLER: And 10 from the on board, not in board necessarily--

MR. SCHWARZ: Right.

SENATOR ADLER: --diagnostics.

MR. WEAVERSTAD: And one from Tier II.

MR. SCHWARZ: One from Tier II adding up to 85.

Are there any more questions on this?

SENATOR McNAMARA: Yes. Is it just those two items that you discussed that would be different than what DEPE included, as to what you are including to get to that? I mean, that is a substantial difference.

MR. WEAVERSTAD: That is correct.

MR. SCHWARZ: On a motor vehicle program, okay, because we did not dig into the stationary source things. That is not our expertise. So we don't know if there are differences in what you can attribute to reasonably available control technologies, or trip reduction.

SENATOR McNAMARA: But we are only talking about the car.

MR. WEAVERSTAD: That is correct.

MR. SCHWARZ: Right.

SENATOR McNAMARA: Can you add to that?

MR. WEAVERSTAD: And we did not take a look at what additional benefits you could get from inspection/maintenance if you went to an I/M 240 type test. We didn't have time to do that. We got the baseline information and began working on it on Tuesday, so that is all our computer could click out in that period of time. We did not analyze any of the stationary source. We only analyzed the mobile source portion, and of that, we did not look at reformulated gasoline, and we did not look at I/M. We assumed that-- We just looked at a couple of oversights that we saw immediately. There may be others in there. I can't say.

SENATOR McNAMARA: I hope you will be cooperative with Nancy from DEPE, giving her some of this information.

MR. SCHWARZ: You know, we want to do that. We want to have people at the level of the analysts who generate these numbers between the industry and the Department to work together. Where we have had difficulty in the dialogue is that they tend to not want to hear our thoughts on the merits of the program. They say, "That decision has been made. Don't try to talk to us about that."

SENATOR McNAMARA: Well, let's say this: I would say that both sides most probably come together with the assumption that it is an adversarial position. I would hope that through this process we are going through, that we can eliminate that and try to work towards what is going to be best for New Jersey in the most cost-effective way for the citizens of New Jersey.

MR. WEAVERSTAD: We agree.

MR. SCHWARZ: That's what we're for.

SENATOR McNAMARA: So, you know, get beyond the personalities. I am convinced that, you know, DEPE will listen. It is a matter of just getting that first foot in the door. Assume now that you have the foot and the shoulder in.

MR. WEAVERSTAD: We are available and ready at any time.

ASSEMBLYWOMAN OGDEN: I would just like to review again, just to make it totally clear to everyone, the difference in the 85 tons per day, because that is really significant. That is based on the greater control of the evaporative emissions. And there was a second thing?

MR. SCHWARZ: On board diagnostics.

ASSEMBLYWOMAN OGDEN: Okay, those two things.

MR. SCHWARZ: That is, the benefit of that.

UNIDENTIFIED MEMBER OF COMMITTEE: Go to the previous chart. That breaks it out.

SENATOR ADLER: Could we have back the information about the evaporative emissions?

MR. SCHWARZ: Sure.

SENATOR ADLER: I think we all want that assumption to be true. I think we would love to have--

MR. WEAVERSTAD: Yes, it is in all our interests.

SENATOR ADLER: I think that is what we really need; that 74 tons per day. That is such a huge-- I mean, the 10 extra, the on board diagnostic-- Again, I apologize for saying "inport," which set my colleague off, quite appropriately, I think.

SENATOR RICE: I want to ask the same question.

MR. SCHWARZ: Yes, sir, it is still a valid question.

SENATOR ADLER: All right. Those two, the 74 and the 10-- I mean, the extra one is significant also; every ton matters. But those two are such big factors that we want them to be true. We need your information so we can be comfortable knowing it is true.

MR. WEAVERSTAD: Okay, no problem.

MR. SCHWARZ: The pie charts that we showed you-- We understand them, and can explain them step by step, but in describing it in such a short time, it could lead to confusion. You might wonder, how did we go from 36 percent of the inventory in '88 down to only 1.8 percent being effective in 2010 by the Low Emission Vehicle Program? The biggest part of that is the retirement of older cars. By 2010, a lot of the high-emitting vehicles that are on the road today will not be around. There is an opportunity in speeding up the retirement of those vehicles. Based on registration data, we found in 1990 that 30 percent of the cars were responsible for 61 percent of the hydrocarbon and CO emissions; 45 pervent of the NO_x emissions. This is a problem, and it is a problem that is getting worse.

Looking at how the fleet has aged in the State of New Jersey: From 1970 to 1990 -- this is not on a graphic; I'm sorry -- the vehicle population in New Jersey has grown by 59 percent during that 20-year period, but it has not been uniform growth. The eight-year and newer segment of the vehicle population has grown 23 percent, whereas the nine years and older segment has grown by 106 percent. So the aging of the vehicle fleet is an environmental problem.

ASSEMBLYWOMAN OGDEN: How would you suggest we speed up taking those cars off the road?

MR. SCHWARZ: Well, scrappage programs, as outlined by EPA, are one way. Having a tough policy on waivers in the inspection program: States generally have had a level of expense after which the customer doesn't have to clean up his vehicle. That tends to give him a break and let him keep driving the dirty vehicle, whereas if he really had to pay what it would take to bring it into line, it might push up his decision to buy, not necessarily a new car, but a newer car, you know, which would be lower emitting.

ASSEMBLYWOMAN OGDEN: But probably most of the people who have these older cars can't afford to buy the newer ones.

MR. SCHWARZ: Well, that is why I said, "not necessarily a new car," because the benefit you get through this is a trickle through the system of the person with a 20-year old car buying a 10-year old car, and that 10-year old car person buying a five, etc. Certainly the person who has a real high emitter that is 15 years old generally -- except for my dad; that's the way he does it-- But generally that person wouldn't be able to then buy a brand-new car.

SENATOR McNAMARA: See, how you gave one of the best arguments I have heard for forcing manufacturers to improve the air quality of the vehicle, because we would not be in this mess if they started 15 years ago. I'll just throw that on the table.

MR. SCHWARZ: Well, you know, today's cars, before any of this, before the Federal action or the proposed New Jersey action, are 96 percent cleaner than the older ones. So you get a very big benefit by replacing an old car with a new car, and you get a very small benefit by forcing that new car to be somewhat cleaner yet.

SENATOR McNAMARA: Maybe in the states in the Northeast you could offer a $2500 rebate for any car that is nine years old.

MR. SCHWARZ: Yeah. That would help for as long as we stayed in business. (laughter) You know, of course, that is essentially how the industry has been operating for a few years, so--

SENATOR McNAMARA: I didn't think it was anything innovative before I got--

MR. SCHWARZ: It was almost hard to find a car that didn't have $1000 taped to the dashboard in the form of a rebate, but we haven't been real profitable going about business that way.

SENATOR McNAMARA: I know, unfortunately. Go on.

MR. SCHWARZ: Okay. We are not alone in our view that a decision to go to the California standards has a lot of uncertainty about it and may be premature. Back in November, EPA's Assistant Administrator for Air Issues, Bill Rosenberg, spoke of how there is a great opportunity from inspection/maintenance enhancement and relatively little opportunity from bringing in exotic, somewhat cleaner vehicles under the California program.

This is a point that was addressed by the DEPE. We are glad to see it, because we have not had success in getting other states to look at this issue of the timing of implementation. When you adopt the California program, you join it in progress, if you will. If 1998 is the first model year in which you are going to join in, then you have to be at California's level for 1998. It does not restart itself.

Now, when you couple this information with the fact that the program starts up fairly modestly; it starts off affecting 10 percent, 15 percent, and 20 percent of the new vehicle population, you realize that there is no urgency to the implementation. You get the vast majority of the benefit, such as the benefit is, by adopting the program and implementing on the order of the year 2000. This analysis just shows that when you run EPA's emissions model, the lines come out on top of each other, whether you implement in 1995 or 1997.

We want to share the Department's-- We want to see the Department's analysis that estimated, I believe, five tons per day as the difference between a two-year implementation difference. That does not seem possible to us, and we would like to understand it.

SENATOR McNAMARA: Well, Nancy is a representative of the Department. I would like to see that information shared with the manufacturers, because that is a very important question.

SENATOR RICE: Mr. Chairman--

SENATOR McNAMARA: Apparently Connecticut came to a different conclusion. I don't know what they were looking at, but they came to the conclusion that if they didn't go in until '98, the difference would be so slight that it wouldn't make a difference. So, you know, I would like to find out what the nuances are.

MR. SCHWARZ: Our point in bringing that up was not that implementing it for '98-- That is not a problem to us. The point is, consistent with what we have said earlier, there is tremendous uncertainty. EPA has not officially ruled on what kind of benefits it is going to give. So, it warrants waiting. If you lose a model year or two while you are waiting to make your decision based on better information, as shown on the previous slide, it has essentially no impact.

SENATOR RICE: Mr. Chairman, through the Chair-- Could we request, through you, that all the information and data and analytical stuff that administrations bring to us to kind of more or less justify some of their views, be sent to the interested parties? It seems to me that there is a spirit on one side of wanting to cooperate locally and at the Federal level, but you can't find out-- You know, you can't balance and analyze your stuff with someone else. If not, can they give it to us, and we can share it? It seems to me that it is public information. I mean--

SENATOR McNAMARA: Assuming from the testimony of the Commissioner the other day and the testimony from Nancy in response to the question I asked her before, I don't think that is a problem. Is it, Nancy? That's not a problem?

MS. WITTENBERG: (speaking from audience) It is not a problem.

SENATOR McNAMARA: You know, it may have been, Ron. I am not saying there wasn't a problem, but now it is not a problem. If either group -- the auto manufacturers or the DEPE -- find out that it is a problem, you can address the Chairs, and we will address the problems.

MR. WEAVERSTAD: I don't think it is fair to characterize it as a problem before. We have talked back and forth, and I believe the working level people have a fairly good relationship. I think what the problem may be as to why the differences are, is that the Department had to develop regulations and work on what their calculations were, and while they needed some of our -- or were receptive to our input, they wanted to be able to do it without any bias that we might add to it.

So, I don't think there is a problem, either.

SENATOR McNAMARA: All right. Whether we call it a problem, not a problem, or a problem that is a problem, or it is a small problem-- I really don't care what you call it. What we want is your working together and opening a dialogue, and seeing to it that the critical information passes from one to the other. You certainly know there is interest in this administration, and that putting New Jersey at a competitive disadvantage with anybody-- Certainly the Legislature feels that very strongly. That is why we are involved.

MR. SCHWARZ: This exhibit is one that there will be no controversy over. It is the timetable required in the Federal statute for submitting an implementation plan. It doesn't really say New York City. It must say "New Jersey." I would not have done that. But the information is the same. The key thing is the last block on the exhibit: "Ozone

Standard Attainment Demonstration in Post-1996, Requirements for Further Progress Plan." That aspect of the plan is due in November 1994. So it is not critical to make that decision about the Low Emission Vehicle Program. The Low Emission Vehicle Program is a maintenance program, long term, and might have some small effect by the 2005 or 2007 deadline. So it does not belong in the earlier portion of this plan. It is a November '94 kind of decision.

Just two points that I wanted to respond to, in addition, from earlier testimony: The two-year review -- the biennial technology review that California will undergo -- was described as making the program fail-safe and providing a bailout. Several Senators and Assemblymen seemed to pick up on the fact through Q&A that nonetheless it puts that decision in the hands of California. We started off with the air quality data in southern California versus New Jersey. It is important for you to recognize that they are going to make their decisions about what is a big enough risk to take based on that context; that they have an intransigent ozone problem that just about defies solution because of their geography. I don't think a State in the Northeast with a much less severe problem necessarily wants them making a decision on what is fail-safe.

We also heard assurances that the vehicles that would result from the program would have minor modifications to the cars we are all used to. We don't know that. I don't know how the Department knows that. It is a fuel neutral program that allows us to certify on any of those four fuels, or any other ones that would be identified. If we find that we are going to have to put a compressed natural gas system on a vehicle in order to comply, as awful as that is from a customer's standpoint, we are going to do that. For the State not to have a plan to then require that those fuels be available in the marketplace, leaves the customer in a serious problem there, because he has a compressed natural gas vehicle and very few places to find fuel for it. So, it is simply too soon to tell the minor modifications to the car we are used to.

MR. DANA: One point on the modifications issue is, we have not talked at all about the California ZEV requirement -- zero emission vehicle -- and that is a significant issue. Under California's regulations, starting in 1998, manufacturers must make 2 percent of their fleet zero emission vehicles. To our knowledge right now the only vehicle that meets that requirement is an electric vehicle. Okay? Now again, we don't know what technology is going to do in five years. We may find a magic battery some day down the road. But assessing what we know now about batteries and electric vehicles, we find that a significant problem in terms of marketing; trying to sell someone a vehicle which, even as nice as the one where GM has designed the impact, still has a very limited range, and would have problems, particularly more so in a northeastern climate where it is colder, than it would in southern California. When you add to that vehicle the need to defrost a windshield or heat the car on a winter day, that directly affects the vehicle's range and eats time off of that battery charge.

That is part of the California program. We do not know how to solve that marketability issue yet. Hopefully, we will, but if we don't that becomes part and parcel of what this State picks up from California.

MR. WEAVERSTAD: If the California program doesn't change, we are only 10 years away from having to find a customer for a pure electric vehicle for each nine that we can sell a more conventional vehicle. That's hard for us to envision; one out of 10 customers buying the electric vehicle, with its limitations. Then, as Greg pointed out, in the Northeast, the need to operate the defroster and the heater will shorten the range of the vehicle by as much as 30 percent, and will bring a 100 mile range down to a 70 mile range. Then it is that much harder to find one customer for each nine that you want to sell a more conventional vehicle to.

ASSEMBLYWOMAN OGDEN: You know, I think this is an area in which we all need to work together. Clearly, from reading the articles in the "Smithsonian" and The New York Times, etc. about what the team in General Motors is doing in connection with an electric car, the impact is going to be, certainly initially, much more expensive. So we at the State level are going to have to explore incentives to encourage people to buy those.

But on the other hand, I think the automobile manufacturers are really making a mistake if they are saying, in a way that they said, say, 10 years ago, that they can't produce the air bags, that it would be too expensive, too cumbersome, take up too much room, and now they are saying, "Buy our cars because we have two air bags--" I think this also, in spite of the problems, represents a real opportunity for the American automobile industry. I am really pleased to see that General Motors is moving in the aggressive fashion that they are with their impact car.

MR. SCHWARZ: I agree with what you're saying. The problems are so basic on the electric vehicle -- that limited range and very high replacement cost for the battery, the limited life of the battery -- that present technology, in fact that projected five-year technology around the time we are going to introduce this-- The batteries only last about 30 months and they cost several thousand dollars to replace. But we are attacking that problem. You may have read about the U.S. Advance Battery Consortium which has been launched.

SENATOR McNAMARA: What is the offsetting benefit of not buying gas--

ASSEMBLYWOMAN OGDEN: Nonmaintaining the car.

SENATOR McNAMARA: --and nonmaintaining the car?

MR. SCHWARZ: Oh, I hadn't heard that the electric vehicle would be maintenance free. (laughter) As far as offsetting the costs of the gasoline, that is only a good trade in Europe, like in Italy, where gasoline prices are very high. It doesn't come anywhere close in the U.S. when you offset the gasoline price. But the Advance Battery Consortium-- The reason I mention it is because it is an example of us doing things in a better way than your air bag example. We have launched the research by the big three, along with the Electrical Power Research Institute and the Department of Energy. There is $260 million devoted to the program by December of '94, and we are attacking those basic problems -- longer life, better performance, lower costs. The program has midterm and longer term goals. We hope to have pilot plant production of vehicles to the midterm goals. The goals, frankly, are confidential. The information is only available to the participants, but we would have pilot production of much improved batteries, hopefully, in 1994.

So, we are really going after this program, because it is staring us in the face. It is only 10 years away. Well, the introduction is earlier than that, but I mean that situation of having to sell one for every nine is only 10 years away.

SENATOR McNAMARA: One question on warranties: It is Federal law, isn't it, that the manufacturer has to warranty the emission system for five years, or 50,000 miles?

MR. SCHWARZ: Yes. There is Federal law and California law.

SENATOR McNAMARA: What happens, you know -- and I understand it -- if you design a car that is designed to use a specific fuel, which would be the California car with the California fuel, and you use -- and we are not going to adopt a fuel standard, so you will be using the Federal fuel-- What change does that-- Is that still going to be warrantied by the manufacturer, even though it is not designed, you know-- It is designed to use one fuel; it is going to be using a different fuel. How does that impact on a warranty?

MR. SCHWARZ: We have to learn more about the long-term impact of operating on the two fuels. We are going to have to step up to that and find out what that is, so that we know that when components tend to fail in the Northeast at a different rate than they do in California, we can defend ourselves and say, "That vehicle was not properly maintained and used. We do not owe you a remedial plan," or "We do not owe you warranty coverage." Because if it comes down to that, we can determine that it is fuel related. It is simply not right, not fair, that we should have to warrant the failure of those components.

SENATOR McNAMARA: But then how do you meet the Federal law? Don't they require a five-year, 50,000 mile, on all emission warranties?

MR. SCHWARZ: Well, we would not-- No. Both of them are exempted from proper maintenance and use, both Federal and California.

SENATOR McNAMARA: Well, if the State is designating that the use is the Federal mandated fuel and we are using the California car, I don't think you can tell the customer if he can only buy the Federal mandated fuel that he is misusing the car if he buys that fuel. He is not going to be able to buy any other fuel.

MR. WEAVERSTAD: What you're asking is really a legal question. We're engineers. All I can tell you is that our attorneys have indicated that it is very defensible to avoid a performance warranty recall by saying that it was not used with the fuel it was designed to operate on. We have past precedent where that has actually happened on some evaporative emission recalls. That is what we are talking about here.

Warranty is even more complicated that just that, though, because the California warranty involves different components and different mileages than does the Federal warranty. So, when you, as a former dealer, would send your service write-up man-- As the car drives in, he would have to check the license plate, the pedigree of the car, to determine which components are warrantied and for how long they are warrantied.

SENATOR McNAMARA: After being a dealer and getting caught with eating so many warranty and policies, we ran a pedigree on every car by using the serial number. That is nothing new, just an added expense that any dealer who is in business has to incur.

MR. WEAVERSTAD: It's a complicated process, and it will be much worse.

SENATOR McNAMARA: Oh, believe me it is.

As engineers, what is the impact on emissions? Since California is going to check their car, or certify their car with their particular fuel, and we are going to use the Federal fuel in their car, what is the variable on the emissions?

MR. SCHWARZ: The emissions, based on California's goals for reduction with their fuel and the Federal goals for reduction with their fuel-- In the early going, when New Jersey would be operating on the first round of Federal fuel, the emissions would be about 30 percent higher from the California car operated here than the California car operating in California. Later on, when the Federal government takes its second step in improving the Federal fuel, that would reduce to about 15 percent.

SENATOR McNAMARA: So, is that factored into your chart where the lines lay right over each other?

MR. WEAVERSTAD: Yes, it is.

SENATOR McNAMARA: That is just the tail pipe emissions, right?

MR. WEAVERSTAD: That is correct.

MR. SCHWARZ: Yes.

SENATOR McNAMARA: Okay. All right, I think we will have to take a break for about a half-an-hour. And we will reconvene--

MR. SCHWARZ: We have one more.

SENATOR McNAMARA: Oh, I'm sorry.

W I L L I A M T E R I L L: I'm only going to take about two minutes, Mr. Chairman.

SENATOR McNAMARA: I'm sorry, I didn't-- We'll stay here even if you take 10 or 15. Be my guest.

MR. TERILL: I am not going to take long. I don't have a slide show. I am from the union. (laughter) We are here today-- I am from the United Auto Workers. My name is William Terill. I am the New Jersey CAP Director, which is the Community Action Program's Director for the State of New Jersey for the United Auto Workers. I am also an International Representative. I represent the Ford Motor Company. I am the Service Rep there at the Ford Motor Company in Edison, New Jersey, which is also my home plant. This is where I originated from in the UAW.

I started in the UAW in the Ford Motor Company in 1960. That's 32 years ago. During that 32-year tenure, we built a lot of California cars in the Ford Motor Company -- a lot of years ago -- and shipped them to California; not here in New Jersey, they were not sold here in New Jersey.

You know, I was born and raised here in the State of New Jersey. In my short period of time -- in my 54 years of being here -- I have seen a lot of plants close up that belonged to Region 9 of the UAW: the MAC trucks; the Cerbol (phonetic spelling) cabs in New Brunswick; MAC trucks of Plainfield; the Studebaker plant. I don't know whether any of you remember the Studebaker plant. We had one here in New Jersey. We just closed up a Nash.

SENATOR McNAMARA: The Ford Delco plant.

MR. TERILL: That's right, the Delco plant just closed; the Mahwah assembly plant. Pennsauken had a parts depot, down in Pennsauken. That's closed. Curtis Wright; Hyatt Roller Bearing-- This is just to name a few plants what were in the UAW that we represented -- our workers -- which are now gone. They are not here any longer.

You know, when I got hired in the Ford Motor Company in 1960, we had a lot of people who came into that plant. If they didn't like the job there, they could quit and go over to General Motors and get a job. That can't happen today. I used to walk around, when I was a Committeeman in the plant, with my briefcase full of applications for people to get jobs. I would see some of my friends and they would say, "Can you get my son or daughter a job?" and I would hand them an application. A short while later they would give me the application back, and I would get them a job. You can't do that today. That doesn't happen. These jobs are nonexistent.

My main purpose for being here today is my concern for employment, and to keep the jobs in New Jersey. My Senator here -- Senator Sinagra -- is from my district. I live in Edison, by the way. That is our main concern in being here today. I am not here to fight against the EPA or fight with the Ford Motor Company or General Motors. I am here because we are concerned about keeping jobs here.

When Nancy made mention of modifications -- that there are going to be some slight modifications-- Modifications cost money. When these costs are put on to the automobile, the customer is going to look at that cost, and he is going to think twice as to whether he is going to buy that car or not. So if we can't sell the cars, it is going to result in the loss of jobs. Before we get into a study, or adopting a California policy, I think this study should include what impact it is going to have on the workers in the State of New Jersey.

How many jobs are going to be lost? What is it going to cost? How is that going to affect the direct labor in the State of New Jersey? We have to stop the hemorrhaging of jobs going out of this State. We can't be a service economy in New Jersey. New Jersey was a manufacturing State. You know, right over here you have a bridge that says, "What Trenton Makes, the World Takes." What does that mean? That means manufacturing jobs. Pretty soon they are going to take that sign down. That sign is going to be gone, because you won't have any jobs left in the State of New Jersey. You are going to be a service State. That is what it is coming to.

If you just look back over the last 10 years at the jobs that were lost in this State -- over the last 10 years -- it's astronomical. We cannot continue in that fashion. Once you lose your industrial base, what do you have left?

That is my concern. The UAW has always been in the forefront of the environment. We are environmentalists in the UAW. We have an Environmental Department headed by one of our Vice-Presidents, Odessa Colmer. That is her job. That is what she does on a daily basis. She travels the entire country trying to solve environmental problems. She testifies in Washington before the Congress about environmental problems. We have adopted many environmental problems. Right here in the State of New Jersey, we were in the forefront for the HELP legislation. A lot of you who were in office at that time remember the HELP legislation; the Right to Know bill. These types of things the UAW has always been out in front for, and we are going to continue to do that.

We accept change. We know what happens when you have change. Change -- sometimes it can be very painful. We know that, but we don't want you to take the meat ax approach in this particular legislation and the California standards.

In closing, I would like to say that before we adopt the plan, we should have a full study of the impact of what it is going to do to labor in this State.

Thank you.

SENATOR RICE: Mr. Chairman?

SENATOR McNAMARA: Yes, Ron?

SENATOR KRONICK: (interjecting) I would just like to say one thing, Mr. Chairman. I have a lot of faith and confidence in the American genius and inventive spirit. When I think back to the 1929 car -- or whenever the first one came -- and what we have done, and what we have done in space, I believe you will be able to lick it, and probably exceed what is set out here before us today. I find it difficult that you couldn't do it, if the will is there, and you make it a priority and a goal, and have it priced right, so that we don't have a loss of jobs, because Americans-- That is our genius; that is our ability. We have always had it through history. That is why we are leaders in space.

So I want to end on a very positive note: I think we can do it, and we will do it.

SENATOR McNAMARA: I want to tell you, if we had the 1929 car, you could drive from here to California. It wouldn't be too comfortable, but you could do it with a screwdriver and a pliers in your glove box, and you wouldn't need a mechanic. You would be able to get cross wise. So, there is an upside and a downside.

Ron?

SENATOR RICE: Through the Chair, I have asked the DEPE people to do a cost benefits analysis. They did a cost study. That is what you are really talking about, to put those other variables in. That is what concerns me. I would hope that if the UAW is serious about this, they would also do a cost benefits analysis from an unbiased perspective. Don't give me the union stuff, because they will do that sometimes. I want the information--

MR. TERILL: We'll give you the straight stuff, Senator.

SENATOR RICE: And I would hope that the corporate side, the big three, could also do an independent cost benefits analysis as related to your industry and keeping people working. Hopefully, all three of those reports can come to us from three different sources, so we can have some judgment.

SENATOR McNAMARA: It is a quarter after one. We are running about an hour-and-a-half behind schedule, in a very timely fashion. We will reconvene at a quarter to two.

(RECESS)

AFTER RECESS:

ASSEMBLYWOMAN OGDEN: We would like everyone in the back of the room sit down, or go out, because we would like to get started again. In deference to the many individuals who have come a fair distance today, we don't want to keep you any longer than necessary.

The next group to testify will be the Petroleum Council. Is that correct, for those of you who are seated there?

J A M E S E. B E N T O N: Yes, that is correct.

ASSEMBLYWOMAN OGDEN: Jim Benton, New Jersey Petroleum Council, Mobil Refinery, Sun Research. Have I left anything out?

MR. BENTON: Yes, Assemblywoman.

ASSEMBLYWOMAN OGDEN: Oh, you'll introduce the people with you. All right.

MR. BENTON: Good afternoon. My name is Jim Benton. I am the Executive Director of the New Jersey Petroleum Council. With the permission of the Chairs, we have assembled a panel of representative interests of the presence of the petroleum industry here in the State. We would like, if it is permissible, through you, to have the opportunity for each of them to address you briefly and respond to some of the questions and the dialogue that has either preceded us or you might like us to address specifically.

On my left is Mike Tydings. He is with Exxon. He is their Environmental Coordinator. On my immediate right is Dr. Brian Davis. He is from Sun. He carries the title, Manager of Regulatory, Legislative, and Technical Support. Brian was also a player for the petroleum industry at the Federal reg/neg process, the now infamous process that EPA used to bring together the various interests to put the regulatory structure around the Federal reformulated fuel. To his right is Dale Choate, Manager of the Mobil Paulsboro Refinery, and Dale's labor representative at the Paulsboro Refinery, Jim Campbell.

With that, with your permission, just very briefly before we start, we do have a couple of handouts which I thought would be helpful to the Committee in its debate -- its discussion of this issue. We've got a current state-by-state assessment of where the various states stand in their considerations of the California emissions program. Like our State -- New Jersey -- many states are wrestling with the question of whether to commit to the California LEV program, or whether they opt to remain with the Federal program and enact other more cost-effective strategies.

I will disseminate these for your information, and I would be happy to respond to questions. Let me, at this point, turn it over to Mike Tydings. Mike?

MICHAEL J. TYDINGS: Thank you. Good afternoon. First of all, I am here on behalf of the New Jersey Petroleum Council and its member companies. The Petroleum Council is a Division of the American Petroleum Institute.

Our industry is often asked, "Why do you care about California's LEV program? Doesn't California's LEV program impact cars only?" The answer to this question is, "No."

One of the key uncertainties associated with the LEV program is the uncertainty regarding the program's fuel requirements. New Jersey's DEPE has stated again today that if New Jersey adopts California's LEV program, the only fuel required will be Federal reformulated gas. However, California's LEV program is accompanied by a mandate requiring fuel providers to make available those fuels used to certify vehicles under the LEV program. In California, car manufacturers, as stated before lunch, will be able to meet the LEV standards through a combination of vehicle technology and fuel type. Auto manufacturers will be required to certify that the vehicle/fuel combination meets the LEV standards. It is important to recognize that, at this time, vehicles meeting the LEV standards have not been designed or tested, nor have the fuels been selected. Whatever fuels are selected, and these fuels may be a California-type severely reformulated gasoline, methanol, compressed natural gas, or whatever, these fuels are likely to be considerably more costly than the Federal reformulated gasoline required under the Clean Air Act amendments of 1990. Also, some of these fuels, for instance methanol, may not be compatible with existing supply and distribution systems in New Jersey.

We simply do not see how we can, at this point, assume that cars will meet their emission standard if they are operated on a fuel different from the fuel on which they were certified.

The possibility of a California fuel requirement is very real, irrespective of statements to the contrary by the DEPE. In the DEPE's proposed rule, they incorporate, by reference, "All amendments and supplements to those" -- the California -- "regulations, specification documents, and test procedures." To adopt California's LEV program, New Jersey is required, under the Clean Air Act, to adopt the identical program implemented in California.

One such specification, which the DEPE is adopting from California, and which was indicated in the April 6 proposal, is that of using reactivity adjustment factors. Such factors are designed for California conditions, including temperature, meteorology, and emissions levels, but these factors will be applied here in New Jersey also. Such factors could allow, for example, emissions for methanol-fueled vehicles to be almost twice the mass emissions from comparably certified gasoline vehicles. This may work toward reducing ozone in California, but it is not tailored to do that in New Jersey.

Even at this juncture, it is uncertain what the magnitude of all the reactivity adjustment factors for the different fuels that could be used in the LEV program will be. California has determined what the factor for methanol is, but not for any of the other fuels. In fact, California has not received approval from the EPA to use the reactivity adjustment factor approach, nor has California received approval from EPA to proceed with implementation of the LEV program in California. This ties in with our concern over the uncertainty of what program New Jersey will be adopting and the need to assess the problem and develop a cost-effective solution tailored to New Jersey's needs.

We are also concerned about the "adoption by reference" clause which was mentioned earlier, because it effectively translates to having no representation for the citizens of New Jersey on this important issue. Do we really want to have Sacramento, California, dictating what your decisions will be here in the State of New Jersey?

We acknowledge the very difficult job the New Jersey DEPE faces in developing strategies and programs to bring New Jersey into attainment with air quality standards. We strongly believe that an in-depth study of New Jersey's air quality and the careful construction of the most cost-effective emissions control strategies are needed before any optional or discretionary controls on emissions are implemented like California's LEV program. Our industry is willing to commit to work with the DEPE and other interested parties, such as the autos, to evaluate New Jersey's air quality problems and to identify and implement the most cost-effective program to bring New Jersey into attainment with the air quality standards.

Thus, we strongly believe it is premature to adopt California's LEV program at this time, without a thorough assessment of New Jersey's air quality situation and prior to resolving some of the many uncertainties associated with the LEV program's needs, benefits, and costs.

Commissioner Weiner provided an important service when, at last week's hearing, he presented options the DEPE is considering for complying with the Federal Clean Air Act amendments of 1990. Our industry shares DEPE's and the citizens of New Jersey's concerns about clean air and a healthy environment. We have supported, and will continue to support, cost-effective efforts to attain ambient air quality.

However, based on our preliminary assessment of the bases for the DEPE's proposed plan, we do believe that the DEPE has significantly underestimated emissions reductions for some of the steps mandated by the Federal Clean Air Act, as well as some of the estimated costs per ton. For example, we estimate much higher emission reductions from cleaner cars that meet the new, stricter Federal standards.

We would like to have further discussions with the DEPE and share our analysis and compare numbers so that the end product is the most cost-effective plan to bring New Jersey into compliance with the air quality standards.

We feel that the uncertainty regarding the differences in our estimates and the DEPE's estimates, combined with the many uncertainties associated with California's LEV program, support the need to pause and closely evaluate New Jersey's air quality situation prior to adopting a costly, optional program such as the LEV program.

There is ample time to clarify the questions and uncertainties regarding the LEV program without New Jersey falling behind in its air quality improvement efforts. Three control measures mandated by the Clean Air Act -- cleaner cars, Federal reformulated gasoline, and stricter vehicle inspections -- will significantly improve quality and help New Jersey achieve the emissions reductions required by the Clean Air Act.

Moving slower to adopt the LEV program would not hinder the progress New Jersey needs to make because the LEV program results, if implemented, for example, in 1994, are almost identical to the Federal Clean Air Act's standards during the first three years of the LEV program. Any delay in adopting the LEV program will have minimal impact in the years beyond 2000. The State can then carefully evaluate the need for additional control measures and determine which options best fit New Jersey's needs.

Let me restate just some of the many controls for mobile or transportation-related source emissions mandated by the Clean Air Act. This listing is by no means all inclusive, but it will provide a feel for the magnitude of the activities and effort required by the Clean Air Act, that are being, and will continue to be, undertaken in New Jersey to reduce emissions.

Some of the measures have already been mentioned, and I will just highlight them:

The tighter Federal exhaust standards -- the Tier I; later on the possibility of going to Tier II, with even tougher standards.

In the fuels areas: The Act requires that all gasoline supplied to New Jersey be reformulated to help reduce ozone, beginning in 1995. In addition, 10 other states, in the Northeast Ozone Transport Commission region, have elected to "opt into" Federal reformulated gasoline. The "opt in" provision is part of the Federal Clean Air Act. As a result, these states will also receive reformulated gasoline. This gasoline will be required to be specially refined to reduce emissions by 15 percent.

To combat carbon monoxide, the Act requires that New Jersey, together with 38 other areas in this country, be supplied with oxygenated fuel during the winter months. Beginning this November, all gasoline sold in New Jersey will have to be blended to contain at least 2.7 percent oxygen.

The most cost-effective mobile source emissions reductions step is effective enhanced inspection/maintenance of vehicles currently in use. This measure provides significant and immediate emissions reductions by identifying vehicles in need of repair and ensuring their repair. The vehicle inspection program envisioned by the Clean Air Act will be much stricter than New Jersey's current program.

The requirements of the Clean Air Act, some of which I have already talked about, coupled with steps already taken by New Jersey, plus the continuing turnover of the motor vehicle fleet that will replace older, higher-emitting vehicles with new, lower-emitting vehicles will reduce vehicle emissions from today's typical vehicle by 85 percent by 2010. California's LEV program would provide only 1 percent to 2 percent additional reductions.

Based on the reasons stated above, we believe New Jersey should:

1) Conduct an in-depth, broad-based, time-specific study of its air quality situation and develop a detailed emissions control strategy that incorporates the effects of the control measures mandated by the Clean Air Act.

2) If additional air quality improvement is needed, rank additional control measures, such as California's LEV

program, in terms of their contribution to air quality improvement and costs.

3) Assess the benefits and costs of adopting optional control measures.

I appreciate the opportunity to make these comments.

MR. BENTON: Brian Davis.

DR. BRIAN C. DAVIS: Chairmen and members of the Committee: I appreciate this opportunity very much to be able to speak to you. You have my statement. In the interest of your time and avoiding redundancy, I would much rather not read. I will summarize, and then allow you to ask questions, if there is anything that is not clear to you.

First of all, let me underscore the concern we have that may seem strange to you. It is certainly not unreasonable to say, "If there are cleaner cars available in the country, why not provide them for New Jersey?" There is nothing illogical about that. However, the concern we have was at least perceptively intimated by some of your questions of the folks from the car companies when you asked about warranties. Realize that one of the considerations you run into very quickly when you have warranty requirements for a fuel for which a car was not designed -- that those kinds of considerations may well be decided in a court, not with the desires of the Department or any of the other environmental departments in the Northeast. We certainly do not believe it is their intention to have fuels, but they may be, in this context, powerless to prevent their inclusion.

Sun's two refineries that are on the Delaware River now -- fortunately, perhaps, or unfortunately, if you like, either way -- happen to be on the Pennsylvania side of the Delaware River. Nevertheless, the cost of converting those two refineries for Federal Phase I fuel is on the order of $50 million to $100 million. Now, that is not insignificant, but to convert the same refineries to produce California reformulated fuel would be a factor of possibly as much as 7; an immense amount of money which would be required before the time that in the reg/neg agreement would go to a Federal Phase II, which would only double the cost. So there is a potential of having an immense amount of extra capital required in a shorter time frame even than the Federal program. So, realize that that is one of the reasons that makes us very concerned about the potential of bringing in California fuel.

Now let me say also, I think there is a set of other potentials for gaining emissions benefits that in this technology-forcing atmosphere we have are just now coming to fruition. They would bear real analysis to see if they would not be more cost-effective than the California program in giving the same kinds of benefits.

There are new things being done with inspection/maintenance which would make those programs, the more efficient ones, more cost-effective.

Now let me do something here. You have to be a little careful. The petroleum industry is possibly as unified as State government and all other industries. So now I will take off that hat and put on a Sun hat. Just so we all understand. One of the things that is of specific interest to us is the use of early movement to alternative or clean fuel penetration in fleet vehicles. While that is required later on, at the end of this century, it certainly could be gone to with credits, and the EPA is developing those credits right now. Often these vehicles, if you have ever ridden in a cab in the Northeast, are among the poorest maintained, with the worst driving cycles, in the areas that have the toughest situation. The conversion of those vehicles to much cleaner vehicles might have an immense effect on the emissions, exactly where they need to be. We are fully prepared to work with the Department, and they have been forthright, certainly, in working with us, in exploring this possibility. We have some programs in place right now to look at all of the alternatives.

We would like to recommend those kinds of procedures to complete looking at the cost-effectiveness before an immediate move to enact the California vehicle program.

I appreciate your time. I would be more than happy to handle any questions. Thank you very much.

SENATOR McNAMARA: Obviously you are in a position to deliver fuels, at least the production of them. What about the distribution?

DR. DAVIS: As it turns out, depending on which specific alternative fuel is chosen, facilities can be put into conventional service stations, not at no cost, but at a cost that we believe, depending on the fuel in this area, may well be cost-effective right now. That is not true of all alternative fuels, however, and the ones that may come to us from California by way of gift may not be the ones that are cost-effective.

SENATOR McNAMARA: Which ones are cost-effective?

DR. DAVIS: For us in this area, certainly propane would be. It has the lowest installation cost for infrastructure, and currently sells at a rack price that is far below gasoline.

MR. BENTON: Dale? Oh, I'm sorry.

SENATOR McNAMARA: Ron?

SENATOR RICE: I meant to ask this earlier: If somebody is going to turn to fuels from a capital perspective, you know, you formulating -- using one, does that mean that when the season changes you are going to have to get in the ground and clean the tanks out in order to put in another type, or-- Maybe we would have to find room at some of the stations to put in additional tanks. What does that mean?

DR. DAVIS: Generally it is not a seasonal question, but the addition of a new fuel almost inevitably means some new piece of infrastructure -- tankage, dispenser.

SENATOR RICE: I'm not cutting you off, but someone testified this morning that when the weather is cold -- I think you were raising the question -- you use this type of fuel--

DR. DAVIS: This is a modification of gasoline, rather than an alternative. Again, let me emphasize that not every petroleum company is interested in alternative fuels, but the surgical use of highly reformulated gasoline in vehicles adapted for it, might well be another kind of alternative fuel that would not demand that the entire fleet run on it.

So, there are a lot of possibilities that can be explored here.

MR. BENTON: Dale Choate, the Mobil refinery manager.

D A L E E. C H O A T E: My name is Dale Choate. I am Manager of the Mobil Oil Paulsboro/Gloucester County, New Jersey, Refinery. I appreciate this opportunity to comment on the California Low Emission Vehicle Program and the DEPE's proposal to adopt this program in New Jersey.

The Paulsboro Refinery is located on a 950-acre site on the east bank of the Delaware, in New Jersey rather than Pennsylvania, as has been mentioned. The refinery processes about 110,000 barrels per day of crude oil into consumer products of gasolines, heating oils, jet fuel, and lubricating oils. We employ more than 860 people at the Paulsboro Refinery, plus we have averaged 500 contractor employees the past three years to do primarily capital construction and turnaround work. The Paulsboro Refinery annually spends $140 million for payroll, maintenance materials and contracts, local taxes, and supplies. This $140 million annual spending is a big injection into the South Jersey economy. Furthermore, in the past decade, Mobil has invested several hundred million dollars in capital projects to try to make Paulsboro a viable economic operation and to comply with the many Federal and State environmental regulations. We are Mobil's smallest domestic refinery, but we have a proud 75-year history of contribution to New Jersey's economy and helping to supply the area's energy and lubricating oil needs.

As I said, the Paulsboro Refinery has invested heavily in environmental protection. Our estimated environmental expenditures, capital and ongoing, averaged more than $37 million per year over the last five years. We are now preparing to make substantial capital investments at Paulsboro to comply with the new Clean Air Act requirements, both in our production of clean-burning gasolines and in other initiatives to meet additional refinery emission reduction mandates. As you know, our industry is heavily regulated both at the Federal and State levels. Our refinery operates under the authority of 150 environmental permits -- DEP type -- and we are categorized as a "major stationary source" of emissions.

I recognize that the purpose of this hearing today is to gather information regarding the emissions from vehicles, or "mobile sources" -- spelled with an "e" -- not stationary sources like the Paulsboro Refinery. I would like to ask you to broaden that focus for a few minutes while I address an issue surfaced by the DEPE when discussing the California LEV program. There has been an implied threat of more rigorous control of stationary emission sources if New Jersey does not hastily adopt California's mobile source control program.

SENATOR McNAMARA: That sounds like a real attempt to get you on board quick.

MR. CHOATE: You've got it. We think that is inappropriate. We believe that a careful analysis is needed to determine if there is, indeed, a potential consequence to stationary sources.

The Federal Clean Air Act amendments of 1990 set new and stricter limits for both stationary and mobile sources of air pollution. These comprehensive new programs will be put into place in the next few years to improve the nation's air quality. On the mobile source side, there will be new vehicle emission standards, enhanced vehicle inspection/maintenance, etc., which you have already heard about, including reformulated and partially burned gasoline, which some people call "oxygenated" fuels -- you are going to start paying for the oxygen, rather than letting nature provide it for you -- transportation control measures, and others.

For stationary sources, there will be a more restrictive permitting program, more stringent offset requirements for new or modified plants, additional controls on emissions of hydrocarbon, oxides of nitrogen, and sulfur, vapor recovery systems, etc. The Clean Air Act requires that more stringent control be applied to both mobile and stationary sources in parallel, and not in any trade-off fashion, as implied by the DEPE. Only after analysis of the impact of the new Clean Air Act controls over the next several years could any additional controls, whether mobile or stationary, be identified. The decision should be made only if actual measured results, not theoretical or hypothetical, showed New Jersey to still be out of compliance.

The California LEV program is an optional step beyond the Clean Air Act requirements. It is a program developed specifically for California to address its extreme smog problem, which you have heard too much about already. It concerns me that New Jersey's DEPE is proposing to adopt this discretionary California program before proceeding with the mandatory Clean Air Act requirements and before an assessment of New Jersey's air quality improvement needs is completed.

I will dispense with the reading of the remainder of my comments, other than for the final analysis. You have already heard most of it.

We do urge that this Committee consider the potential impact of the California LEV program on New Jersey residents and New Jersey businesses. There is no need for DEPE to act hastily to adopt California's program. The DEPE has yet to complete its air emissions inventory, which will establish the baseline from which air quality improvements will be measured by the Clean Air Act. The agency has yet to identify regulations for the partially burned fuels -- oxygenates -- which we must make available by next November -- 1992. And, it has yet to determine the specific needs to each attainment of the ozone standard. The revision to the State implementation plan which must include New Jersey's "attainment demonstration" for air quality standards is not due until November 1994. It is premature to force the citizens of New Jersey to pay for an expensive, optional step before we've done our homework and answered the questions of need and cost-effectiveness.

In closing, I wish to emphasize that Federal mobile source requirements will bring cleaner cars and cleaner gasoline to New Jersey much sooner and at a much lower cost than California cars. We believe that rushing to transplant a customized California progam in New Jersey before the necessary analyses are made is not in the best interest of New Jersey's citizens.

I would now like to introduce Jim Campbell, who is President of the union that represents the Paulsboro Refinery.

JAMES CAMPBELL: Good afternoon. I am Jim Campbell, President of the Independent Oil Workers. I represent the employees of the Paulsboro Refinery. We operate and maintain the refinery. I have approximately 600 members. I have been President since 1967.

Most of my members live in Gloucester, Salem, and Camden Counties. We have a lot of second and third generation members. Their parents worked there; their grandparents worked there. As Dale said, it is the 75th anniversary of the Paulsboro Refinery.

We are concerned about the effects on jobs this California LEV proposal will have. If it is adopted, it will require huge investments in equipment, and improvements that will be very costly to the refinery. Being the smallest refinery in the Mobil organization, it wouldn't look good for continued operation there. It would naturally make sense to shut the smallest down first when there is a decreased demand for gasoline.

Not only do we represent 600 union members, but also the contractors; vendors who employ hundreds of people to help out the refinery, to sell products to the refinery. They would also all be affected. So with the shutdown of the refinery, you are talking about thousands of jobs that would be affected -- a lot of family members, who also vote and spend money and pay taxes.

On behalf of my members and the other people at the Paulsboro Refinery, I just ask that you look for different solutions, more economical solutions, and carefully consider the seriousness of the LEV program and its impact on the refinery workers.

Thank you very much for the opportunity to testify.

DR. DAVIS: Mr. Chairman, Ms. Chairman, and members of the Committee, may I make one other comment? We have been a part of the New Jersey Clean Air Project both as a council and individually, technically to look at specific clean air plans in a single project content.

The Department has also been gracious about asking for input on other programs on occasion, as in the case of oxygenates. When this occurs, the result is always better when all of the information is brought to the table in an atmosphere that tends to be less adversarial.

We would certainly recommend that if there is a way that those kinds of interrelationships could become more ongoing and less ad hoc, perhaps it would be useful for your staffs to then monitor the information that comes into them. It might lend to making an analysis long term of the regulations that are going to come and come and come, much more fruitful. So, if there is a way that that could be catalyzed, we would certainly recommend it.

MR. BENTON: In closing--

SENATOR McNAMARA: Mr. Benton, excuse me for one second. This morning that was the problem; that was no problem; that is a problem; that might be a problem. We had that discussion this morning. I think you will find DEPE cooperative, and hopefully you will be as cooperative with them. And hopefully either party that is involved can contact either of the Chairpersons to help to move things along.

MR. BENTON: In summary, recognizing the time afforded to us and the generosity you have shown, the State of New Jersey faces a number of difficult decisions and challenges on clean air. There is no question about that. The State of New Jersey has taken leadership actions that are recognized nationally, are second to none, and, in some instances, even surpassing that of California's Stage II vapor recovery at service stations, which you are familiar with, vapor pressure reductions in gasoline, and now even the statewide implementation of marine vapor recovery, which came about as the result of an inclusion in our State Plan and then the lawsuit, to just name a few.

We continue, on behalf of the petroleum industry, to help the State do the right thing and work toward the goal, meeting the air quality standards. We have a significant, and obviously very high concern about the premature adoption of the optional California program. We do not think of it as a no-cost decision, particularly on top of the costs we are facing with regard to the implementation of the Clean Air Act.

Now, you heard from EPA regarding the listing of the 12 things that New Jersey has to do to continue its track record of accomplishments under the Clean Air Act. We suggest that we set about doing those; taking a good look at our emission inventory, which was scheduled, so that we have a profile of where the State's air quality stands, and recognize that, again, the ozygenated fuel program -- in November '92, this year -- will cost the State approximately three cents to five cents in terms of additional costs in petroleum. It is part of the Federal Clean Air Act. It is coming into place right now here in New Jersey, beginning November 1992.

The Federal reformulated fuel will cost in the neighborhood, right now, between five cents and nine cents. These are costs to consumers for the Federal reformulated fuel. Again, it is an element that we are working toward as an industry. You have heard from Dale and Mike and Brian regarding that. Our estimates right now are five cents to nine cents. I will accept DEP's testimony, but yet very realistically between the automobile manufacturers and others, the prospect of the California severely reformulated fuel runs in the neighborhood right now, according to estimates, of between 17 cents and 24 cents per gallon, depending on the fuel selection. You can see very clearly that it is a very significant impact, which we why -- and Director Wittenberg referenced the study -- we retained the economic consulting firm of DRI/McGraw-Hill to prepare an analysis of what would happen to the State of New Jersey should a program like that be implemented. Obviously it has very severe-- I will leave this for your Committee staffs and for the members of the Committee to review. (referring to written materials) It has very severe economic impacts in terms of costs, in terms of loss of personal income, in terms of jobs, and, ultimately, in terms of tax revenue, also.

We have described that and debated that. It is an economic model which takes into account both the positive attributes of a program and the negative impacts. Now, in fairness, it does not take into account the improved health conditions, but it does take into effect, as economic models do, both the positive benefits of a particular program and the negative. We offer it to you for your review. We suggest you take a look at it.

Also, as Brian referenced, we participated in Project: Clean Air. Project: Clean Air also came up with a very similar analysis done by, in this case, Urbanomics, of Wayne, New Jersey. In there also, they talked about different strategy options. Strategy Package No. 2, which included the California car, what was referenced as "clean fuels" -- again, the Federal reformulated fuel -- and the additional test, costs by 19 -- this was an estimate by this firm -- in the area of $2.4 billion. Again, not an insignificant study, but one that should be added to the compilation. Unfortunately, this is the only copy I have. I understand that later you will be hearing from Project: Clean Air. I am certain they will be more than willing to discuss their assessment of these figures with you.

In closing, we, again, want to help the State of New Jersey reach the best decision. In that, I think our industry, along with the automobile industry, has taken a major step forward by committing to what we are calling the "Auto/Oil Air Quality Improvement Research Program." Much of this research between the major oil companies and the automobile companies is going on right here in New Jersey at Dale's Paulsboro Research Center, in Paulsboro. They are conducting an analysis of what different fuel requirements will have -- what effect they will have on existing vehicle fleets and also new vehicles.

That research is going on in Mobil's Technical Center at Hopewell -- in Hopewell, New Jersey -- and Exxon's Research Center in Florham Park. Again, much of this research on the oil side is going on right here in New Jersey. They have come out with technical bulletins. I just grabbed this one real quick. This is "Technical Bulletin No. 7." There is a No. 8 which is out. This one analyzed the emissions and air quality modeling results from methanol gasoline blends in prototype vehicles and variable fuel vehicles. We think this advances, in very real, concrete terms, the effort toward cleaner air, which is something we all subcribe to. It is something we think makes a very significant improvement.

Again, we want to share our expertise, which we think is considerable right here in New Jersey, to help you fashion a New Jersey program specific for New Jersey. We caution you that the California program is very real in terms of its costs. However, it remains untested, unproven, and not yet even approved, as you heard earlier, by EPA. In essence, we want to debate solutions for New Jersey, rather than focusing on our problem. We believe there is a problem. We continue to commit to you to doing things that will help to make solutions.

Thank you very much for your attention. We will be happy to answer any questions you might have.

SENATOR McNAMARA: Anybody have any questions? Yes, Assemblyman?

ASSEMBLYMAN WARSH: I have a question. I also have the opportunity to serve on the Assembly Transportation Committee, and we have been briefed on the Federal Clean Air amendments. We are constantly told that we either comply, or we will lose $400 million a year in Federal highway support.

Now we have a choice: Do we adopt the California standards, or do we adopt something different that the industry is advocating? Can you assure the Committee that if we were not to adopt the DEP proposal and adopted something more in line with what you are proposing, that we would not put in jeopardy the Federal highway funds?

MR. BENTON: Our suggestion, indeed our position -- and I will let the individual members comment to supplement -- is that by following the Federal EPA programs, by following the Clean Air Act, moving aggressively and smartly through the strategies that are required by the Clean Air Act, New Jersey will continue to maintain a track record -- a proven track record -- for successfully implementing and improving our environment. Therefore, we do believe it would be free from the sanctions that are anticipated.

I remind you of the EPA testimony, where indeed New Jersey's DEP has not submitted the requirements for a VOC control. And indeed, the sanctions don't come down in an immediate fashion. We would have 18 months to respond should we somehow fall behind. However, again, we are recommending that we subscribe very specifically to the Federal requirements, rather than going for this optional untested, unproven California program. Brian?

SENATOR McNAMARA: But, Jim, one point here: DEP, this morning, testified that there is an absolute-- They testified that there is an absolute five-ton difference if the program was delayed. Now, that was an issue that the auto manufacturers brought up. Hopefully we resolved, this morning -- that between their scientists and the scientific body of DEP, that will be resolved. But it is not a five-ton difference that we can just choose to ignore. If everything that has been said by the auto manufacturers and by the petroleum industry is true, we may not have a problem. But that is part and parcel of why we are having these hearings.

We have been assured that DEP is going to cooperate fully. You know, you tell us whether they will or they won't.

DR. DAVIS: I think the answer to this will come about. What we are asking is not simple nonimplementation, but to continue with the technologies that are now coming forth to look for the most cost-effective set that will reach that attainment.

SENATOR McNAMARA: You can't believe that DEP would sit on anything without moving forward with technology. They usually establish a standard before you have a scientific way of reading what standard it is.

DR. DAVIS: I understand that. One of the things we are asking for is to try and bring that a little bit more into perspective, and realize the specific program we are talking about today is one that virtually everyone says has its benefits after the year 2000. That gives us a little bit of time to explore alternative means, which may, in fact, have better cost-effectiveness in the meantime, without discounting the fact that you must have a plan that does, in fact, lead to attainment. I am sure that will, in fact, be the case.

SENATOR McNAMARA: That is another reason why we want the Connecticut study, or notes, or work, or whatever was done on why they chose to defer the program to 1998. They are not talking the year 2000; they are talking 1998. It is very important for our considerations and deliberations if we can, you know, have those documents to review.

MR. BENTON: We certainly can help you with the Connecticut documents. Again, I think it is also important to recognize that there is a whole contribution outside of the specific California program that can be made, not only from the Federal Clean Air Act, but from optional other strategies that may do a lot to improve air quality. Transportation was mentioned earlier; certainly road construction, bottleneck improvements. Improvements have been identified in one of your bills, Mr. Senator, with automatic identification of vehicles through tolls.

SENATOR McNAMARA: I was fascinated to read the cost of that is $50,000 per ton. I can't believe some of the numbers that have been placed on the different tonnages.

MR. BENTON: Again, we are ready to provide additional information that will help to clarify those numbers. Again, in the inspection aspect, you have heard about the dynamometers in the other I/M programs. There is also infrared technology, which can assess the amount of emissions from the tail pipe by using an infrared sensor that allows for detection of a vehicle that is not operating in compliance, so that that vehicle can be singled out for quick repair. That would be a more aggressive program.

There is a whole range of solutions and options which, again, will work toward improving air quality here, without conscripting us to an untested, unproven program.

MR. CHOATE: Mr. Chairman, if I may, I would like to add also that, contrary to what I have heard some people mention here, this is not a science. We are still in the art stage. We do not fully understand how ozone is formed.

SENATOR McNAMARA: I am not so sure that it is the VOCs and not the NO_x that has a greater impact.

MR. CHOATE: Yes, sir, that's right. But, like anything else, you have to measure it before you can control it. I would think we would spend more effort on trying to measure what our ozone levels are and report that and keep people aware of it and ratchet down. That is how business does things, and I think that is how any good economy would attempt to do it; the ratchet down approach, rather than just going on 20 years into the future.

ASSEMBLYMAN WARSH: We heard earlier from the representative from the Association of International Automobile Manufacturers. On page 4 of his testimony he indicated that Commissioner Weiner's adamant statement last week makes it clear that DEPE has no intention to provide adequate supplies of fuel that may be needed, in a timely manner. Could you comment on that? Do you know what he was referring to? We didn't have time; we broke for lunch.

MR. BENTON: Well, Commissioner Weiner, as you heard from him last week, did say, in fact -- and said so repeatedly -- that there is no fuel implication. We are only going to require Federal fuel in pursuing the California LEV strategy. I presume that is the statement the importers' representative was referring to.

Very candidly, we see it a bit differently. We accept Commissioner Weiner's representation. We also had asked for the Attorney General's opinion. We asked for the Attorney General's opinion at our meeting back in October, and we were told that we would have it back then. We still have not seen it to date, at this time.

We think there are some very real concerns that were highlighted by the manufacturers, that were highlighted in our testimony, regarding mandatory fuel use for the vehicle, both in terms of warranty and in terms of meeting the standard. The vehicle will only take you, as referenced earlier, to a certain percentage of that standard. The proper fuel use will take you to meeting that standard. Therefore, potentially you have a lot of vehicles that are not going to be operating in compliance with that California standard. We think to ignore that is to ignore a big part of what we believe this problem to be all about.

Brian?

DR. DAVIS: Let me speak to that a little bit: I really believe it is not the intent of the DEPE or any other departments in the Northeast to require California fuels with the California program. They simply want the cleaner vehicles. But as you read the Clean Air Act and you look at the warranty concerns of the people who furnish the vehicles, and realize the California program -- that is what is being opted into -- allows the vehicle manufacturers to bring vehicle fuel combinations, and that in California fuel manufacturers will be required to furnish -- not necessarily sell, but to furnish -- the fuels that go with the vehicles that are brought, whatever they are-- So our concern is not that the Department will require them, and not that the Department is simply taking a reduced credit because they don't have those fuels, but that they may be legally required externally -- by courts, for instance.

ASSEMBLYMAN WARSH: But, see, with this statement-- I am still confused. This statement seems to indicate that should these standards be adopted, we will have an inadequate fuel supply; we will have an inadequate gasoline supply in the State of New Jersey. Am I misunderstanding that?

DR. DAVIS: This is difficult, because you are asking us to speak for the Department. I think the intent is that what is desired is to run the California vehicles on Federal reformulated gasoline, which, in fact, will be furnished in this area. That is not a question of supply shortage.

MR. BENTON: Let's carry that a half a step further: Suppose, again remembering that the vehicle manufacturers certify the vehicle on their fuel of choice in California-- Let's presume that they certify it on a methanol, or a CNG. I think that is where you begin to run into concerns over supply, given the heavy emphasis on Federal reformulated fuel. The California program requires that fuel suppliers make these fuels available in that marketplace. Let's suggest that there is a California fuel vehicle certified on compressed natural gas -- CNG. How can we glibly say that that same fuel won't be required here in New Jersey? The vehicle manufacturers are standing behind the vehicle, and it is being run on a completely different fuel. It is a little like saying, "Don't worry. The car you bought is designed to run on premium" -- right now, 93 octane -- saying, "Don't worry. Just let it run on 87 octane" -- that type of disparity.

SENATOR McNAMARA: It is going to peak.

MR. BENTON: Well, then there are the warranty considerations you heard about earlier from the manufacturers, and obviously from the consumers. Again, we are here to serve our consumers and the residents here in the State. The types of problems envisioned under this program all reflect back toward us, by problems that we hear from your constituents, which are ultimately our consumers.

ASSEMBLYWOMAN OGDEN: The year 1998 is going to be the year for the clean fuel fleets--

DR. DAVIS: Right, fleets, exactly.

ASSEMBLYWOMAN OGDEN: --in the Northeast. Where will they get the fuels, the liquid natural gas or the propane? Are they all going to get it not through the usual commercial way, but at the plants, for instance?

DR. DAVIS: One of the things that will have to occur to be able to fuel those fleets, is the building of some new infrastructure. Right now, there are not sufficient fueling sites to handle all of those needs. So something that will have to happen between now and then is, in fact, at least the partial construction of new fueling opportunities, even though they may occur at existing service stations. They will also occur in the yards of some of those fleets, depending on whether the size will warrant it and whether they are willing to take the responsibility for the tankage and so forth.

One of the things that may help catalyze going to those clean fleets, is the fact that the Federal government is developing guidelines which will allow credits for doing that earlier. So what you might see is the opportunity to begin to build some of that infrastructure before it is, in fact, fully required in the marketplace, so all of those options can be explored.

MR. BENTON: New Jersey does statistically have a heavy dominance of fleets here in the State. I don't have the figures immediately at my disposal, but as a State, whether it is the urban cabs, taxis that Dr. Davis mentioned earlier, or corporate fleets and other types of municipal vehicles, there are opportunities that we see coming creatively into the marketplace to offer incentives to alternate fuel vehicles.

ASSEMBLYWOMAN OGDEN: What would you suggest the State might do to offer incentives?

MR. BENTON: The State might, again, look at the Alternate Fuel Program that is provided under the Clean Air Act, and offer earlier incentives for the State to gain the credits they need in this area. There might be some tax implications that need to be examined. There might be some other incentives that don't come immediately to my mind that the State could examine.

DR. DAVIS: I think that Project: Clean Air has actually identified some of those potential kinds of incentives. One of the things that occurs in southern California now, where there is a larger use of alternative fuels, is to allow HOV -- high occupancy vehicle -- lanes to, in fact, use alternate fuel vehicles even when there is only one person in the vehicle, which makes it easier to do business, because it is a faster way to get around. That is just one example, but there is a variety of things that can be explored that I suspect the Department is looking at.

MR. BENTON: But let me also say in closing, because I know Dale would like to say the same thing-- Let me also suggest that the improvements that are going to be made in Federal reformulated gasoline, which will be introduced here on a statewide basis, will make a very significant and dramatic impact on everyone's car here in the State. We are the ones who are committed to doing that. We think the alternate fuel issue fills niches in the marketplace, but as energy for the public at large, we believe the Federal reformulation is going to make a major and significant step here in improving air quality.

MR. CHOATE: I would just like to add, history -- and I have been around for a long time -- has demonstrated that managed government, managed societies, don't perform -- Russia, the Eastern Bloc, to go back to England. I mean, there has to be an incentive, but let's make it an incentive that people can understand and will respond to, not government mandated.

The marketplace is beautiful, as you know. We have the best system there is in the world, as long as we don't monkey around with it, as we have done already with exporting car manufacturing to Japan, electronics, etc. Keep the jobs in this country. That is what Jim is saying. Manufacturing is the backbone, and we have to do something. We cannot let these jobs be exported. That we should talk about. Where are the oxygenates going to come from? They are going to be imported. We will not-- Mobil Paulsboro will not build an oxygenated plant. We will import the stuff. In fact, this coming winter, our stuff is going to come up from the Gulf Coast, and that is going to reduce our ability to produce gasoline here in New Jersey, without any thought being given to the overall societal needs.

DR. DAVIS: One of the things you had alluded to earlier as a concern, is the business of transport. Realize that virtually all of the states in the Northeast have, in fact, opted in to the Federal reformulated gasoline program, even the ones where it isn't directly required because of the severity of the problems, as in the case of New Jersey. So, New Jersey will reap the benefit of some of that transport reduction from the Federal fuel being basically implemented in all of the Northeast, and our industry supports that, granted the difficulty of the emission situation here in the Northeast.

SENATOR McNAMARA: Thank you very much for your testimony.

ASSEMBLYWOMAN OGDEN: Are there any more questions from anyone? (no response)

We will move on to the Environmental and Occupational Health Sciences Institute -- Paul Lioy.

SENATOR McNAMARA: Will those having a conversation kindly move it to the hallway? Close the door please, so we can proceed. Thank you.

DR. PAUL J. LIOY: Good afternoon, Chairman McNamara and Chairwoman Ogden, and members of both the Assembly and the State Senate. I am here today representing a number of different areas: First of all, I am Director of the Human Exposure Division of the Environmental and Occupational Health Sciences Institute, a joint program of the UMDNJ, Robert Wood Johnson Medical School, and Rutgers University. I am also the Director of the Ozone Research Center, which is conducting both air quality modeling and participating in health effects studies in New Jersey. That Center is supported by the New Jersey DEPE through a grant. I am also representing the National Academy of Sciences. I am on the Board of Environmental Studies and Toxicology of the National Academy of Sciences. I have served on seven committees, and I have also recently served on a committee called Troposphere Ozone Formation and Transport. So, I will be talking to you about a number of different issues. Finally, I have served since 1981 as a member of the New Jersey Clean Air Council, and I was Chairman of the Clean Air Council in 1983 and 1984.

The first thing I would like to do is-- I am submitting to the Chairperson and the Chairman eight copies of the report, "Rethinking the Ozone Problem in Urban and Regional Air Pollution." Obviously I don't want you all to read it. There is a good executive summary. We did a good job in trying to make it palatable to just about anybody, and we have gotten a tremendous amount of response from our report in the "National Academy of Sciences," from industry, government, and the citizenry. So, I think the executive summary is readable.

I will talk a little bit about that today. I am going to try to divide my talk into basically two sections, with a comment section at the end. First, I will try to remind you about the idea of why we are here; why ozone is a problem. Secondly, I will talk to you about some of the details in the National Academy report, and specifically, I think, I will focus on what Chairman McNamara said at the end of his conversation with the people from the oil industry -- the word "NO_x," which has not appeared at all in the discussion this morning. That is a serious deficiency.

I was a little bit amazed this morning at the fact that we talked a lot about hydrocarbons, because hydrocarbons has been the strategy we have been talking about for 20 years. I have been dealing with the ozone problem for 20 years. I have lived in New Jersey all my life. I still breathe dirty air in New Jersey, and so do you. I think it is about time that we get on with the task of cleaning up the air in New Jersey.

I would also like to say that Assemblyman Kronick made a very good comment this morning at the end of the discussion. I think if we put our minds together, and put our energies together, and do some real positive thinking, and not nitpick ourselves to death, we do solve this problem. It is an intractable problem, but I do not think it is an unsolvable problem.

For the last 10 years, I have been doing ozone studies in New Jersey and in other areas of the country. In fact, I have done five studies on the health effects of ozone in New Jersey, looking at the New Jersey population. Basically, there are about five, maybe four major points that came out of those studies:

One, the pulmonary function of healthy children participating in summer camp activities is affected by ozone. The accumulated dose during the day or a prior day is associated with that decrement in function.

That means it is not just the peak concentration that was shown on the graph this morning. It is every ozone molecule that you breathe over a very specific period of time; that could be six to eight hours a day. Imagine a child participating in urban/suburban activities during the summertime, or a young adult, or even a person my age participating between six and eight hours a day during the summertime, with high ozone levels, which may not actually exceed the standard. The standard itself is bogus; it has no margin of safety. It is the only national standard that I know of that actually is less stringent than an occupational standard. That is a subtle point, but a major point. In fact, it is the only standard -- occupational standard -- that is violated outdoors during the summer. That is a major point: the fact that there is no margin of safety for the current standard. So, we are talking about a real public health issue.

The second point: After extended episodes, the baseline pulmonary function of an individual can remain depressed for at least a week. That means that a transitory response in a human being, in fact, can last for a few days. In fact, you may have decreased function; you may not be able to participate in the activities you normally do at the same rate or the same high level of activity, because of the fact that your pulmonary function has been decreased from an extended period of ozone. These extended perios of ozone can be from five to seven days. We have them frequently in New Jersey. We do not have them every year because of meteorology, but over the last 10 years we have had at least five such instances. That means that you have five to seven straight days of ozone above the standard, or at least above 100 ppb every day for about five to seven days.

The third point: Respiratory symptoms have been observed in active children at a camp during an extended episode. That means that not only are we looking at changes in pulmonary function -- which most of you probably would not perceive unless you were an athlete or unless you were participating in activities in one area that has low ozone and you come back to New Jersey and try to participate in the same activity in high ozone and notice the fact that your activity level is down-- The fact of the matter is, you will see symptoms in children who are participating in normal camp activities. It could be a wheeze; it could be a cough; it could be a number of different things.

Finally, just this past year we completed a study which indicates, or at least suggests -- and this is going to be published in the next couple of months in the "Journal of Environmental Research" -- that approximately 8 percent -- and this is only the first level of analysis we have done -- of summertime visits by asthmatics to emergency rooms -- now, this is not all asthmatic visits to local doctors, okay, or clinics; this is just to emergency rooms -- in nine North/Central Jersey hospitals are associated with photochemical smog episodes, at least for the period 1988 and 1989. We are continuing that analysis from 1986 through 1991, and we will probably extend it through 1994. We are trying to see if, in fact, things change and how they change based upon the ozone levels.

So clearly, we are not dealing with a de minimis risk problem. We are dealing with a real problem in New Jersey. We are dealing with a real air pollutant. We are dealing with an air pollution problem which has been protracted for 20 years, and we have to solve it. We have to solve it. If we ignore it, it will just get worse. If we do not provide the right set of strategies for controlling ozone, we may worsen the problem. I think that frightens me, and I think that should frighten each and every one of you, that we have to develop strategies that are logical. I think the idea of doing cooperative types of analyses and having cooperation with the various fractions of the problem is a very important tool. But I think we have to have a mission statement also. At this particular time, I think the mission statement I believe in is the LEV vehicle with the national, Federal reformulated fuel, not the California fuel. And I will try to explain that to you in about five minutes when I discuss the nature of the NAS report we worked on.

First, if you have any questions on that part, I can answer them now, and then we can go on to the NAS report. I will be sending the Committee two papers. One I finished--

SENATOR ADLER: May I interrupt you?

DR. LIOY: Yes, sir, Senator Adler.

SENATOR ADLER: Please describe for me, if you can, some of the longer term health effects. You were speaking, I think, specifically about acute problems of five to seven days duration.

DR. LIOY: Right.

SENATOR ADLER: Why don't you talk more about the long-term effects, because I think--

DR. LIOY: I wish I knew.

SENATOR ADLER: My kids get stuffed noses and are wheezing for a few days -- in fact, they are right now -- and then they get better. I guess I am more concerned about the longer term--

SENATOR RICE: And so did your grandmother.

DR. LIOY: I would not neglect the short-term effects, because short-term effects have a tendency to accumulate and cause long-term effects. I mean, if you were insulting a lung and you are changing the biochemistry of the lung, you are doing something to the basic pulmonary system. Therefore, you have the opportunity for infection. You have the opportunity for repair, but in some cases you may, over time, not be able to repair the system. That is one of the-- I guess that is what the ideology of chronic obstructive lung disease is all about.

We do not know, at this particular time, the effects of ozone over a long period of time. There are some suggestions -- and, of course, I hate to use the California example, because I know in this room there is a little bit of apprehension about talking about California--

SENATOR RICE: True.

DR. LIOY: I know.

SENATOR ADLER: Except, you know, we are actually a lot closer to California in terms of our nonattainment problem than we are to places like North Dakota or Nebraska.

DR. LIOY: That's right.

SENATOR ADLER: So, realistically, when we are talking about where we stand in relation to other states, California is a pretty good model of the problems we have with ozone, as opposed to some of the rest of the country, especially the Midwest.

DR. LIOY: That is a very--

SENATOR ADLER: So I think--

DR. LIOY: We're in the middle.

SENATOR ADLER: Don't be offset by the comments some of us made about how we are not like California. We are much, much more like California than we want to admit.

SENATOR RICE: Or, like the Chairman--

SENATOR ADLER: We have much more of a problem--

DR. LIOY: I would say we are more--

SENATOR ADLER: --particularly in our northern counties -- much more of a problem, like southern California, than we have the beautiful bucolic air of a North Dakota. I think all of us keep that in mind. You may feel free to comment, but keep that perspective.

DR. LIOY: Okay. Well, with that in mind, there have been one or two flawed epidemiologic studies so far that have been done that have shown that over time people living in the polluted areas of southern California versus a pristine area in Arizona, have, over their lifetime, a greater pulmonary function loss than those people who live in Arizona. So if I wanted to put us into a category, let's say New Jersey may be somewhere in-between if you take that flawed study and use it as an analysis. But we are not doing that. There are two major groups that are going to be putting out RFPs -- which are Requests For Proposals -- for looking at what the long-term effects are. But there is enough suggestion, both in rat studies at concentrations that humans breathe-- That is another thing that is real trouble to me, because we don't have to worry about extrapolating dosing of rats at 10 times what we normally find in the environment and seeing the effect. We can dose the rats at the same thing that you and I are breathing, and they will see the biochemical effects. That scares me a little bit about the inflammatory aspects of this particular pollutant.

But it shows that over a lifetime there are biochemical changes which can lead to chronic lung disease. So, if I had to take the animal models, which we do with some faith, and then start using them as an example for planning new studies, I would say it is not inconsistent that we would probably see longer term effects if, in fact, we do very good studies.

SENATOR McNAMARA: Well, one--

DR. LIOY: Yes, sir?

SENATOR McNAMARA: I don't mean to minimize what you're saying, but there are a lot of things that affect rats that do not affect humans.

DR. LIOY: That's right.

SENATOR McNAMARA: A classic example is the time that they announced that saccarine, which they took off the market because it caused cancer in rats, has no effect on humans.

DR. LIOY: Well, that--

SENATOR McNAMARA: So, you know, I--

DR. LIOY: Well, let me try to make a translation there, and I agree with you. I was trying to state that I clearly did not want to use that as a good example, because I know there is a lot of hesitancy--

SENATOR McNAMARA: But you knew what was going to stick in everybody's mind as you said it.

DR. LIOY: Yes. Let me see if I can give you a better example. Clinical studies have been done where we exposed normal human beings to six to eight hours of ozone. We saw that those people responded the same way the rats do, using the same type of exercise cycle, except the rats do it at night and the humans do it during the day.

So, we are pretty sure that the nature of the pollutant is consistent between species at this point. But again, we want to verify the long-term effects and do human studies; you know, conduct human epidemiologic studies. So we are not relying on the data, but at least it says that with ozone, it is such a rapid oxidating specie, and it causes inflammation in the lungs, and is an irritant to the lungs, that we--

SENATOR McNAMARA: Is there a much shorter life span in southern California?

DR. LIOY: We cannot tell that, because obviously southern California has much more transience than we do.

SENATOR McNAMARA: Maybe you should get to some insurance companies. They might be able to give you some data on people who have lived there all their lives.

DR. LIOY: Well, those are the types of things we are doing. We are looking at siblings who live in, let's say, Hawaii, or somewhere else, with the other sibling living in California, especially for that type of a study. Clearly, we do not know the answer on chronic effects. What we are doing right now here--

SENATOR McNAMARA: I didn't mean to delay you, because--

DR. LIOY: --is the acute effects, and they are real.

Okay. Let me go to the NAS document, trying to deal with an issue that I think was overlooked, for whatever reason, this morning.

The committee I served on developed this document called "Rethinking the Ozone Problem in Urban and Regional Air Pollution." That was not the original title, because we didn't really believe that we were going to rethink it. We thought we had all our ducks in line. But clearly, at the end of the study, we began to realize a lot of things that we had been doing in the past were not totally appropriate for trying to control ozone.

Motivation for the study was basically progress towards meeting the NAAQS standard. Progress has not been as rapid as we might expect, and also, as I explained earlier, we did find adverse effects. So, we felt that was very important.

I am going to go over some major conclusions. I am not going to read all the flaws; I am going to highlight the ones which I think are appropriate for this analysis. In the document itself, we go through all the analyses. Your staff people can call me at any time, and we can discuss the nature of these particular-- (indiscernible; witness showing slides and is speaking off microphone)

SENATOR McNAMARA: Please proceed.

DR. LIOY: All right. In the past, ozone control strategies assumed that VOC controls were more effective than NO_x controls. Unfortunately, that is what I heard this morning. As I go on, please leave that in your mind. And, as I go on, we are going to try to poke a few holes in this argument. Recent studies have indicated that anthropogenic VOC emissions are greater than previously believed. That was discussed logically and reasonably this morning; superemitting vehicles, evaporative emissions. We all believe it, and know it. We underpredicted the VOCs, so therefore our models have been underpredicting the nature of the problem.

In many areas, VOC emissions from trees are significant. We find that in New Jersey. Again, all of these things are consistent with what we saw this morning, and this afternoon. A VOC control strategy alone may have been inappropriate in many areas. I will leave that alone, and discuss it in about five minutes. Let's leave that, along with this, as topics of discussion.

Finally, accurate VOC estimates are needed. Fortunately, DEPE now has a new technology which has just recently become available, and they are going to begin to measure the reactive hydrocarbons in the atmosphere, so we can validate some of these remission reductions. It has taken time to develop the proper instrumentation, but I think now we are beginning to get the right act together.

Now, let's go to NO_X control. It is a dirty word, but I don't think it was discussed too much this morning, and I am certainly surprised at that. NO_X controls are probably needed in many areas. Air quality models show that NOx controls can effectively reduce ozone in most areas. Again, not alone, and let me explain that, in a little bit.

In many urban and rural areas which have biogenic emissions, you can only use NO_X control. We are not like Atlanta; Atlanta is not like California. Remember this example: California is not like Atlanta. Atlanta has a problem that is unique.

Finally, according to model results in the Northeast, combined VOC and NO_X controls would be a much more effective strategy in reducing ozone than VOC alone.

So those are the modeling studies that have been done to date. Even with the flawed nature of these studies, because the VOC emissions have been underestimated, which makes it even more important to have NO_X controls-- The point is, we have to have both NO_x and VOC controls to reduce the ozone problem. I am going to bring this point around to the LEV vehicles in a couple of seconds.

I know there was a lot of discussion about the VOCs. I thought about it for about five minutes at lunch, and I recognized that there was something that was missing. This is the (using slides/graphs) Federal Tier I cars that people were discussing this morning, and emissions from the 96 LEV VOCs. Here is the NO_x from the Tier I, and here is the NO_x control from LEV I. The point of the matter is, in an area like New Jersey, we have to do both. We've got to control the NO_x and we've got to control the VOCs. Since one of our major emitters -- 50 percent of our emissions -- is basically automobiles, it is the NO_x and the VOCs that have to be controlled; it is not just the VOCs.

So some of the discussion this morning was absolutely on target. With the nature of the Tier I vehicles, with the nature of putting better evaporative emission controls on, we will get the VOCs down. By the year 2010 we will probably do very well, but right now, with the Tier I vehicles, we are not going to do very well for NO_x. The trouble is, they discussed the Tier II vehicle, but that is not to be introduced until way out here. So, what I am worried about is, if we focus on VOC alone, we may not control the ozone, because we will still have the NO_x generating facet, and, to me, that is a serious consideration that we have to take into account. It is a dual nature. It is not a simple problem. I wish I could say, "Let's go stick a cork on the cap for the thing that produces ozone," but it doesn't work that way. It is not like particulate matter. With particulate matter, if we do the job right at the source and just cap it off and scrub it out, the particulate matter is gone. When we are dealing with ozone, we are dealing with a secondary pollutant. A pollutant is formed by three things: VOCs, NO_x, and sunlight, and the right meteorologic -- four things, the right meteorologic conditions with the sunlight. So, we have to look at this in total.

I think maybe part of the discussion has to be, between the oil, the automobile, and the DEPE, how we factor in these different components and ensure that we achieve what we want. If we look at VOC alone-- The discussion this morning didn't seem to be that difficult to comprehend, but when we are talking about NO_X, we have a whole other factor in the equation, and that factor is truly logical in terms of the discussion of ozone production.

SENATOR RICE: Mr. Chairman?

SENATOR McNAMARA: Yes?

SENATOR RICE: Just so we can keep this in perspective, on your last point, I think that has been the implication of my argument. We have to do more than one thing. It seems that the argument here has been to do the California model. I don't disagree with your information that you ought to go back to the drawing board, and that we have to reduce the NO_X as well as the VOC. But my point is, I am not so convinced that we need the California model to do that, along with something else we want to do. The arguments here seem to be a stickler for doing it this way. I still say California is not New Jersey. They have much more sunshine, by the way, in southern Cal. But by the same token, there is a difference between an urban center like Newark, just like there is a difference between L.A. in California and maybe a Berkeley or a Bay Area type of location.

DR. LIOY: Well, you see--

SENATOR RICE: So, I am talking about ozone, but I am also talking about what causes it. I am talking about the junkyards that sit around in Newark, with abandoned cars and things like that, that the sun beams down on, with all that leaking stuff. I am just saying-- I guess my point is, I am still not convinced that we have to do California. I am convinced that we have to do more than one thing to put all of this into perspective, to reduce the NO_x, as well as the VOCs. I just wanted you to keep that in mind.

DR. LIOY: The only--

SENATOR McNAMARA: Rather than dwell on that subject, because you--

DR. LIOY: May I just make a minor comment? The only problem I have is, all the other approaches, at this particular point, at least as far as I can tell, are much less efficient because you are dealing with smaller emissions per day from the other sources; whereas the motor vehicle is basically, you know, put in in total as an area source.

SENATOR McNAMARA: Asbestos roofing is 38 tons a day.

DR. LIOY: Pardon me?

SENATOR McNAMARA: Asbestos roofing is 38 tons a day -- asbestos.

DR. LIOY: Asphalt -- asphalt for volatile organics, but there is no NO_x. See, that is the problem. If I were just dealing with volatile organics, we would have a whole host of things we could deal with, but with NOx, we are much more limited. And NO_x is part of the equation. It is not something we can ignore.

SENATOR McNAMARA: What is why I asked the question this morning. It seems to have been ignored, but I did ask the question because I thought it was a factor.

DR. LIOY: Well, I thought it was an excellent question. As I said, it was an excellent point.

SENATOR McNAMARA: Paul, I would like you to move on, only for the simple reason that the hour is getting late and we have about seven more people to testify.

DR. LIOY: Oh, yes. I am just about finished. Okay? I didn't want to extend my time too much.

I think, from my vantage point at this time, because of the total tonnage and the total volume of material that you can reduce, at least for NO_x, we are much better off dealing with something we can do on a -- you might say, a consistent basis. Combustion sources, like habachis-- I mean, I don't really want to go into someone's backyard and try to, you know, shut down a habachi. To me, that is illogical. It is a small combustion source. Hey, you know, we all like to use them. It is a nice part of American life. We like to use our cars, but I think we have to pay some price for the car. If it is for improvement of air quality, I think we have to deal with the fact that we have to control both VOC and NO_x.

I will just leave you with that message.

SENATOR McNAMARA: Thank you very much, Paul. Thank you.

ASSEMBLYWOMAN OGDEN: Is the spokesman for the Propane Gas Association still here? (affirmative response from audience)

SENATOR McNAMARA: I guess before you start-- I'm sorry that the schedule was a little longer than we had anticipated. But in light of that, and in light of the fact that hopefully we will be able to hear from all of the witnesses today, I will ask each of the witnesses to move a little bit more rapidly so everyone can be heard. I want to have enough Senate and Assembly members still here, so I would suggest that we target for 4:30. It is 3:30, so that gives us one hour to squeeze in an hour-and-a-half. So, go for it.

W I L L I A M P. C U R C I O: I would like to thank the Chairs. We are prepared to do that. We are prepared to move it along for you, so you can get other testimony in.

My name is William P. Curcio. I am President of the New Jersey Propane Gas Association. With me is Mr. Brian Clayton, who is Chairman of our Clean Air Committee. We are here representing the Association.

I would like to answer one question that was raised previously. Our estimates from our sources indicate that you may have up to 500,000 vehicles in the commercial area with fleets to be able to handle alternative fuel. So there is a vast market out there and it represents billions of dollars of investment on the private sector.

We are here today to tell you that propane has been around for 60 years. It is here today. It has been used; it has been recognized. We are here to tell you that propane is cost-effective, and we are here to tell you that it is environmentally acceptable.

What I mean when I say it has been around-- We have been around for 60 years, and have been recognized as a clean air fuel. We were recognized in 1974 by the New Jersey Legislature as a clean air fuel, and thus were presented with various reductions in the fuel tax because we were a clean air fuel. We have four million vehicles on the road today using propane, worldwide. There are 370,000 in the United States today, and there are approximately 1000 vehicles in the State of New Jersey, utilizing propane, basically because of its clean air content, and also because of its cost-effectiveness.

What I would like to do is to rapidly go through some charts which are contained in the statement we gave out, which will show you our cost-effectiveness. Next to our cousins, compressed natural gas, which we feel is our next best alternative fuel, you can see that converting propane -- and we are talking about a fleet of 20 vans-- If you take a look at it, the cost of converting a propane van would be about $1400; the cost of a CNG van would be about $2200.

When you get down to the cost of the 20 vans, you see that there is an approximate $17,000 difference; $44,000 to convert the CNG vans, and $27,000 to convert the propane.

When we get down to the all-important numbers, though, when you take in fuel consumption for 100,000 miles, plus the equipment to put in -- to pump the product in, you can see that the first-year cost for a propane fleet of 20 vans was

$43,000. That same cost on a CNG is $99,000 on that first-year cost. You can also see, given the tanks that are on the vehicles, that could be placed on the vehicles -- and we will get more into that later -- that you will get a 267 mile range on a propane vehicle, versus 95 miles on a compressed natural gas vehicle. We consider compressed natural gas as the next best alternative to us in the alternative fuel fleet.

When we take a look at another business concern -- dollar concern -- you can see that on a vehicle the relative size of the container, the handle, the fuel -- the alternative fuel used-- You can see that you have a payload on a compressed natural vehicle of about 588 pounds of tank, compared to 161 pounds for propane. When you are hauling material and you are pulling that truck and you are looking at fuel consumption, that weight is significant in today's vehicles. So you can see that that is another cost factor on the side of propane when you are talking about commercial fleet vehicles.

The next one shows you the range based on the content of each fuel. In an equal-sized tank, you can see the relative benefits of propane, where you would go 100 miles on propane; ethanol you would go 82 miles; methanol 61 miles; and CNG 25 miles. That scopes it out as far as being able to make your rounds around the various towns in the State of new Jersey.

I want to quickly tell you why we are environmentally acceptable. If you take a look at the charts, you can see that in hydrocarbons, carbon monoxide, and nitrogen oxide-- We are four times cleaner in the hydrocarbon area; we are 14 times cleaner in the carbon monoxide area; and in the important nitrogen oxide area, we are 2.3 times cleaner than the standards used for gasoline -- I want to repeat that, gasoline. These were tests that were done at the--

SENATOR McNAMARA: Is that the reformulated gasoline?

MR. CURCIO: That is gasoline presently used, okay? These are tests that were done by the EPA at its Ann Arbor testing facilities last year, using a 1991 Ford Crown Victoria during their tests. On those tests, we can supply information that goes beyond that. There are numerous studies that indicate that propane is a viable fuel.

I think one of the major areas that we would like to emphasize is the fact that the representative from Sun said he felt propane was an alternative fuel that was here, that could be considered by the Committee. What we are asking the joint Committee to do -- because sometimes we are forgotten about; we are sort of a silent fuel -- is to not forget propane in your considerations. It is here now; it is used; it has been used. It is acceptable environmentally by the EPA, and it is also cost-effective to the population that is out there.

Thank you very much for allowing us to present that information.

SENATOR McNAMARA: Thank you very, very much.

Do you want to call the next witness?

ASSEMBLYWOMAN OGDEN: Next we will have Blakeman Early, of the Sierra Club, and Rob Stuart, of New Jersey PIRG.

SENATOR McNAMARA: Gentlemen, before you start, I hope you heard my message before.

A. BLAKEMAN EARLY: I know. It has been a long afternoon.

SENATOR McNAMARA: If you have written testimony--

MR. EARLY: Yes, I have it right here.

SENATOR McNAMARA: --you know, pass it around, but please, please summarize it so we can move the hearing along. Thank you.

ROB STUART: Good afternoon, Mr. Chairman. My name is Rob Stuart. I am with the New Jersey Public Interest Research Group. New Jersey PIRG is a nonprofit, nonpartisan research and advocacy organization. We are pleased to be here today to support DEPE's proposal for adopting a low emission vehicle in New Jersey. We called for this measure when we first began debating the implementation of the Clean Air Act, and we were pleased to support Assemblywoman Ogden's and Assemblyman Martin's bill last year, that would have actually created the program, if the DEPE had not acted.

So, we think DEPE is right on track with proposing this legislation to deal with the serious problem of ozone pollution in New Jersey. I think there has been enough testimony as to the effect air pollution has, though to put it in context, it is deplorable that even if this program is adopted, we are still dooming children, the elderly, those who currently have, and will have respiratory ailments, to breathing dirty air well into the 21st century.

I want to turn it over to Blake to talk a little bit more about the Act. Then we will come back and explain some of the literature we just handed out as to the real costs to, and the availability of, the technology that will lead us to these cleaner cars. I just think it is important to note that we are a long way away from clean air, which was promised years ago.

MR. EARLY: Good afternoon. It is a pleasure to be here. For the record, I am A. Blakeman Early, Washington Director of the Pollution and Toxics Program for the Sierra Club. I have been a Washington representative of the Sierra Club for 13 years, and I have been working on clean air legislation for 15 years.

I was very much struck by the testimony given by the auto industry this morning regarding the fact that New Jersey does not really need the California tail pipe standards. I am here to vigorously disagree with the industry on that question.

I direct your attention, for a couple of minutes, to, what is New Jersey going to need to do in order to comply with the Clean Air Act? Briefly, let me run through some important elements that you need to keep in mind:

State implementation plans under the new Clean Air Act amendments -- which are greatly expanded, as you will note, in large part because of the huge public demand that something better and more effective be done to solve the problem -- are required to contain sufficient elements not only to attain the standards, but to maintain the standards. Congress, in emphasizing that, requires that once areas which have been in nonattainment achieve attainment-- States have to develop plans to maintain attainment with the standard for 20 years. That is a long time. So, when you are looking at putting elements of an implementation plan in place, it is important not only to just get into attainment, but to stay in attainment.

One of the things I was struck with on the Motor Vehicle Manufacturers Association's -- one of their bar charts -- was, by recalculating some of the studies, they showed how New Jersey just edged over into attainment in the year 2005. It didn't look to me like they were going to stay there very long, but under their calculation they just kind of edged over.

SENATOR McNAMARA: Under the Commissioner's, we didn't make it, so, you know-- We got the message from both, and we don't need a replay of the testimony we have heard for a couple of days on this. Get to, you know, what your objective is, and move along -- please.

MR. EARLY: The Clean Air Act, as you may already know, also requires annual progress be made. If annual progress isn't made, new Federal requirements kick in.

You are very much aware of the fact that the Clean Air Act creates a new ozone transport zone. One of the things I wanted to observe was, if you are looking at the question of delaying the use of the California tail pipes in your plans as a member of the Ozone Transport Region, obviously other states are very anxious to receive New Jersey's cooperation in the overall pollution reduction effort. New Jersey's delay is likely to result in Pennsylvania, Maryland, Virginia, and the

District of Columbia delaying also. You need these states to do what they can to reduce the pollutants that are being blown into New Jersey.

SENATOR McNAMARA: That point was made very clearly this morning.

MR. EARLY: Finally, I guess there has already been a discussion of the sanctions that can potentially apply for New Jersey being found having an inadequate plan, failing to make progress, or failing to ultimately meet the attainment date. Certainly the Congress sends a very strong message when it imposes a Federal $5000-a-ton penalty for excess emissions from major sources in severe areas that do not meet the 2007 deadline. That is a very serious potential economic impact.

As the witness just before us mentioned, we are not really providing much of a margin of safety in even attaining the standard. I thought he made a very good presentation on the fact that in New Jersey, there are many more days where the pollution levels hover just below the standard for many hours of the day than there are technical violations of the Clean Air Act standard.

In light of this impressive array of requirements, I basically strongly disagree with the auto industry's assertion that you don't need the tail pipe standards. But I come here to also say, I have heard this before, and I urge you to ask the question: Why should you believe the auto companies? My experience in lobbying on the Clean Air Act and the history on the Clean Air Act debate, have shown that the auto companies have routinely exaggerated the cost of compliance, and always understated the severity of their air pollution problem. Here are some illustrations:

In September 1970, Lee Iaccoca, then Vice-President of Ford Motor Company, said, "Some of the changes in this bill could prevent continued production of automobiles. Even if they don't stop production, they could lead to huge increases in the prices of cars. They could have a tremendous impact on all American industry, and could do irreparable damage to the economy." This is the man who ended up being one of the highest paid executives in America 20 years later. It does not appear that the assessment of the industry on the impact of the Clean Air Act requirements has been a very accurate one in the past, and my testimony goes into this in greater detail.

SENATOR McNAMARA: That's why Ford fired him.

MR. EARLY: I'm sorry?

SENATOR McNAMARA: I said, that is why Ford fired him.

MR. EARLY: Let me review some of the problems I had with the auto industry's testimony today. What the auto industry told you this morning, was that the California standards really ought to be used to solve California problems. What they didn't tell you is, they are challenging the waiver process for California even going ahead with their own standards in California.

What the auto industry told you this morning, was that the EPA will adopt a Tier II Federal car standard. What they didn't tell you is that they oppose that standard. They will fight that standard all the way to the Supreme Court. The likelihood of that standard going into effect, particularly on time, is really quite low, in my opinion.

If you look at the numbers, assume for a moment you get an EPA decision to go ahead with the Federal car in 1999 -- a Tier II car. The industry litigates the question for two years; you are in 2002. They are required by law-- They are allowed a two-model year lead, so we are talking 2004. That is when the first Tier II car would be marketed -- 2004. You would have a 10-year turnover rate for the full introduction of the car. We're talking 2014 before the full benefits of a Tier II Federal car will be available in New Jersey. I submit that it is important to get on with the job, and get on with it as quickly as possible.

We have seen this kind of testimony from the industry in the past. Unfortunately, I think we have seen it again today. I ask the simple question, given the history of misrepresentation and exaggeration from the industry: Why should you believe their testimony?

Thank you very much.

SENATOR McNAMARA: Thank you.

MR. STUART: I just want to point out that one of the things that we submitted for the record is a brochure and a cover letter talking about the electronically heated converter, both the fact that it is in place, and it has shown -- and I will read right from this letter-- It says: "The emissions reductions achieved shows compliance with the California LEV standard for the 100,000 mile test."

The industry says this is going to put the cost of cars out of reach. Obviously, there is concern within the labor community that that cost would then therefore mean that there would be less cars being sold, and we would have to close auto plants. I think the opposite is the case.

First, let me point out that within the industry's own documentation, the EHC cost -- the whole system, not just the converter -- at a maximum is $300. It is probably less than what air-conditioning costs, and is not a significant addition to automobiles.

The other thing is, if you look through this brochure you see that, number one, the converter itself is only four inches long. It is sort of a small component, not something that is going to require a lot to be added in. In addition, there are some sophisticated relay modules, logic modules, power modules, all things that actually have to be constructed, have to be built, have to be produced, have to be installed. So I think this, especially given the fact that we are talking about requiring this on 1996 cars -- the proposal, is regulation at its best, in that it is giving enough lead time for technology like this to develop, to be tested, and to be produced.

Again, from the front -- from the cover letter -- "Over the last 18 months, significant advances have been made in this technology, incuding extending converter and component durability and reduction of power requirements for preignition heating research and development jobs." So I would take issue with the blanket assumption that if we require this, this would be -- we would see a reduction in the amount of jobs in New Jersey. In fact, I think we could be spurring a new industry and, in fact, rescuing a dying industry, by allowing American companies and New Jersey-based companies to produce these cars, which ultimately are going to have to be produced, and ultimately are going to be sold here anyway.

I think it is important to recognize that you are giving people enough time -- this technology is already on the market; it is already working -- and we really should challenge the horror stories and the dire predictions and move forward with this program.

SENATOR McNAMARA: We intend to. You did prove one thing: You can't do it for $170.

MR. STUART: Well, the low cost--

MR. EARLY: The $170 cost, which is one that continues -- because I talked to a California Air Resources Board official yesterday -- to be defended, is the cost once you have a sufficient demand for the converter and its associated equipment. The cost obviously is lower as the total number of the products--

SENATOR McNAMARA: Sure, that was discussed earlier, but there is an initial higher cost.

MR. EARLY: --and that is the difference.

SENATOR McNAMARA: The decision is not going to be made on the cost factor. I thought it was going to add a little lightness, but at this point in the day it doesn't seem anyone is light. (laughter)

MR. EARLY: Well, I am stunned at how low that is. My daughter lost the plastic hubcap off her car. I went in and bought one -- 40 bucks.

SENATOR McNAMARA: Well, you don't honestly believe you are going to buy a replacement converter with an electric heating blanket for $300? It will most probably be closer to $2800. The car that sells for $20,000, most probably with replacement parts over the counter, runs closer to $45,000, $50,000, or better.

MR. STUART: Which is one of the reasons why we support the extended warranty and the provisions of this proposal which will ensure that the pollution control equipment will, in fact, last the life of the car, rather than, you know, having consumers bear that cost, or worse, having those emissions at hazardous levels being emitted from those cars.

MR. EARLY: I wanted to also reinforce the testimony from the NAS witness. If you don't take both the VOC and NO_x out of the vehicle at every opportunity you can, you are going to have to take it out of stationary sources. This is going to be more expensive, particularly NO_x. Getting NO_x out is going to be much more of a problem from stationary sources than this, what we see to be a very cost-effective opportunity.

SENATOR RICE: Mr. Chairman?

SENATOR McNAMARA: Yes?

SENATOR RICE: I hate to do this, but I know we are on the record; we are being recorded, and I would like to keep my record clear. With due respect to the auto industry, I do have a problem with corporate America sometimes. There was an implication that the integrity of that information -- that it may not be as valid as it necessarily should be, and we should be cautious.

Let me just go on record to say, I do not have a lot of respect for the environmentalists' special interest either. I would take their information with the same grain of salt as they indicate about the others. In this State, I know that PIRG and others still have not come forward with the right information on environmental issues that we raised last session in Committee, etc.

So, as the record reflects, I am going to be objective, and thank God that I can read and write.

SENATOR McNAMARA: Thank you. So that we don't get into a debate, let's say that everybody came to the table with dirty hands.

MR. STUART: Certainly dirty air.

SENATOR McNAMARA: Is your testimony completed?

MR. EARLY: We're finished.

SENATOR McNAMARA: Thank you very much, and thank you for your patience.

ASSEMBLYWOMAN OGDEN: We certainly thank you very much. Janet Lussenhop, Regional Plan Association?

J A N E T D. L U S S E N H O P: I promise to be very short. My name Janet Lussenhop -- L-U-S-S-E-N-H-O-P. It is different from how it is written on the program you have. I am Director of the Regional Plan Association's New Jersey Office. For those of you who do not know RPA, we have been around for as long as propane. We work on planning issues for the New Jersey/New York/Connecticut region.

I am here today to support the adoption of the LEV program in the State of New Jersey. We base our support on the work of Project: Clean Air, which we have staffed for the past three years, and which you heard mention of in the testimony of the petroleum industry.

We were established several-- Or, Project: Clean Air was established several years ago to try to build a consensus on ways to reduce emissions from transportation strategies, in anticipation of a Clean Air Act that would focus on transportation strategies more than it has in the past.

We published our recommendations last fall. You have copies of our reports. They were part of the DEPE package you received last week. I have a couple more copies here, if anyone didn't get them then.

I just want to tell you who was part of Project: Clean Air, since this was a consensus-building group. The members of the Steering Committee, which was the group that made the policy, were: Allied Signal; the League of Women Voters; the New Jersey Petroleum Council; the Casino Association of New Jersey; the New Jersey Business and Industry Association; the Delaware Valley Regional Planning Commission; the New Jersey Automobile Club; New Jersey DOT; the New Jersey Association of Railroad Passengers; the Natural Resources Defense Council; the New Jersey Clean Air Council; the Motor Vehicle Manufacturers Association; AFL-CIO of New Jersey; New Jersey Office of State Planning; Stockton State College and Princeton University; the Port Authority of New York and New Jersey; PSE&G; the American Lung Association; the New Jersey Motor Truck Association; Chemical Bank; and New Jersey DEPE.

That was just to give you a sense of the range of participation we had in this group. We worked together for two-and-a-half years, and studied a range of transportation strategies to improve air quality. We looked at hardware strategies, emissions and fuel changes, land use planning changes, pricing strategies, and a variety of travel demand strategies, including improvements in public transit, employer-based ride sharing, and HOV lanes, among others.

We did a research study of the emissions reduction potential of all of these strategies, which is in this report here; also, an economic analysis of each measure. The Steering Committee was also advised by a technical group, which included

Dr. Lioy, who you just heard from, Brian Davis from Sun Oil, and Jim Benton, among others.

The Steering Committee had help from this technical group, and also had presentations from the Petroleum Council and the Motor Vehicle Manufacturers Association. So they really heard from everybody, I think, who they could hear from. Based on these presentations and our analyses, the Steering Committee concluded that the LEV program should be one of New Jersey's top five priorities in air quality planning.

In reaching their conclusions, they weighed the trade-offs. They understood that there were trade-offs in implementing some of the strategies. They weighed those trade-offs with the need for a variety of strong measures to meet the State's air quality problem. I should say that, while we reached a consensus on this, it was not a unanimous vote, as you will understand from who I said was on the Committee. A majority supported it as a top priority. There was some dissent, and there was a written dissent from the Motor Vehicle Manufacturers, which is published in our report.

Let me just explain quickly why the Committee reached the conclusions it did: Our technical study showed that the biggest impact on emissions reduction would come from technological solutions, such as tighter emission standards, alternative fuels, and more stringent inspection/maintenance. It also showed that travel-related measures would have a significant impact on emissions in the long run. In fact, the top priority strategy was improvements in land use planning, but the technical solutions provided emissions improvements several times as large as the most effective travel-related strategies. Also, the technological solutions obviously do not require changes in travel behavior.

We also did a public opinion survey for the Project. It was done by the Eagleton Institute at Rutgers. The Survey told us that three out of four New Jerseyans think that the quality of our air poses a threat to their health, or to the health of a member of their household so they think it is a problem. It also found that making available alternative cleaner burning fuels for cars and trucks was the solution of choice for the New Jersey public, and establishing tougher vehicle standards was also considered very acceptable.

The Survey also showed that New Jerseyans think that cleaner cars would do more than any other strategy to improve air quality in the State. For obvious reasons, the Survey seemed to tell us that the public is very supportive of technological solutions, and less supportive of those solutions which mean that they have to change their travel behavior, or their life-style in some other way.

The Survey also found a very high level of support for funding air quality improvements. In fact, more than half of those surveyed said that cleaning the air is so important that continuing improvements must be made, regardless of cost. A majority said they favor efforts to reduce air pollution, even if they cause taxes to go up, which, of course, many people question the validity of our Survey.

SENATOR McNAMARA: I was just going to say, I hope you submit a copy of the Survey to the Committee, and the number that responded.

MS. LUSSENHOP: Sure, sure. It is all in here.

The Steering Committee of Project: Clean Air remained convinced in the end that, given the severity of the problem in New Jersey, the LEV program must be a critical part of New Jersey's air quality solution, and the Regional Plan Association supports that conclusion.

Thank you.

SENATOR McNAMARA: Thank you very much.

ASSEMBLYWOMAN OGDEN: Thank you, also, for all the time and effort you have put into this really important issue.

Next we will have the Public Service Electric and Gas Company.

ROGER SCHWARZ: Good afternoon. I am Roger Schwarz. With me is Greg Dunlap. On behalf of PS, let me thank you for the opportunity given us today.

I guess my first job is to figure out how many pages I can throw away, and get this to move along. Well, I don't need that one.

SENATOR McNAMARA: It will all become a part of the record.

MR. SCHWARZ: There was a lot of talk earlier already today about how many days in New Jersey we exceed the ozone standards versus how many days perhaps in California. I think we ought to take note of the fact that, given the passage of the Clean Air Act amendments, that is really history. There is nothing to be gained by arguing about the number of days of exceedances. New Jersey must come into compliance with the Clean Air Act.

As a part of its plan for compliance, DEPE has proposed these low emission vehicle regulations. PSE&G supports the decision to adopt those regulations. The environmental benefits of a LEV program will assist the State in finally meeting the Federal air quality standards.

Another point with regard to the Federal Act: New Jersey's LEV program is compatible with other mobile source emission reductions programs that are required by the Act. Really, to no small extent, the debate over low emission vehicle standards is already over. Beginning in the fall of 1997 -- or model year 1998 -- New Jersey and the other states that have failed to meet the ozone limits, are required to participate in the Clean Fleet Program, which is already mandated by Federal law. Under this program, the percentage of vehicles purchased by fleet operators -- and in the first year that will be 30 percent of purchases -- will have to meet the LEV or the California emissions standards. The National Energy Strategy legislation, which is in both Houses of Congress -- it has passed the Senate; it has been released from Committee in the House -- will advance that schedule.

So, the LEV program, as it is proposed both here -- not just in New Jersey, but here in the Northeast, and in California -- will require manufacturers to sell vehicles that meet the lower emission standards. The Clean Fleet Program, which is the other one I just mentioned, will require the fleet operators to purchase them. I mean, that is in the law, and we are not even debating that today. So, given the existing mandate that New Jersey implement the Clean Fleet Program, adoption of the LEV program is a logical step. And by implementing programs on both the demand and supply sides, New Jersey can facilitate the acceptance of these vehicles by ensuring a market for manufacturers and the availability of vehicles for consumers.

Many of the vehicles that are going to be sold and marketed and designed to meet the LEV standards will not be designed to run on traditional fuels. They are going to run on the so-called alternative fuels. At Public Service Electric and Gas we sell two of those fuels, and I hope it doesn't come as a surprise to anyone here that we hope to sell electricity and compressed natural gas for use in cars and trucks. The use of those fuels will help to clean our air, and we believe we can do well by doing good.

You heard from an earlier witness about the issue of nitrogen oxide, and there has been talk today about the relative contributions of mobile sources and stationary sources. Let's remember that here in New Jersey, well ahead of Federal schedules-- For the past 20 years, New Jersey government and New Jersey businesses have been working to clean the air. At my company, we have converted our generating stations from coal to oil, and then from oil to gas. We burn only low-sulfur-content fuels. We have added pollution control equipment over the years. One result is, we are proud that our generating stations in the State already meet the Clean Air Act's Phase I and Phase II limits for sulfur dioxide.

Now, that said, we will move on to the issue of ozone. It seems clear that both stationary sources and mobile sources will have to be -- that the emissions will have to be reduced. We recently announced plans to repower and rehabilitate our Bergen and Burlington generating stations. Once that work is completed, the result will be more efficient, more economical power for our customers, and cleaner air. We expect that the emission rates for nitorgen oxides -- which you just heard about -- will be reduced by as much as 97 percent, and CO by as much as 85 percent.

SENATOR McNAMARA: That is with your proposed renovations?

MR. SCHWARZ: Yes.

SENATOR McNAMARA: Because one of the proposed options -- and I was going to say, I hope you would be as supportive -- says that more stringent control of utility boiler emissions could lead to a reduction of 63 tons a day.

MR. SCHWARZ: We are pretty confident that-- We have seen the N.E.S.C.A.U.M. NO_X -- there are so many acronyms here -- racked proposal, and we are confident that with the plans we have announced for Bergen and Burlington we will be meeting, if not exceeding that. That work in Bergen and Burlington, which are two of our fossil stations in the State--

SENATOR McNAMARA: That is meeting the proposed -- the standards that are coming into play, right?

MR. SCHWARZ: Right.

SENATOR McNAMARA: What I am saying, as a further option -- and I hope you have the same enthusiasm for the--

MR. SCHWARZ: I'm with you on this.

SENATOR McNAMARA: --further reduction of NO_X--

MR. SCHWARZ: I know where we're going.

SENATOR McNAMARA: --as you have for LEV--

MR. SCHWARZ: I'm trying to get to my next sentence.

SENATOR McNAMARA: I don't want to hear you back here six months from now saying--

MR. SCHWARZ: No, I am trying to get to the next sentence, which is--

SENATOR McNAMARA: --"whoa."

MR. SCHWARZ: --that, that work there-- They will be the first plants where we are going to be repairing and firing with natural gas. That work is part of an overall plan for all of our fossil stations. I think we will be meeting, or exceeding, those proposed standards. But that alone is not going to do the trick, and mobile sources are going to have to be part of the solution.

You have heard all the numbers about how much motor vehicles contribute. Unless action is taken -- you saw the charts with the way things are going to rise in the future -- the projected increase in vehicle miles traveled will increase emissions and make it more difficult for New Jersey to have cleaner, healthier air. I said to someone earlier that if we don't take action now, only Bill Clinton will be able to walk out on the streets, because he doesn't inhale. (laughter)

Over the past couple of years--

SENATOR RICE: Just remember, he is my candidate.

MR. SCHWARZ: --we have been working to encourage a collaborative effort between the public and private sectors to promote the use of alternative fuel vehicles. We have several demonstration projects underway. Currently, we are operating 30 natural gas-powered vans and eight electric vans. One of the electric vans is being operated and tested by DEPE. We are developing our own plans to have the most extensive fleet of alternative fuel vehicles in the State.

In partnership with New Jersey Transit, we installed a refueling facility in Orange that supports five natural gas-powered buses. And as part of our contribution to New

Jersey's Alternative Fuel Demonstration Project, later this year we will construct a refueling facility here in Mercer County for 200 natural gas-powered vehicles which the State government will operate.

We are also moving to offer refueling capability for businesses and individuals. Currently we provide New Jersey Bell with refueling for 25 natural gas-powered vans, and we continue to explore various refueling options, including public stations and home compressor equipment.

All of these efforts and more will be needed if we are going to have healthy and breathable air in New Jersey. We are confident that a LEV program can be implemented in a practical and workable fashion. Clean fuel technology offers a realistic, cost-effective approach for New Jersey to move a step closer to achieving Federal air quality standards. We encourage your support of the Department's efforts.

I think, as I said--

ASSEMBLYWOMAN OGDEN: And in addition, the gas and the electricity.

SENATOR McNAMARA: Absolutely.

MR. SCHWARZ: I don't want to hide that. We hope we can.

SENATOR RICE: Well, I used to work for them. That's my family there. But, I was reading some of the statement, and it does not say, "We support the California LEV." It says, "We support the LEV." I can take that to mean if we come up with some type or formation of it-- They are being specific in their implication that--

SENATOR McNAMARA: Yes, because there are only two cars. (malfunction of recording equipment causes some loss of testimony at this point in hearing)

ASSEMBLYWOMAN OGDEN: Our next witnesses will be Jerry Ferrara and Fred Sacco.

JERRY M. FERRARA: If Jerry Ferrara can say anything quickly in five minutes, you really have a deal. Let me congratulate you for having the patience to listen to all the technical business that has gone on on both sides of the fence.

I am not going to attempt to be a technician, except they mentioned NO_x at the very end, and you can't measure the damned stuff. If you look at the schedule that DEPE gave you, if you took the Federal plan vis-a-vis theirs, even at the LEV level there is only two-tenths of a percent difference. That brings me back a little bit to the past. How quick DEPE is in New Jersey to be the forerunner. We went for Stage II, which we fought for years, and it was going to clean up all the air. I testified in Maryland. They at least had sense enough to go to RVP, and didn't go to Stage II. Meanwhile, we are trying to clear up all the air that is coming from the west. It reminds me that when a windstorm is coming, it gets behind us, and it throws us in the ocean if we don't do anything. We're cleaning the air up for Connecticut, which has reservations. Massachusetts has reservations about going with its Governor's quote. We have to clean it up, because that is where it is going.

Now, the big problem we have here is, in our State -- to paraphrase an old quote -- DEPE says, damned the Legislature; full speed ahead with their program. We were in a workshop last year and we were told. I have a colleague in the back. He says he is not coming up here. He was going to jump up and down when they told him they didn't care what anybody's opinion was -- "We are going to get the California car."

We are at the bottom of that pipeline. We listen to the consumers. Whatever happens, we are going to get caught in the middle. We are going to get caught in the middle of this. You have two different standards; two different cars. Whatever they do, I was glad that at least Public Service admitted that they had an ax to grind. Propane had an ax to grind. I haven't got an ax to grind. My ax is the people who buy gas in our stations.

Don't let DEPE continue on in this helter-skelter rush to clean up the whole environment, until the states west of us do something about it.

I heard the Highway Trust Fund brought up. I listened in Pennsylvania when they were threatened with it. I listened in Maryland when they were threatened with it. And, it has not taken effect. You will hear more later on about this so-called "centralized inspection," how this is going to clean the air and how great it is going to be. All I'm saying to you is, you have heard all about the technology. If you can absorb it, all well and good, but you need a lot more time before it goes into effect. Slow down. Let's tell our DEPE-- They went from one floor to a seven-story building. They built another building. Slow down until we can find out what the real effect is on our people. Truly, we can clean up everything. We shouldn't get out of bed in the morning-- Don't get me wrong. I didn't fight underground storage tanks, no. That is our water we drink. But I will fight anything that says we have to clean up, when the rest of the country isn't.

That is going to be the end of my presentation. I took less than five minutes, Senator.

SENATOR McNAMARA: Nice going, Jerry.

FRED SACCO: May I just try to sum up, because we supply 1200 of Jerry's members through our gasoline jobbers. We are very much concerned. We don't want you to go the LEV route as quickly as the Department wants you to go, because we want you to pause a little bit. We are concerned about their estimates, and I will cite three. Ask your staffs to look at them:

The cleanup of chemical control: They gave an estimate-- I will send it to you, Senator. I just didn't want to burden you with a lot of paper. Their estimates and what it actually cost -- a phenomenal difference.

The radon in Monclair and Nutley: Estimates, what it really cost -- phenomenal differences.

Stage II vapor: They came to us and told us it was going to cost $1200 per service station. It cost us $28,000 per service station.

SENATOR McNAMARA: That's close. (laughter)

MR. SACCO: So, don't come up here and tell us that their numbers are the best numbers. The gentleman from the clean air outfit and his condemnation of the auto industry for their facts-- That kind of annoyed me, because I have lived here for 30 years in this legislative process, and have gone through at least 15 years with DEPE's estimates.

SENATOR RICE: I took care of it. (laughter)

MR. SACCO: So, we are really concerned.

I just came from two days in Washington with 1000 petroleum marketers from across the country, trying to deal with our legislators down there. Before this meeting, I was across the street trying to get someone to wake up to the fact that someone is stealing $40 million worth of motor fuels taxes in New Jersey. That is coming from my members' pockets, and now they are going to be asked to absorb this kind of stuff. What we want you to do is kind of deal with some of the real immediate problems.

At that meeting, we talked about the DEPE in New Jersey. It is 4000 employees. Everybody across the country was astounded. I read an article in The Trenton Times that their average salary is $35,000 per employee. Driving up the Turnpike, I just put some numbers together. If you took 2000 of those employees and said, "Hey, it is time to gore their ox," and we fired them all--

SENATOR McNAMARA: I don't want to say that you are drifting from the matter that we are considering today, but you--

MR. SACCO: Seventy million dollars, sir.

SENATOR McNAMARA: --are drifting. It must be that west wind. (laughter)

MR. SACCO: Seventy million dollars. You could take that $70 million and $1000 a car, and you could solve this problem in Newark, Paterson, southern Bergen, Jersey City, Camden, because those people are not going to buy the LEVs when they come. I have two kids in college. They have a five-year mortgage on their automobile. That's today's automobile. What is it going to be when we have to buy the LEV automobile?

So, to solve the problem, Senators and Assemblypeople, you are not going to get to the people in the urban centers. That is the illustration I am trying to make here.

SENATOR RICE: They never want to get to us.

MR. SACCO: Well, sir, I am not pandering, sir.

SENATOR RICE: No, but you're right. They never want to get to us.

MR. SACCO: And I am not trying to be a demographer.

SENATOR RICE: We are not a part of New Jersey.

MR. SACCO: I don't really want you to fire the 2000 people. I just want them once in a while to sit and see how their side feels when they are the ones who are going to be gored. I am going to lose 400 service stations in my membership because of this kind of stuff.

You listened to New Jersey Natural Gas tell you it is a great idea to go to CNG. Please, every one of you, make sure your staff reads the Abramson Report that is being mailed to your offices. Please read it, because methane emissions are contributory to at least 30 times the pollution of what our product is -- 30 times. If you put that into the marketplace and don't deal with that emission problem, you ain't going nowhere.

I'm sorry; I'm street people. Those of you who have known me for the 37 years I have been down here-- I try to deal with the problem. I try to bring things that are logical. I just don't want my guys getting killed. We're good people. We think they're speeding. That's all. We just ask you to slow down. Give us a shot. I don't think we need to go to LEV; I really don't, ladies and gentlemen, because I think the Ohio Valley is going to meet the clean air requirements. They got away with it all that time. The Missouri Valley. We're getting all their emissions. So now we are going to start solving the problem a little bit. Let's kind of do it from a rational, more economic viewpoint.

I have a lot more, Senator, but I will shut up. Thank you so much.

SENATOR McNAMARA: Thank you.

MR. FERRARA: He got some technology in there. Did you hear that? I did.

SENATOR McNAMARA: Senator Adler?

SENATOR ADLER: Fred, I don't think anyone here is trying to unduly burden any particular industry or sector of our society. What would be helpful, I think, for the members of the joint Committee, would be an alternative proposal, or a series of proposals, options that we can consider. DEPE has indicated that there are other ways to solve some of the problems. They cost money. Any solution is going to cost money. I think everybody here knows that. So it would be helpful-- I don't want to put you on the spot and ask you to give us that right now--

MR. SACCO: Sir, all we want you to do is--

SENATOR ADLER: Let me finish; let me finish.

MR. SACCO: Yes, sir.

SENATOR ADLER: In addition to the suggestion that we study it and think it through and really understand what we are doing -- all of which I think we are going to try to do, and we appreciate the reassurance of what our job is-- It would be helpful if you could propose any sort of alternatives. I am not saying this is the only choice we have. There may be a myriad of options, but it would be helpful to hear what our Fuel Merchants Association's position is on each of the specific options the DEPE has indicated are possibilities -- expensive possibilities, but possibilities. That would be very instructive, I think, for the members of both the Senate and the Assembly Committees.

MR. SACCO: We support the Clean Air Act, its objectives.

SENATOR ADLER: I understand that, but in reaching that reassuring conclusion, we now have to actually implement some plan that will comply with the mandates the Federal government has imposed upon us. As the Assemblyman indicated, we lose a lot of money if we do not comply. The question is: How does your Association recommend we do that? I am looking at this in a very -- not in a hostile way. I want your input as to how we can meet the requirements the Federal government has imposed upon us.

MR. FERRARA: Senator, what you are asking us-- They are coming down with a plan. They are saying we have to give them an alternative, so they can't lose. What we're saying is, the new cars coming down the road, the oxygenated gasoline-- The program is already in effect. Stick with the Federal plan. Why are we jumping ahead? If we follow that technology, I can come down here and throw six things at you that I want, and I am sure I am going to come out with one of them. Don't put your Committee in that spot; that you have to find the alternative. The alternative is really delay. Let the Federal Act take the place. Stop trying to be the leaders. That is the point I tried to make. Otherwise, it is a losing proposition.

You can come in here every year: We've got this. What is the alternative? Stage II did not work. RVP was five times more effective, and this State made every station put that $25,000 in. California, to this day, does not have Stage II through the entire state. That is what I am trying to tell you. You've got to stop reacting to them, and say: "Hey, slow down." That is what I am afraid of, because if we follow your thing, I don't know of an alternative, other than the one I am telling you: Let's follow the Federal plan.

MR. SACCO: Senator?

SENATOR McNAMARA: Remember, DEPE has taken the position that they can do it by regulation without any legislation.

MR. FERRARA: We have been told that.

SENATOR McNAMARA: So you have to understand one of the reasons we are having the hearings. I appreciate the timely fashion in which you delivered your testimony. I really hate to cut you off, but with about eight minutes left, and four more people to hear from--

MR. FERRARA: We'll take the hint.

MR. SACCO: I'll send each of you a letter on the reaction of 11 Congressmen about our losing our highway dollars. In the last two days we talked to 11 of them, and every one of them said, "You won't lose it."

SENATOR McNAMARA: Yeah, but they are retiring. (laughter)

MR. SACCO: Only three so far.

SENATOR McNAMARA: The New Jersey Automobile Dealers Association?

C H A R L E S E. W A L T O N: Thank you, Chairman McNamara, Chairwoman Ogden. I am Charlie Walton with the New Jersey Auto Dealers Association. I am going to try to do it in two minutes.

We have some concerns, as those at the end of the pipeline, that we would like to share with you. We are very concerned that New Jersey, if it doesn't move in lockstep on a regional basis, will place auto retailers and, indeed, the

State in a number of areas, at an economic disadvantage with neighboring states, leaving New Jersey residents to go elsewhere to buy their cars. That is clearly an example we learned not too long ago with the truck tax.

The second thing we are concerned about is the inventory problem. The manufacturers will be mandated to manufacture LEVs, ZEVs, electric cars, on and on and on. We are going to have to put those in inventory. There is no guarantee that they are going to sell. When they do not sell, auto dealers will go broke trying to carry them in inventory and financing them in inventory.

So, we would urge this Committee, in whatever role it decides to play, on a continuing oversight basis or through resolution, or just in casual conversations with DEPE -- and we have had these discussions with DEPE -- to try to build some kind of a marketplace or consumer incentives into the program, to do two things: Get the new LEVs and ZEVs in use, and get the old junk-- Thirty percent of the fleet is over 10 years old. If you can get those off the road through economic incentives, you will take big giant strides in cleaning up the air.

The third thing, and not of immediate concern now, is our role in the enhanced inspection/maintenance. We share an interest with Jerry Ferrara's group in seeing that we continue to play a part as private inspection centers in doing that.

I thank you, Senators, and members of the Committee.

SENATOR McNAMARA: Thank you, Charlie. That is exceptional timing.

ASSEMBLYWOMAN OGDEN: I just want to say one thing, Mr. Walton: We realize that it would be the dealers who would be stuck with the inventory of more expensive, but less polluting cars. Any suggestions you might have as to how the State could help move those cars along, so that you won't be economically disadvantaged, we would appreciate hearing.

MR. WALTON: I have not spent a whole lot of--

ASSEMBLYWOMAN OGDEN: Not right now, but if you want to send us something in writing--

MR. WALTON: It's simple: Bounties on old cars; sales tax incentives on new ones; State income tax credits on ZEVs and LEVs; that type of thing. There are plenty of people around this table who could do it better than I.

Thank you. A long day.

ASSEMBLYWOMAN OGDEN: Herb Wortreich, New Jersey Clean Air Council?

HERBERT WORTREICH: It's tough coming in at the end of the line when you have heard everybody say almost everything there is to be said, but we'll try, and we will try to keep it short.

I am here representing the New Jersey Clean Air Council, which is a statutorily constituted body of 18 members, an advisory group to the Commissioner of Environmental Protection. This Council represents a broad spectrum across the State of business and industry, agriculture, government, labor, the medical profession, health officers, professional engineers, industrial hygienists, municipalities, and the public in general. I, myself, am a public member. Council meetings are held every month except August -- that is for vacations -- and are open to the public. The members are not reimbursed except for expenses. All the members serve the State gratis. The Council is obligated, by statute, to conduct a public hearing at least once a year and make a report to the Commissioner.

Primarily, I want to bring to your attention three reports of public hearings the Council has produced in the last few years:

A hearing in 1987 was on the subject of ozone, New Jersey's health dilemma. Without going into a lot of detail, which you can read in the written statement, this report also covers a discussion on health effects, and effects on vegetation, which is so critical to the economy of our State -- and I didn't hear anyone mention that this morning, or this afternoon. The standards, as Dr. Lioy pointed out, of .12-- The Federal standard of .12 parts per million for one hour exposure is very suspect. He called it a bogus standard. I just call it an inadequate standard -- inadequate to protect the public health.

Furthermore, EPA is supposed to review these ambient air quality standards at least once every five years. My latest information tells me that EPA has not reviewed that ozone standard for the last 13 years. I think they are now being forced to because of some litigation.

The 1990 public hearing was on the subject of trucks, buses, and cars. This addressed the whole spectrum of transportation-related issues, including: inspection enforcement, mass transit, carpooling and vanpooling, and alternative fuels. From that, the Council concluded that an emission reduction program must be multifaceted, and must include many components. There is no single answer to the problem. The State must take advantage, as promptly as possible, of technological advances. That is what we are talking about here in the low emission vehicles -- technological advances.

It further recommended that the State give particular attention to the California standards and join other states in the region in implementing that program. Now, some of that, obviously, has come to pass, to some small extent.

The 1991 hearing dealt with air pollution emergencies. The criteria for triggering an air pollution emergency, especially ozone, is far from protective of the public health. We have not had any air pollution emergencies declared in New Jersey for, I don't know how many years, if ever. Possibly this is one of the reasons why we don't always get the support of the public that we would like to see. If we had some emergencies declared-- Southern California declares them very often, and the public is very aware of the problem and very supportive of most of the things they try to do there.

The standard for triggering an ozone alert in New Jersey is .25 parts per million for a four-hour exposure. Now that .25 is twice the Federal standard that is supposed to protect the health, and the four hours is four times the length of exposure that the Federal standard calls for. Obviously, that is too high. The recommendations were that the Department reconsider these; reevaluate them; and maybe come up with a more realistic standard in terms of protecting the public health.

The point I am trying to make is, whether the Department does that or not, and especially if they don't, it behooves us to try to keep those ozone levels as low as we possibly can. You are still not going to protect the public health, but at least you will protect it more than it would be protected otherwise.

I was also going to call your attention to Project: Clean Air, but you already had an excellent presentation on that, so I do not need to add to what was said.

When you get right down to it, there are only two ways to deal with emissions from motor vehicles: the so-called technical fix, and a reduction in the use of vehicles by reducing vehicle miles traveled -- or VMT. All the indications are that the way things have been going in this State, any significant reductions, if any, in VMT in the near future, are simply not going to happen. However you look at it, you are forced to fall back on the technical fix. We have here a technical fix which, as far as the Council knows from all the information it has received, is the best one available at this time; that is, the low emission vehicle, and particularly the California car.

So, on behalf of the Council, we urge the State to go ahead and do something about adopting these standards. I think the time is right now. We have regional cooperation, which was not easy to get; it took a long time to arrive at. We have this terrible air pollution problem, and the cars are available.

Ozone, of course, has been the main impetus, but there are other benefits to be realized. Contrary to what one of the previous speakers said, whatever shortfalls there are in emissions reductions that we do not get from the motor vehicles, there is no other place they can come from except the stationary sources. That means business and industry and, who knows, maybe even into our homes. Some of the states, and even the Federal government, have been seriously considering things like putting limits on what can go into aerosols, underarm sprays, and things like that. That is where we stand, and it is a very serious problem.

ASSEMBLYWOMAN OGDEN: Thank you very much.

MR. WORTREICH: May I make one more point, Assemblywoman Ogden?

ASSEMBLYWOMAN OGDEN: Okay. Quickly.

MR. WORTREICH: We are disappointed that the medium- and heavy-duty vehicles are being bypassed right now. We think it is poor public relations, because even though the public is willing to put up with a little more cost, a little more inconvenience, whatever it is, it is very hard to ask the public to do that and they become very resentful when they see these more obvious trucks and buses and other heavy-duty vehicles not being asked to share the burden with them. Those are the vehicles that are more responsible for the toxic pollutants coming out of motor vehicles.

ASSEMBLYWOMAN OGDEN: I understand they are being dealt with separately by EPA, but when and how are good questions. I share your concern.

MR. WORTREICH: We have heard a lot of talk today about, "Just leave it up to EPA; depend on EPA." EPA does not have that great a track record. This is about, I don't know, the third or fourth amendment of the Clean Air Act, and look what they have done and how they have delayed; what they have postponed and didn't do under the previous Clean Air Act. I don't know, maybe you are more optimistic about EPA's behavior than I, but I have been dealing with EPA for 31 years, and I am not very optimistic about that.

ASSEMBLYWOMAN OGDEN: I thank you for being so patient in waiting until this time to testify.

MR. WORTREICH: Thank you.

ASSEMBLYWOMAN HECK: Was he the last, or is there a Mr. Welsh?

ASSEMBLYWOMAN OGDEN: New Jersey SEED and the New Jersey State Chamber of Commerce had to leave, but they left their written statements. We have one last witness who signed up, John Welsh, of Welsh Technologies.

J O H N W E L S H: Senator McNamara, Assemblywoman Ogden, and other members of the joint Legislature Environment Committee: I thank you for allowing me to address this Committee.

Past testimony heard here reveals that the State is engulfed in an environmental tragedy. Draconian measures to combat our problem were outlined by the DEPE on April 2. Tough choices now face this Legislature that may force the people of this State and beyond, major sacrifices that will affect their lives into the future. The brief message that I would like to convey to this Committee is that the path to a cleaner environment that is energy secure must be embraced by the people of this State. The Committee must maintain a clear vision and be objective without dictating to the people.

The main cause of our pollution is tail pipe emissions. As per the Federal Department of Energy, motor vehicle emissions account for 30 percent to 50 percent of urban hydrocarbons, 80 percent to 90 percent of carbon monoxide, and 40 percent to 60 percent of nitrogen oxide emissions.

ASSEMBLYWOMAN OGDEN: Mr. Welsh, since you are really, you know, summarizing what others have said, could you just deal with what you have in your testimony that is different.

MR. WELSH: Okay. Basically, a very brief summary. I am passing around copies of my testimony.

I would like this Committee to consider that there are a lot of alternatives presently available, technologies such as my company's -- Welsh Technologies. We are a New Jersey-based company, and we present one possible solution to the environmental and energy needs of this State through a system we have developed, patented, and are selling, called the "Multi-Fuel System." Our technology utilizes a small amount of alternate fuels as a catalyst with gasoline, diesel, or renewable fuel sources for complete internal combustion in the vehicle. The results of this technology are near zero emission vehicles that have increased performance and fuel economy. By utilizing the existing refueling infrastructure in place today, not only the CNG stations of the future, we are able to give positive results today.

Ours is an example of an economical, practical solution that is a means to combat the Northeast's environmental problems today. With the assistance of State incentives to install clean air management systems, such as now exist in other states, and reduction of road taxes on alternate fuel purchases, we can move forward with a solution that will not hurt New Jersey economically nor require adjustments in our life-styles.

For DEPE to state that natural gas is the fuel of choice shows a clear lack of understanding. Natural gas is naturally one of our nonrenewable assets; it will serve its time and duty. The Federal government has not come to the conclusion that New Jersey and the DEPE have, nor, for that matter, have other states. The State must not continue its closed-door policy on this issue, but realize that there exists a host of other solutions that would better serve its goals. We must not make rash decisions that are clearly at the expense of ratepayers and taxpayers, and would be an unwarranted waste of money.

I know of my own closed-door experiences with New Jersey and the DEPE, and question how many other new technologies and good solutions were turned away because of some narrow reasoning.

In conclusion, I ask that the Committee review all possible solutions to the bettering of our environment and that the State foster legislation that will encourage citizens and businesses to actively become involved in "green" solutions that will improve the way of life for all and foster economic development.

ASSEMBLYWOMAN OGDEN: We certainly appreciate your presenting this to the Committee. As I said to the previous speaker, I apologize for keeping you waiting so long. I share your concern that all possible technologies be explored as we are seeking to clean our air. You know, it was suggested by a couple of speakers that we have something similar to what they have up in Massachusetts, which is an advisory board representing all different views, that would continue to monitor whatever the State of New Jersey -- whatever program is adopted as we go along, and, well, probably through the whole decade and beyond. I think it would be part of the responsibility of such a group to review all the new technologies that are coming out.

MR. WELSH: As part of the legislation I think you are proposing now, there are companies such as myself and other individuals who do come up with creative solutions that have a place in the overall resolving of the problems. I think, just kind of summarizing a little bit what you said, it is important for the State to look at some of these technologies, because they could be a means for the State to handle the problems.

I know in our own system that we manufacture and sell, we are selling the system based on its economics, not so much based on environmental, which was the reason we developed it. But we present a solution to people. The fleets/consumers purchase the system to save money, to increase the performance of their vehicles, and also to clean up the air. Those are the kinds of technologies I am supporting; ones that the people can embrace. They are not solutions that are going to force sacrifices on the people.

Thank you very much.

ASSEMBLYWOMAN OGDEN: Thank you.

SENATOR McNAMARA: I want to thank each and every one of you in this room who has endured this day. Compliments to my colleagues and staff, and to the hearing reporter. I also thank those from DEPE and all others who testified.

I think Maureen and I have concluded that there will be, in the future, a need for having another public hearing sometime down the road. We will not be specific at this time. I think there is enough material that everybody has to answer to, that you will submit to the staffs in the interim.

Thank you very, very much.

ASSEMBLYWOMAN OGDEN: Thank you.

(HEARING CONCLUDED)

APPENDIX

The Low Emissions Vehicle Program

An Overview

Joint Legislative Committees
on the Environment
Hearing
April 9, 1992

New Jersey Department of Environmental Protection and Energy

Introduction

The Low Emissions Vehicle Program enables New Jersey to meet federal Clean Air Act standards in:

- a cost effective way
- a way that preserves the economic health of the state
- a way least intrusive to the lifestyles of New Jersey's residents

Introduction

•What does New Jersey have to do under the federal Clean Air Act amendments, and how does the Low Emission Vehicle fit in?

- New Jersey must reduce volatile organic compound (VOC) levels at least 565 tons/day by 2005 to be in compliance with federal air standards.

- The choice for compliance: Federal plan or the more stringent Low Emissions Vehicle Program.

- If New Jersey chose the federal plan and implemented all Clean Air Act mandated steps, New Jersey would **still need to find ways to eliminate 183 tons a day** of volatile organic compounds (VOCs).

- Many of the options available to meet the Clean Air Act are very costly or require New Jersey residents to make drastic lifestyle changes. Some examples are:
    - restricted use of recreational, lawn and garden equipment
    - prohibition of barbeques and student driving
    - closing drive-through banks and fast food establishments
    - additional controls of large stationary sources
    - controls on small sources such as bakeries and dry cleaners

•**Therefore...**

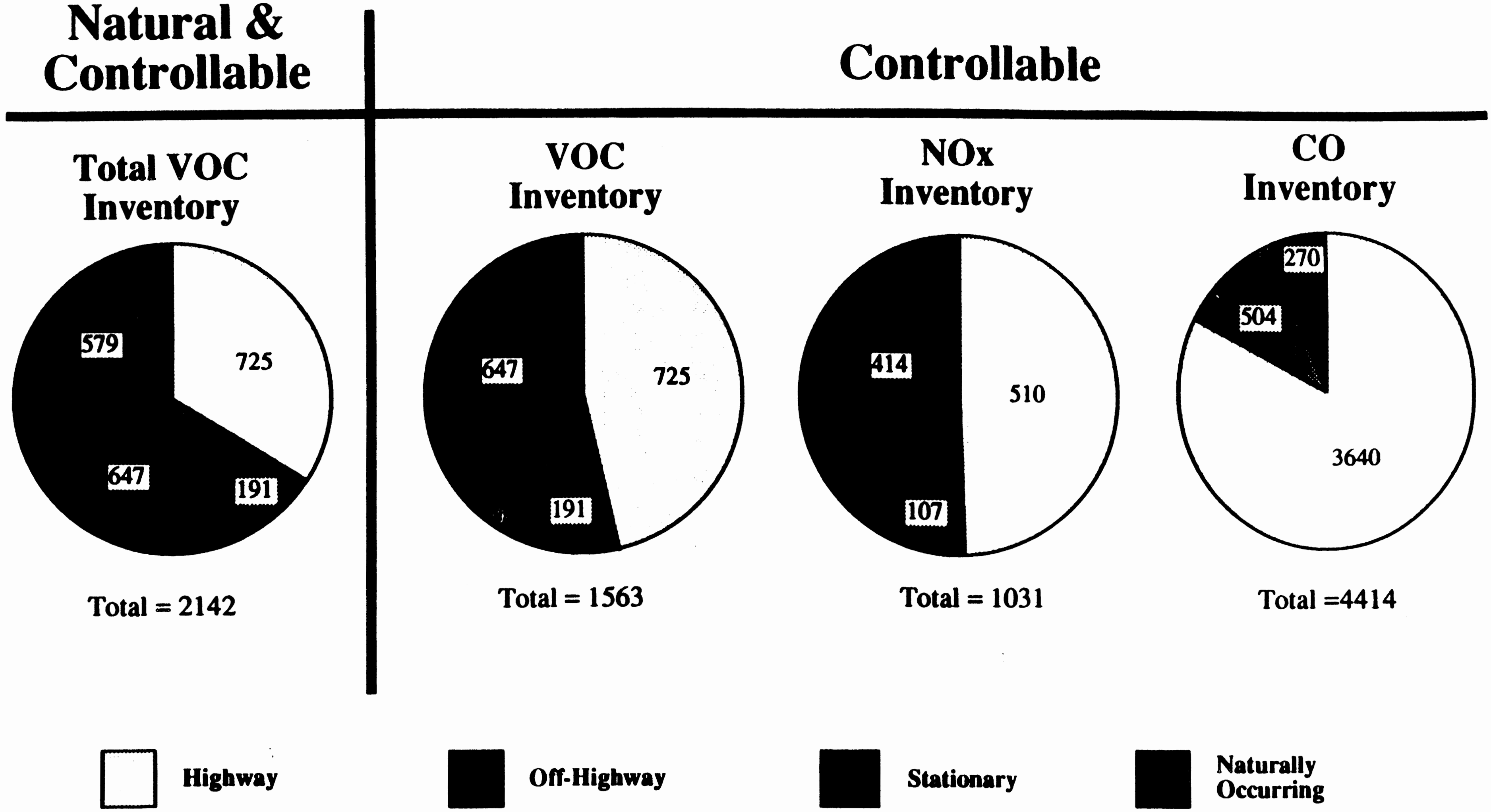
Governors of New Jersey and
all other Northeast States
have endorsed the
Low Emissions Vehicle Program
to meet Clean Air Act standards.

Overview

- What are mobile source emissions?
  - 50 percent of all emissions are from motor vehicles.

1990 New Jersey Emissions Inventory

(Tons Per Day)



-- Preliminary. Based on projection of 1988 emission inventory --

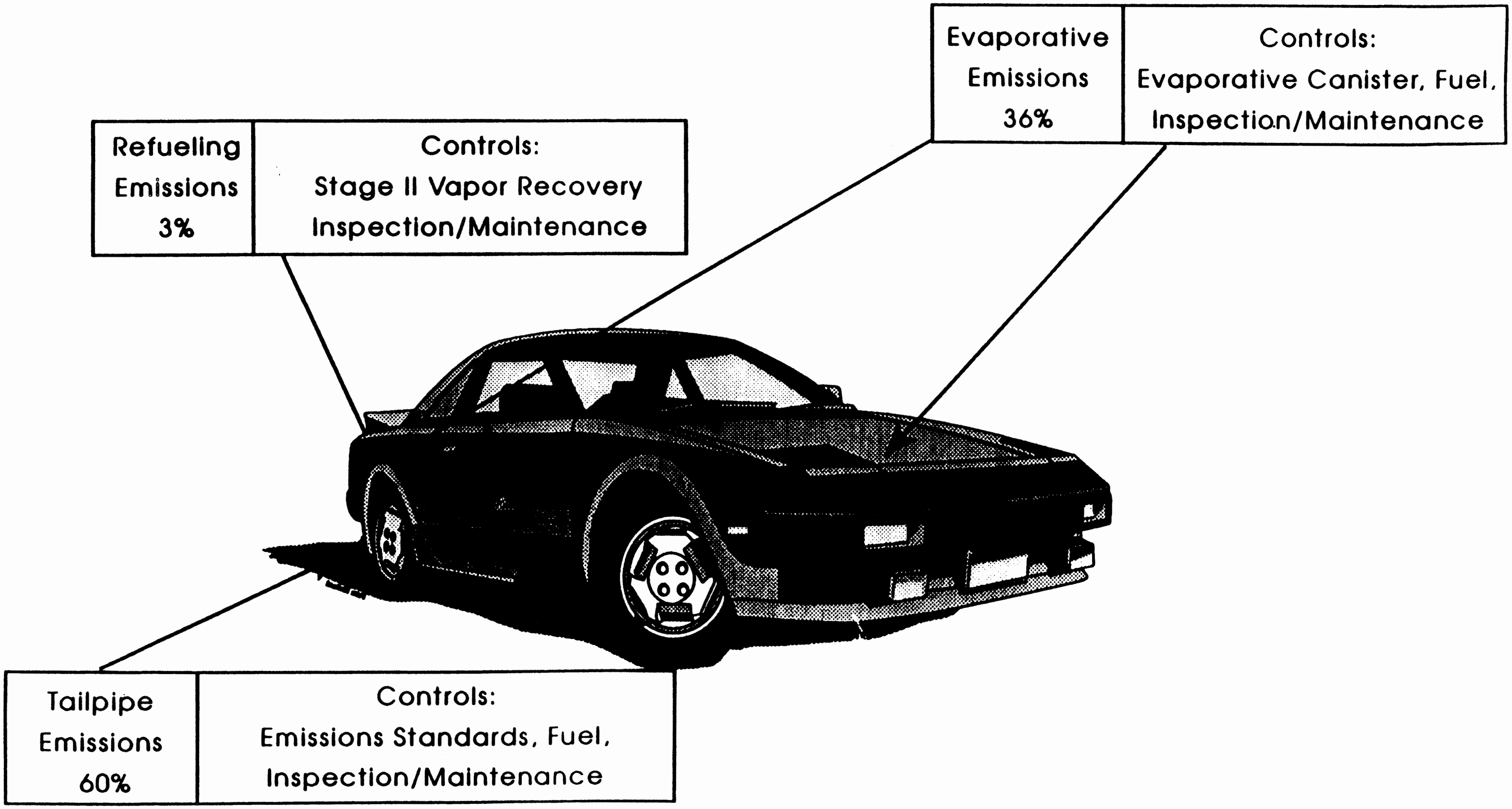
Overview

- What are mobile source emissions? (continued)
  - Sources of motor vehicle emissions include:
    - tailpipe
    - evaporation from fueling and operation
    - poor maintenance

- Methods used to control these emissions include:
  - Enhanced inspection and maintenance
  - Reformulated gasoline
  - Vapor recovery at gasoline stations
  - Tighter emissions standards (Low Emission Vehicle Program)

Sources and Control of Emissions from a Motor Vehicle

x8



Overview

- What is the Low Emission Vehicle Program?
  - Five different grades of low emission vehicle
    - SV - Standard vehicle
    - TLEVS - Transitional low emission vehicles
    - LEVS - Low emission vehicles
    - ULEVS - Ultra low emission vehicles
    - ZEVS - zero emission vehicles
  - Fleet average
  - Phase in
  - Two year technology reviews
  - Certification process
  - Program implementation
  - Meeting the LEV standards

Low Emission Vehicle Program

Level of Emissions From Passenger Car Categories
(50,000 mile certification standards in grams per mile)

Category	Non-Methane Organic Compounds (VOCs)	CO	NO_x
Current Car	0.390	3.4	1.0
Federal Plan	0.250	3.4	0.4
TLEV	0.125	3.4	0.4
LEV	0.075	3.4	0.2
ULEV	0.040	1.7	0.2
ZEV	0.000	0.0	0.0

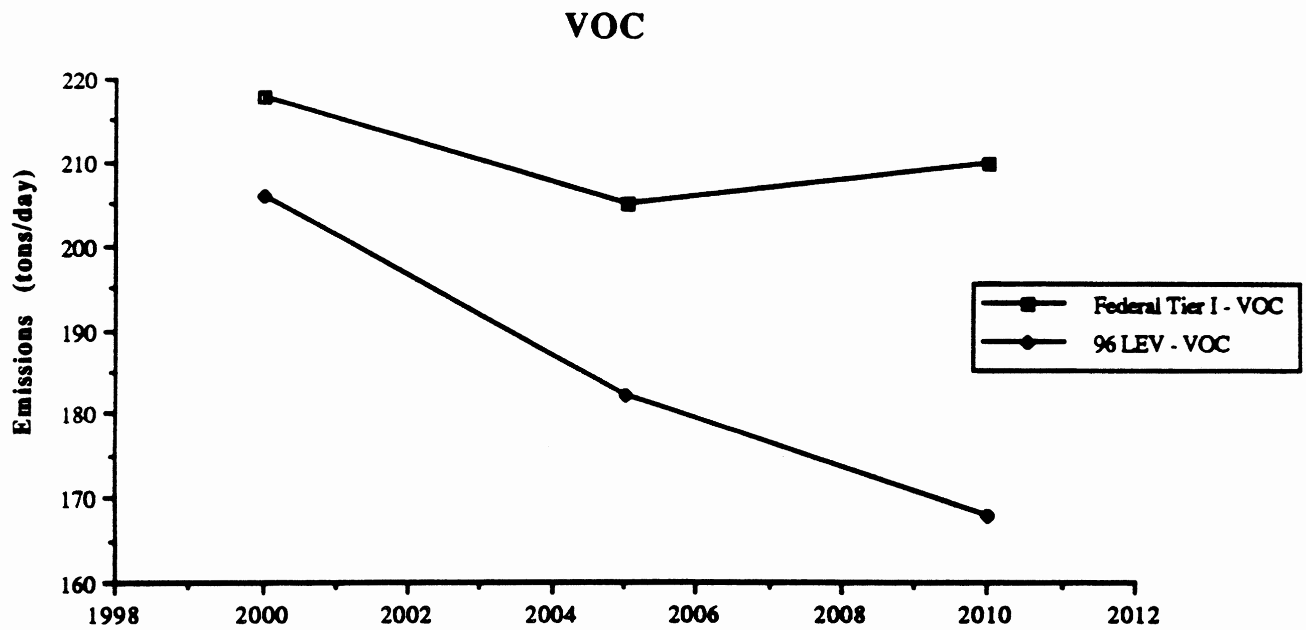
Rates Used To Calculate Fleet Average Standards

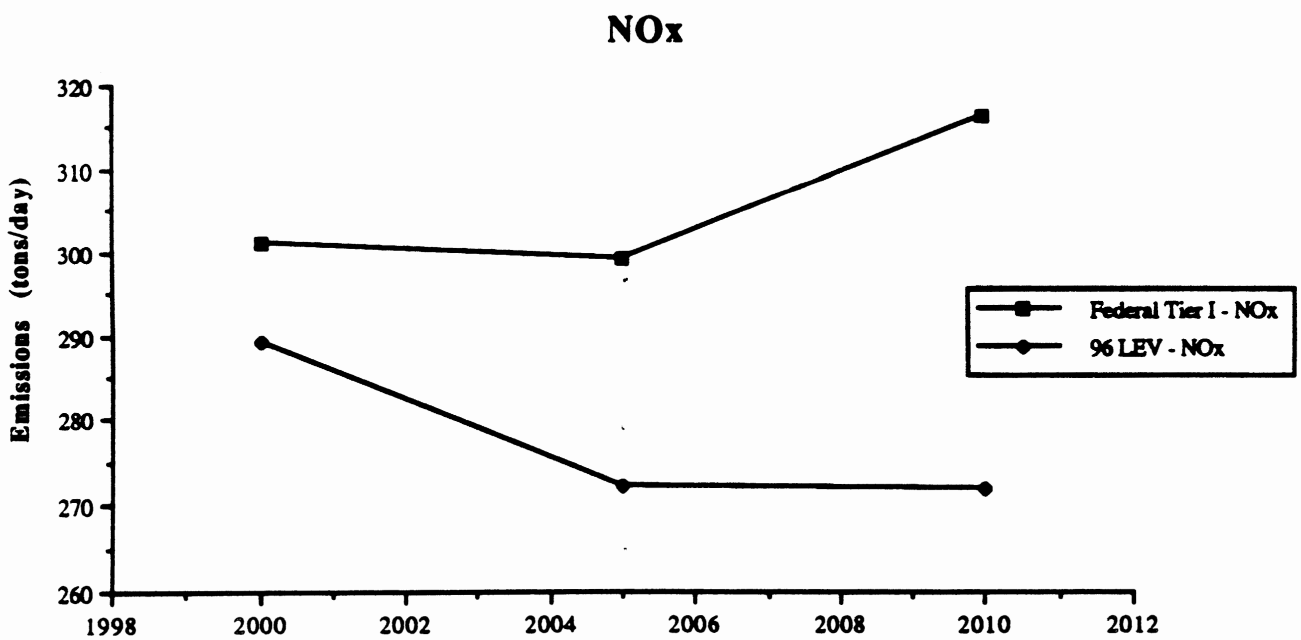
Model Year	Fed Plan 0.25	TLEV 0.125	LEV 0.075	ULEV 0.04	ZEV 0	Fleet Avg. Standard
1996	80%	20%				0.225
1997	73%		25%	2%		0.202
1998	48%		48%	2%	2%	0.157
1999	23%		73%	2%	2%	0.113
2000			96%	2%	2%	0.073
2001			90%	5%	5%	0.070
2002			85%	10%	5%	0.68
2003			75%	15%	10%	0.62

Overview

- What are the emissions benefits of LEV?
  - Difference between federal Tier 1 and LEV
    - Pre-sale testing
    - In-use compliance/warranty
    - Defect reporting and recall
    - Technological requirements - on board diagnostics

Emission Benefits from LEV





Overview

- What are the emissions benefits of LEV? (continued)

    - Calculation of benefits
        - Phased-in benefits

- What is the cost of the LEV program?
    - $170/ car
    - $1700 /ton

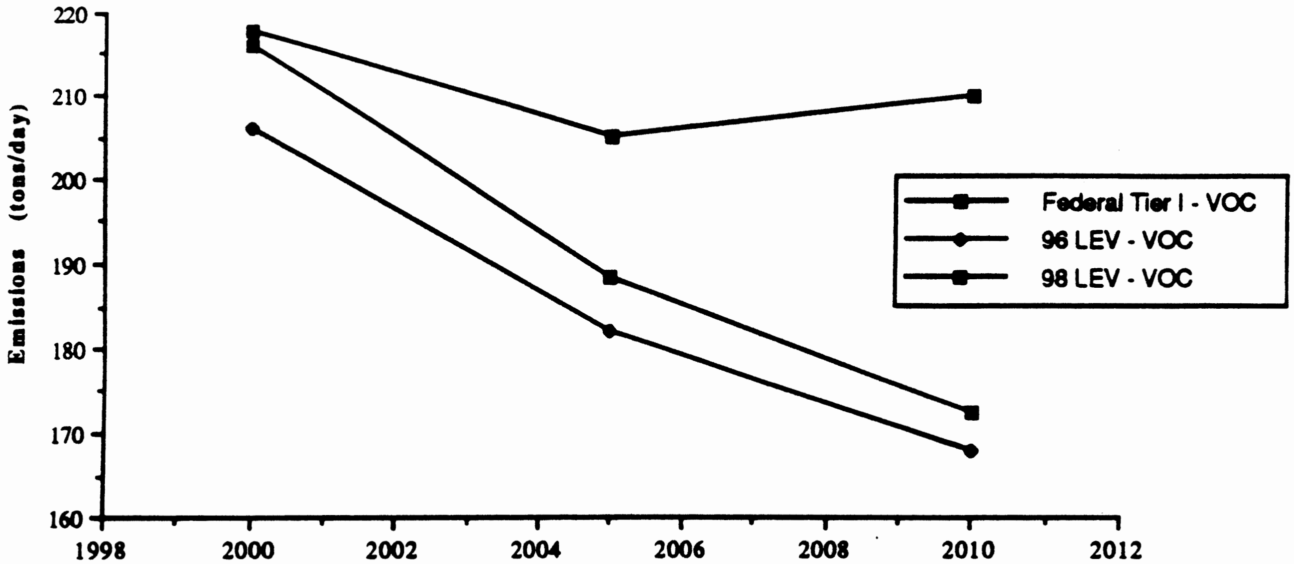
- How was the program developed?
    - CARB expertise
    - PECHAN analysis
    - input from MVMA, API, NJPC, etc.
        - NJDEPE workshop
        - NJDEPE work group
        - OTC Mobile Source Committee meeting
        - NESCAUM
        - CONEG - Energy working group meeting
        - CONEG - Energy/Air Director's meeting
    - Internal NJDEPE analysis
    - Coordination with other northeast states

Overview

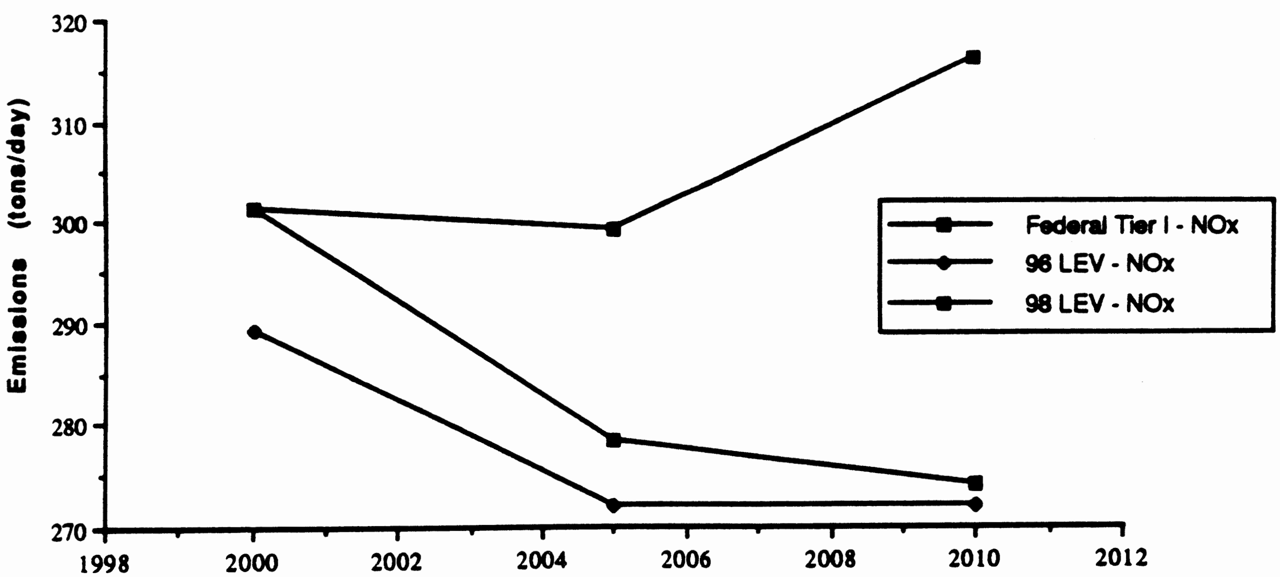
- What are the concerns of motor vehicle manufacturers and the petroleum industry?
  - Fuel uncertainty
  - No need for LEV
  - Limited benefit from LEV
  - Economic impact
  - Technological uncertainties
  - Implementation
- Why shouldn't the LEV program be delayed?
  - Program has built-in delay option
  - Emissions benefit loss

Impact of LEV Delay

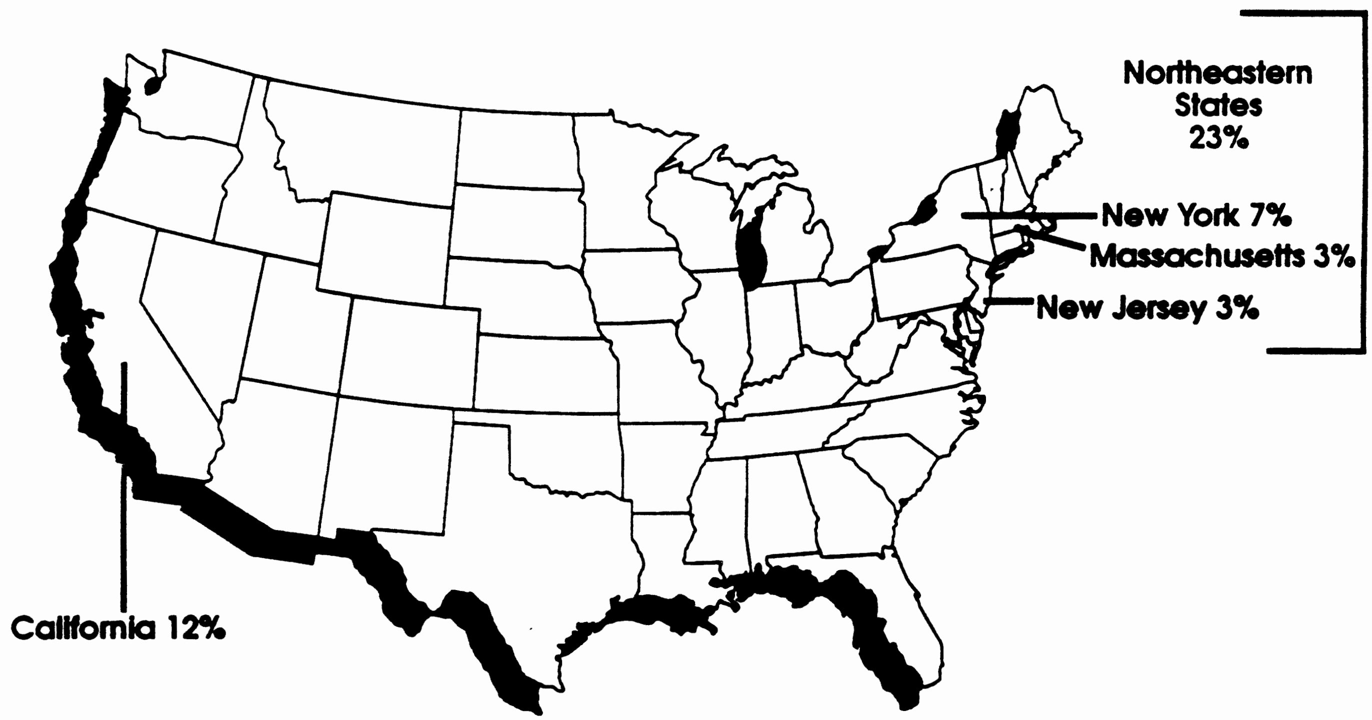
VOC



NOx



Percentage of Market Share Affected by the California Car Program



Total Market Affected - 35%

16x

New Jersey

The chairs of the environmental committees in both houses have stated the legislature will be involved in implementing clean air policy, including any consideration of the California program; they have scheduled hearings for April. Meanwhile, the Department of Environmental Protection and Energy announced that proposed regulations adopting the California program in New Jersey will be published in April with hearings in May and June.

New York

Hearings were held by the Department of Environmental Conservation in late 1991 on proposed regulations which adopt the California program in New York; the state's Environmental Review Board approved these regulations on March 23 and they now await action by the Secretary of State. Meanwhile, the Senate passed on March 23 (38-19) a bill calling for a comprehensive approach to implementing the federal Clean Air Act Amendments in New York, including a study of the California program before adoption; an identical bill in the Assembly currently has over 80 sponsors with 7 additional members committed to vote for the bill (Assembly has 149 members).

Pennsylvania

While Governor Casey announced his intention to pursue the California program, there has been no legislative or regulatory action in the months since his announcement.

Rhode Island

Legislation to adopt the California program was introduced in 1991 but no hearings have been held or scheduled.

Texas

The legislature passed a bill which was signed by the Governor requiring a cost/benefit study of the California program for Texas before any move to adopt.

Vermont

A broad clean air bill is being considered by the Senate. A provision requiring the California program was deleted by the originating committee.

Virginia

The Senate voted to table the Administration bill calling for the state to adopt the California program; instead the Senate passed a resolution calling for more study of the California program.

Washington, DC

DC officials announced at the March 10 Ozone Transport Commission that they would not sign a Memorandum of Understanding endorsing the California program.

Wisconsin

An ad hoc committee involving the Department of Natural Resources, Department of Transportation, and Energy Departments has been formed to study the California program. No legislation or regulations are pending.

CALIFORNIA VEHICLE EMISSIONS STANDARDS

4/7/92

CURRENT STATUS, BY STATE

California

The state developed the program after three years of study, hearings, and public debate. To date, the EPA has not approved the program.

Connecticut

The Department of Environmental Protection announced they will commit to the California program for model year 1998 to the extent necessary to meet attainment. As a result, the legislature lost interest in passing a bill mandating the program.

Delaware

The Secretary of Natural Resources and Environmental Conservation has decided legislation would be needed to pursue the California program and announced he will not pursue such legislation before 1993 citing the need to evaluate costs and benefits.

Hawaii

The legislature is considering a bill to require the state controller to develop a proposal for the 1993 legislative session to phase in the California standards.

Illinois

The Pollution Control Board has re-proposed regulations to adopt the California program for the 1996 model year. The first of several hearings are expected in the summer.

Maine

The Department of Environmental Protection has informally stated they plan to promulgate draft regulations in the summer to begin the process of adopting the California program. The agency has authority to act without legislative action.

Maryland

Bills to adopt the California program were introduced, and hearings held in both houses. The Senate version was killed in committee and the House version, while released from committee, was never voted on by the full House; the Governor announced late in the session that efforts to enact a bill would be deferred until the 1993 session.

Massachusetts

Governor Weld signed a bill in January 1992 calling for an evaluation of the California program; this study is due to be complete in July 1992. Meanwhile the Department of Environmental Protection proceeded to adopt the California program regulations. In another twist, there is a bill pending in the legislature to delay the California program regulations until 1997 and require a cost benefit analysis by 1/30/93.

New Hampshire

Legislation would be required to adopt the California program but there has been nothing introduced and the Department of Environmental Services is pursuing what they describe as more effective clean air initiatives including vehicle inspection and maintenance.

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FOR IMMEDIATE RELEASE
January 14, 1992

ECONOMIC HARDSHIPS, LOSS OF LOCAL CONTROL CITED IF CALIFORNIA PROGRAM ADOPTED

A proposed New Jersey plan to adopt California's regulations for dealing with vehicle emissions could give New Jersey consumers sticker shock. Under the proposal being pushed by state officials, New Jersey would have to agree to follow all future California-based vehicle emission regulations.

The economic impact of following California's regulatory scheme was described in a study released today by the New Jersey Petroleum Council. The study conducted by DRI/McGraw-Hill assessed the impact of imposing of California's vehicle emission standards on Northeastern states and the District of Columbia.

"New Jersey should not blindly follow California regulations," said James E. Benton, executive director of the Petroleum Council. "California's extreme ozone problems are many times worse than those of our state. We need careful study and a public debate to determine a local solution which is appropriate for our state. Allowing California to dictate requirements to us will result in enormous costs which just aren't appropriate, especially in view of our state's current air quality and economic difficulties."

"Furthermore, New Jerseyans should not be forced to forfeit their right to decide important air quality issues to regulators in California 3,000 miles away," Benton added.

The study, conducted by DRI/McGraw-Hill, analyzed what could happen if the states that are members of the Ozone Transport Commission (OTC) adopted California's plan for low emission vehicles and severely reformulated gasoline.

DRI concluded that adopting the plan could cause **job losses of up to 35,400 people** in New Jersey and **reductions in personal income** as high as $2.1 billion for the residents of New Jersey. Additionally, state and local **tax revenues in New Jersey could decline** as much as $250 million annually.

The study estimated that the additional cost to the consumer to produce severely reformulated gasoline to meet the standards could be as much as **24 cents a gallon.**

Benton pointed out that Congress' 1990 amendments to the Federal Clean Air Act mandate a number of emission control requirements that will do much to improve New Jersey's air quality.

"By following federal Clean Air Act requirements that include cleaner fuels, improved vehicle inspection programs and related programs, New Jersey will make dramatic improvements in air quality" Benton said. "Before we surrender local control over our own air quality we should give these more cost effective programs a chance to work."

Benton emphasized that the petroleum industry shares the desire of New Jersey citizens for clean air and a healthy environment. He noted that the oil industry is engaged in a comprehensive $40 million research program with U.S. auto makers aimed at improving air quality by examining vehicle emissions. Preliminary research results are already available and are being applied in developing new fuels. He added that the program's first phase results will be released next month. The program, now in its second phase, will be completed in 1993.

While several Northeastern states are considering the California low emission vehicle plan, Governor Lowell Weicker of Connecticut rejected the program as too costly and unproven. Additionally, Governor William Weld of Massachusetts last week approved legislation requiring that the cost effectiveness be demonstrated by a study prior to adoption.

The DRI study was prepared for the Eastern States Petroleum Advisory Group (ESPAG) which includes Amoco Oil Company; BP Oil Company; Chevron U.S.A. Inc.; Citgo Petroleum Corporation; Crown Central Petroleum; Exxon Company USA; Getty Petroleum Corporation; Mobil Oil Corporation; Shell Oil Company; Star Enterprise; Sun Refining and Marketing Company and the American Petroleum Institute.

The New Jersey Petroleum Council is a division of the American Petroleum Institute.

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JEB/gmd

TESTIMONY BY:

DR. BRIAN C. DAVIS
MANAGER, REGULATORY, LEGISLATIVE, AND TECHNICAL SUPPORT

SUN COMPANY, INC.
1801 MARKET STREET
PHILADELPHIA, PA 19103

ON

PROPOSED REGULATIONS PROMULGATING NEW RULE N.J.A.C. 7:27-26
(SUBCHAPTER 26) ADOPTING CALIFORNIA LOW EMISSION VEHICLE STANDARDS

BEFORE

SENATE AND ASSEMBLY ENVIRONMENTAL COMMITTEES
OF THE STATE OF NEW JERSEY

APRIL 9, 1992

TRENTON, NJ

I am Dr. Brian C. Davis, Manager of Regulatory, Legislative, and Technical Support, for Sun Company, a major regional marketer of motor fuels and other petroleum products. The greatest volume of our fuels is marketed in the Northeast. Sun markets under both the Sunoco and Atlantic brands in New Jersey and has a si_nificant share of the market in the State. Recently, Sun was awarded the contract to supply and operate the several New Jersey Turnpike service plazas. I am pleased to offer my testimony before the Senate and Assembly Environmental Committees. My comments will be on behalf of Sun Company and the New Jersey Petroleum Council. However, Sun will submit more detailed comments for the record before the close of the formal comment period.

Sun Company has concerns with New Jersey's proposal to enact the California Low Emission Vehicle (LEV) Regulations and today I will outline those concerns for your consideration. We certainly support the New Jersey DEPE's and State's commitment to clean air and we will devote resources to help identify the best solutions to achieve the national ambient air quality standards. We intend to supply whatever fuels are necessary to achieve this goal including some of the alternatives not directly derived from the petroleum barrel.

We believe that the best course to accomplish the Department's clean air goals is to incorporate some of the following guidelines:

1) Do as much as necessary to reach the goal in each non-attainment area, but avoid requiring more change than needed.

Measures beyond the necessary penalize the citizens of the State, not just in costs, but in domestically derived supply.

2) Tailor any program to fit New Jersey's specific conditions - climate, driving cycle, fleet.

3) Choose between available technologies on the basis of cost effectiveness, and also by finding overlaps between air programs and other societal goals, e.g., traffic congestion relief.

4) Be sure just what is to be finally required by a program, including credit, real atmospheric effects, availability of equipment, and timing, taking into account other regional or national programs, for example, furnishing fuels to neighboring states.

5) Study the efficacy of the California LEV as a control strategy before adopting regulations to require the program. Allow the mandated and cost effective discretionary controls to impact air quality before adopting the California LEV Program. There is no urgency, at this time, to adopt the LEVs.

Specifically concerning the California LEV Program, there are many still unanswered questions about the required extent of participation once an "opt-in" is officially sent to the EPA. It is not at all certain that a state may stop at California gasoline type clean fuel vehicles without also requiring the same mixture of vehicles using non-gasoline fuels.

California cars will almost certainly be certified with the EPA using California Phase II gasoline, a much more stringent reformulation than any Federal reformulation. Even if the EPA were to allow use of California vehicles on gasoline other than that on which they certified, the question of whether warranties would be binding remains unanswered. Car manufacturers have said they will litigate to have the fuels available for which emissions durability was developed.

Even if unintended, legally required or warrantee dictated California reformulated gasoline could be forced into Jew Jersey by opting-in to the California Program. While on the surface this might not seem undesirable, even if unnecessary, the ability to tailor this fuel to regional needs could be important, even for environmental purposes. For instance, lower RVPs than are prudent for good operation of vehicles in the fleet could lead to increased cold start emissions. It is also not yet clear how much credit may be available for California cars on Phase I Federal RPG in New Jersey.

We believe that other opportunities might be fruitfully explored for improving New Jersey's air quality before the California Program would be fully required. This is no attempt to recommend a slowing of progress, but only to wait on a program that will not give noticeable effects until after 2000. More immediate and measurable reductions from Stage II refueling vapor recovery, enhanced Inspection and Maintenance, increased use of oxygenated gasoline, less polluting diesel vehicles, turnover of the current fleet, some VMT reduction requirements, and a concentration on clean fleets will result in air quality improvements.

Sun would particularly recommend a thorough analysis of this latter possibility. In the urban East many city centers have a large number of fleet vehicles - often not the most modern, or the best maintained - which spend a significant amount of time idling or quickly accelerating. Both of these modes are not "closed loop" in operation, i.e., controlled to minimum emissions by the vehicle computer system. An early move to clean fuel fleets might have an unexpectedly large positive effect on air quality.

We are currently engaged in several projects to examine this option. Reformulated diesel (low sulfur, controlled aromatics, good additive, high cetane) has been sold in a market trial for more than a year. We now have three M-85 stations (M-85 = 85% methanol, 15% gasoline). Two fleets, one with participation from the State of Pennsylvania, and a portion of our Philadelphia Refinery fleet will soon begin using LPG from Sun service stations and a central refueling site in the refinery. We are committed to working with three natural gas suppliers to develop CNG dispensing service stations. The data from this testing will be made available to the State to help guide decision making in this area.

At present, we are not yet committed to sites in New jersey, but we would like to work with the DEPE to evaluate the best niches for each of these alternatives. We are working with the New Jersey Propane Gas Association on a LPG test fleet in conjunction with DEPE.

The use of highly reformulated gasoline in car fleets could also be evaluated.

We would also recommend the continuation of a group like the one that advised Project Clean Air. Industry should be included so that all possibilities for benefit, enforcement, and implementation can be evaluated. We would be happy to provide a representative to such a group.

I appreciate this opportunity to testify.

Respectfully submitted
Dr. Brian C. Davis

MOBIL OIL CORPORATION

STATEMENT REGARDING
NEW JERSEY ADOPTION OF CALIFORNIA VEHICLE EMISSION STANDARDS

JOINT LEGISLATIVE HEARING
NEW JERSEY ASSEMBLY AND SENATE ENVIRONMENTAL COMMITTEE
APRIL 9, 1992
TRENTON, NEW JERSEY

PRESENTED BY:
DALE E. CHOATE
MANAGER, MOBIL PAULSBORO REFINERY

MOBIL PAULSBORO REFINERY
STATEMENT REGARDING
NEW JERSEY ADOPTION OF CALIFORNIA VEHICLE
EMISSION STANDARDS

MY NAME IS DALE CHOATE, AND I AM THE MANAGER OF THE MOBIL OIL PAULSBORO REFINERY IN GLOUCESTER COUNTY, NEW JERSEY. I APPRECIATE THIS OPPORTUNITY TO COMMENT ON THE CALIFORNIA LOW EMISSION VEHICLE PROGRAM AND THE DEPE'S PROPOSAL TO ADOPT THIS PROGRAM IN NEW JERSEY.

PAULSBORO REFINERY IS LOCATED ON A 950 ACRE SITE IN GLOUCESTER COUNTY, WHERE IT HAS BEEN IN CONTINUOUS OPERATION SINCE 1917.

THE REFINERY PROCESSES ABOUT 110,000 BARRELS PER DAY OF CRUDE OIL INTO CONSUMER PRODUCTS OF GASOLINES, HEATING OIL, JET FUEL AND LUBRICATING OILS. WE EMPLOY MORE THAN EIGHT HUNDRED SIXTY PEOPLE AT THE PAULSBORO REFINERY PLUS WE'VE AVERAGED 500 CONTRACTOR EMPLOYEES THE PAST 3 YEARS TO DO PRIMARILY CAPITAL CONSTRUCTION AND TURNAROUND WORK. THE MOBIL PAULSBORO REFINERY ANNUALLY SPENDS $140 MILLION FOR PAYROLL, MAINTENANCE MATERIAL AND CONTRACTS, LOCAL TAXES AND SUPPLIES. THIS $140 MILLION ANNUAL SPENDING IS A BIG INJECTION INTO THE SOUTH JERSEY ECONOMY. FURTHERMORE, IN THE PAST DECADE, MOBIL HAS INVESTED SEVERAL HUNDRED MILLION DOLLARS IN CAPITAL PROJECTS TO TRY TO MAKE PAULSBORO A VIABLE ECONOMIC OPERATION AND TO COMPLY WITH THE MANY FEDERAL AND STATE ENVIRONMENTAL REGULATIONS. WE ARE MOBIL'S SMALLEST DOMESTIC REFINERY, BUT WE HAVE A PROUD SEVENTY-FIVE YEAR HISTORY OF CONTRIBUTION TO NEW JERSEY'S ECONOMY AND HELPING TO SUPPLY THE AREA'S ENERGY AND LUBRICATING OIL NEEDS.

AS I JUST SAID, PAULSBORO REFINERY HAS INVESTED HEAVILY IN ENVIRONMENTAL PROTECTION. OUR ESTIMATED ENVIRONMENTAL EXPENDITURES, CAPITAL AND ONGOING, AVERAGED MORE THAN $37 MILLION PER YEAR OVER THE LAST FIVE YEARS. WE ARE NOW PREPARING TO MAKE SUBSTANTIAL CAPITAL INVESTMENTS AT PAULSBORO TO COMPLY WITH NEW CLEAN AIR ACT REQUIREMENTS, BOTH IN OUR PRODUCTION OF CLEAN-BURNING GASOLINES AND IN OTHER INITIATIVES TO MEET ADDITIONAL REFINERY EMISSION REDUCTION MANDATES. AS YOU KNOW, OUR INDUSTRY IS HEAVILY REGULATED BOTH AT THE FEDERAL AND STATE LEVEL. OUR REFINERY OPERATES UNDER THE AUTHORITY OF <u>ONE HUNDRED FIFTY</u> ENVIRONMENTAL PERMITS CONTROLLED BY THE NEW JERSEY DEPE, AND WE ARE CATEGORIZED AS A "MAJOR STATIONARY SOURCE" OF EMISSIONS.

I RECOGNIZE THAT THE PURPOSE OF THIS HEARING TODAY IS TO GATHER INFORMATION REGARDING THE EMISSIONS FROM VEHICLES, OR "MOBILE SOURCES," NOT STATIONARY SOURCES LIKE PAULSBORO REFINERY. I WOULD ASK THAT YOU BROADEN THAT FOCUS FOR A FEW MINUTES WHILE I ADDRESS AN ISSUE SURFACED BY THE DEPE WHEN DISCUSSING THE CALIFORNIA LEV PROGRAM. THERE HAS BEEN AN IMPLIED THREAT OF MORE RIGOROUS CONTROL OF STATIONARY EMISSION SOURCES IF NEW

JERSEY DOES NOT HASTILY ADOPT CALIFORNIA'S MOBILE SOURCE CONTROL PROGRAM. A CAREFUL ANALYSIS IS NEEDED TO DETERMINE IF THERE IS INDEED A POTENTIAL CONSEQUENCE TO STATIONARY SOURCES.

THE FEDERAL CLEAN AIR ACT AMENDMENTS OF 1990 SET NEW AND STRICTER LIMITS FOR BOTH STATIONARY AND MOBILE SOURCES OF AIR POLLUTION. THESE COMPREHENSIVE NEW PROGRAMS WILL BE PUT INTO PLACE IN THE NEXT FEW YEARS TO IMPROVE THE NATION'S AIR QUALITY. ON THE MOBILE SOURCE SIDE, THERE WILL BE NEW VEHICLE EMISSION STANDARDS, ENHANCED VEHICLE INSPECTION AND MAINTENANCE, CLEAN FUEL FLEETS, ON-BOARD VEHICLE DIAGNOSTICS, REFORMULATED AND OXYGENATED FUELS, TRANSPORTATION CONTROL MEASURES, AND OTHERS. FOR STATIONARY SOURCES, THERE WILL BE A MORE RESTRICTIVE PERMITTING PROGRAM, MORE STRINGENT OFFSET REQUIREMENTS FOR NEW OR MODIFIED PLANTS, ADDITIONAL CONTROLS ON EMISSIONS OF HYDROCARBON, OXIDES OF NITROGEN AND SULFUR, VAPOR RECOVERY SYSTEMS AT SERVICE STATIONS, TO NAME A FEW. THE CLEAN AIR ACT REQUIRES THAT MORE STRINGENT CONTROL BE APPLIED TO BOTH MOBILE AND STATIONARY SOURCE IN PARALLEL AND <u>NOT</u> IN ANY <u>TRADE OFF</u> FASHION. ONLY AFTER ANALYSIS OF THE IMPACT OF THE NEW CLEAN AIR ACT CONTROLS OVER THE NEXT SEVERAL YEARS COULD ANY ADDITIONAL CONTROLS, WHETHER MOBILE OR STATIONARY, BE IDENTIFIED. THE DECISION SHOULD BE MADE ONLY IF ACTUAL MEASURED RESULTS SHOWED NEW JERSEY TO STILL BE OUT OF COMPLIANCE.

THE CALIFORNIA LEV PROGRAM IS AN <u>OPTIONAL STEP</u> BEYOND THE CLEAN AIR ACT REQUIREMENTS. IT IS A PROGRAM DEVELOPED SPECIFICALLY FOR CALIFORNIA TO ADDRESS ITS EXTREME SMOG PROBLEM, WHICH THANKFULLY, NEW JERSEY DOES NOT COME CLOSE TO SHARING. IT CONCERNS ME THAT NEW JERSEY DEPE IS PROPOSING TO ADOPT THIS DISCRETIONARY CALIFORNIA PROGRAM BEFORE PROCEEDING WITH THE MANDATORY CLEAN AIR ACT REQUIREMENTS AND BEFORE AN ASSESSMENT OF NEW JERSEY'S AIR QUALITY IMPROVEMENT NEEDS IS COMPLETED.

MOBIL HAS CAREFULLY EVALUATED THE LEV PROGRAM AND CONCLUDED THAT ITS ADOPTION IN NEW JERSEY WOULD BE PREMATURE AND POSSIBLY UNWARRANTED. THERE ARE MANY UNCERTAINTIES WITH RESPECT TO BOTH THE BENEFITS AND THE COSTS OF THE CALIFORNIA PROGRAM THAT MUST BE CONSIDERED. THERE ARE MANY CRUCIAL TECHNICAL AND LEGAL QUESTIONS REGARDING THE PROGRAM AND NEW JERSEY'S OPTIONS IN ADOPTING AND IMPLEMENTING IT.

MOBIL HAS AN INTEREST IN THIS PROPOSAL TO ADOPT CALIFORNIA TAILPIPE STANDARDS BECAUSE THE PROGRAM CREATES UNCERTAINTY AS TO FUTURE FUEL REQUIREMENTS. NEITHER THE CARS NOR THE FUELS HAVE BEEN IDENTIFIED. WE CAN SAY WITH SOME CERTAINTY THAT THE CALIFORNIA VEHICLES WILL LIKELY BE DESIGNED FOR METHANOL, NATURAL GAS OR CALIFORNIA GASOLINE, IN ADDITION TO THE MANDATORY ELECTRIC VEHICLE, WHICH ENTERS THE PROGRAM IN 1998. WHILE SOME SUGGEST THAT THESE CARS CAN OPERATE ON "FEDERAL REFORMULATED GASOLINE", INFORMATION ON THE PERFORMANCE OF AND THE

EMISSIONS FROM THESE VEHICLES WHEN USING OTHER FUELS IS SIMPLY UNAVAILABLE AT THIS TIME. WITHOUT THIS INFORMATION, THE AIR QUALITY BENEFITS OF THE LEV PROGRAM CANNOT BE ASSESSED.

HOWEVER, EVEN IF WE ASSUME THAT LEV EMISSION PERFORMANCE IS EQUIVALENT USING FEDERAL FUELS, THERE IS CONSIDERABLE EVIDENCE THAT THE BENEFITS OF THE LEV PROGRAM WOULD BE SMALL. FOR EXAMPLE, THE METROPOLITAN AREA SURROUNDING NEW YORK CITY (INCLUDING PARTS OF NEW JERSEY) WOULD REALIZE AN EMISSIONS BENEFIT OF ONLY 1% TO 3% IN THE YEAR 2010 FROM ADOPTION OF THE CALIFORNIA PROGRAM, WHEN COMPARED WITH THE AUTOMOBILE EMISSION REDUCTIONS ALREADY REQUIRED BY THE FEDERAL CLEAN AIR ACT. SINCE THE CALIFORNIA LEV PROGRAM WOULD CONTRIBUTE SO LITTLE TO ATTAINMENT OF NEW JERSEY'S AIR QUALITY GOALS, STATIONARY SOURCES SHOULD HAVE LITTLE TO FEAR REGARDING ANY ADDITIONAL CONTROLS WHICH MAY BE IMPOSED IF THE LEV PROGRAM IS NOT ADOPTED.

NEW JERSEY IS NOT BEING FORCED TO CHOOSE BETWEEN A QUESTIONABLE CALIFORNIA-SPECIFIC PROGRAM AND NO IMPROVEMENT IN AIR QUALITY. OPTIONAL MEASURES, SUCH AS THE CALIFORNIA LEV PROGRAM, SHOULD BE CONSIDERED ONLY WHEN THEY ARE SHOWN TO BE BOTH NECESSARY AND THE MOST COST-EFFECTIVE CONTROL MEASURES. AS A STATIONARY EMISSION SOURCE AND A PRODUCER OF FUELS, PAULSBORO REFINERY WILL BE CONTRIBUTING TO AIR QUALITY IMPROVEMENT THROUGH BOTH STATIONARY AND MOBILE SOURCE CONTROLS.

WE URGE THIS COMMITTEE TO CONSIDER THE POTENTIAL IMPACT OF THE CALIFORNIA LEV PROGRAM ON NEW JERSEY RESIDENTS AND NEW JERSEY BUSINESSES. THERE IS NO NEED FOR DEPE TO ACT HASTILY TO ADOPT CALIFORNIA'S PROGRAM. THE DEPE HAS YET TO COMPLETE ITS AIR EMISSIONS INVENTORY, WHICH WILL ESTABLISH THE BASELINE FROM WHICH AIR QUALITY IMPROVEMENTS WILL BE MEASURED BY THE CLEAN AIR ACT. THE AGENCY HAS YET TO ISSUE REGULATIONS FOR OXYGENATED FUELS, WHICH WE MUST MAKE AVAILABLE BY NEXT NOVEMBER. AND, IT HAS YET TO DETERMINE THE SPECIFIC NEEDS TO EACH ATTAINMENT OF THE OZONE STANDARD. THE REVISION TO THE STATE IMPLEMENTATION PLAN WHICH MUST INCLUDE NEW JERSEY'S "ATTAINMENT DEMONSTRATION" FOR AIR QUALITY STANDARDS IS NOT DUE UNTIL NOVEMBER, 1994. IT IS PREMATURE TO FORCE THE CITIZENS OF NEW JERSEY TO PAY FOR AN EXPENSIVE, OPTIONAL STEP BEFORE WE'VE DONE OUR HOMEWORK AND ANSWERED THE QUESTIONS OF NEED AND COST-EFFECTIVENESS.

IN CLOSING, I WISH TO EMPHASIZE THAT FEDERAL MOBILE SOURCE REQUIREMENTS WILL BRING CLEANER CARS AND CLEANER GASOLINE TO NEW JERSEY MUCH SOONER AND AT A MUCH LOWER COST THAN CALIFORNIA CARS. WE BELIEVE THAT RUSHING TO TRANSPLANT A CUSTOMIZED CALIFORNIA PROGRAM IN NEW JERSEY BEFORE THE NECESSARY ANALYSES ARE MADE IS NOT IN THE BEST INTEREST OF NEW JERSEY'S CITIZENS.

I WOULD BE PLEASED TO ANSWER ANY QUESTIONS YOU MAY HAVE.

Good morning. My name is Jim Campbell and I am the President of the Independent Oil Workers Union at Paulsboro Refinery in Paulsboro, New Jersey. I wish to thank the members of the Senate and Assembly Environment Committees for giving me the opportunity to express the concerns of my members about the proposed California LEV (low emission vehicle) program.

I am an electrician and I have worked at the refinery for 20 years. I represent approximately 600 union workers at the Paulsboro Refinery. For five out of the last six years, I have represented the union as its president.

My members work in maintenance and operations at the refinery. They live with their families in South Jersey, specifically in Gloucester and Salem counties. A number of my members are second and third generation workers at the refinery. We have several father/son, brother/sister Paulsboro union workers.

MY MEMBERS AND I ARE DEEPLY CONCERNED ABOUT THE EFFECTS OF CALIFORNIA LEV ON THE CONTINUED OPERATION OF THE REFINERY AND OUR JOBS. WE BELIEVE THAT IF CALIFORNIA LEV IS REQUIRED (AND FUELS ARE AFFECTED), THE REFINERY WILL NEED HUGE INVESTMENTS IN EQUIPMENT AND IMPROVEMENTS WHICH COULD BE TOO COSTLY FOR ITS CONTINUED OPERATION. OTHER NEWER REFINERIES MIGHT BE ASKED TO SUPPLY THE PRODUCTS THAT PAULSBORO MAKES. IF THE PAULSBORO REFINERY WERE TO CLOSE, IT WOULD NOT ONLY AFFECT MY 600 UNION MEMBERS, BUT ALSO 300 OTHER EMPLOYEES, AND THE APPROXIMATELY 300 OUTSIDE CONTRACTORS AND VENDORS WHO WORK ON PROJECTS AT THE REFINERY EVERYDAY.

ON BEHALF OF MY MEMBERS, I ASK THAT WHILE YOU LOOK FOR SOLUTIONS TO NEW JERSEY'S AIR QUALITY PROBLEMS, PLEASE CAREFULLY CONSIDER THE SERIOUSNESS AND COST OF THE

California LEV program for the refinery workers, the Salem and Gloucester county local economies, and the outside contractors who work there.

Thank you again for giving me the opportunity to testify.

Jim Campbell

I am Dr. Paul J. Lioy, Director of the Exposure Measurement and Assessment Division of the Environmental and Occupational Health Sciences Instiute, a joint program of the University of Medicine and Dentistry of New Jersey-Robert Wood Johnson Medical School (UMDNJ-RWJMS) and of Rutgers University. I am also the Director of the Ozone Research Center of EOHSI/NJDEPE. In addition, I am a Member of the Board of Environmental Studies and Toxicology of the National Academy of Sciences and was recently a member of the NRC committee on Troposphere Ozone Formation and Transport. I also serve on the New Jersey Clean Air Council.

My testimony today is with regard to the need for the State of New Jersey to reduce the levels of tropospheric ozone in the atmosphere. The focus of my presentation is the health effects that we have observed in studies conducted in New Jersey, and the needs for the control of the major source of the precursors of ozone: Nitrogen oxides and reactive hydrocarbons. My presentation will draw from the recently completed NAS report "Rethinking the Ozone Problem in Urban and Regional Air Pollution", and my recent research on the effects of ozone on the respiratory system of New Jersey residents.

Key features of my testimony are:

1. The concentrations of ozone have been above the National Health Standard for over 20 years in most sections of the State, and currently the entire state is in non-attainment.

2. The results from one or more of five studies conducted in New Jersey from 1982 through 1991 have shown that: 1) the pulmonary function of healthy children participating in summer camps activities is affected by ozone, and that the accumulated dose in the prior day is associated with changes in function, 2) after extended episodes the baseline pulmonary function remains depressed for at least a week, 3) respiratory symptoms have been observed in active children at a camp during and extended episode, and 4) approximately 8% of the summertime visits by asthmatics to the emergency room in nine North/Central New Jersey hospitals were associated with photochemical smog episodes and the presence of ozone during 1988 and 1989.

3. The NAS recommendations which I believe are pertainent to the current issue of the Low Emitting Vehicle or "California Car" are:

A. According to model results for the Northeast combined VOC and NO_x controls would be more effective in reducing ozone than VOC-only controls.

B. The extent of controls needed depends on local amounts of VOC's and NO_x

C. Atmospheric measurements of individual VOC and nitrogen compounds are necessary to:

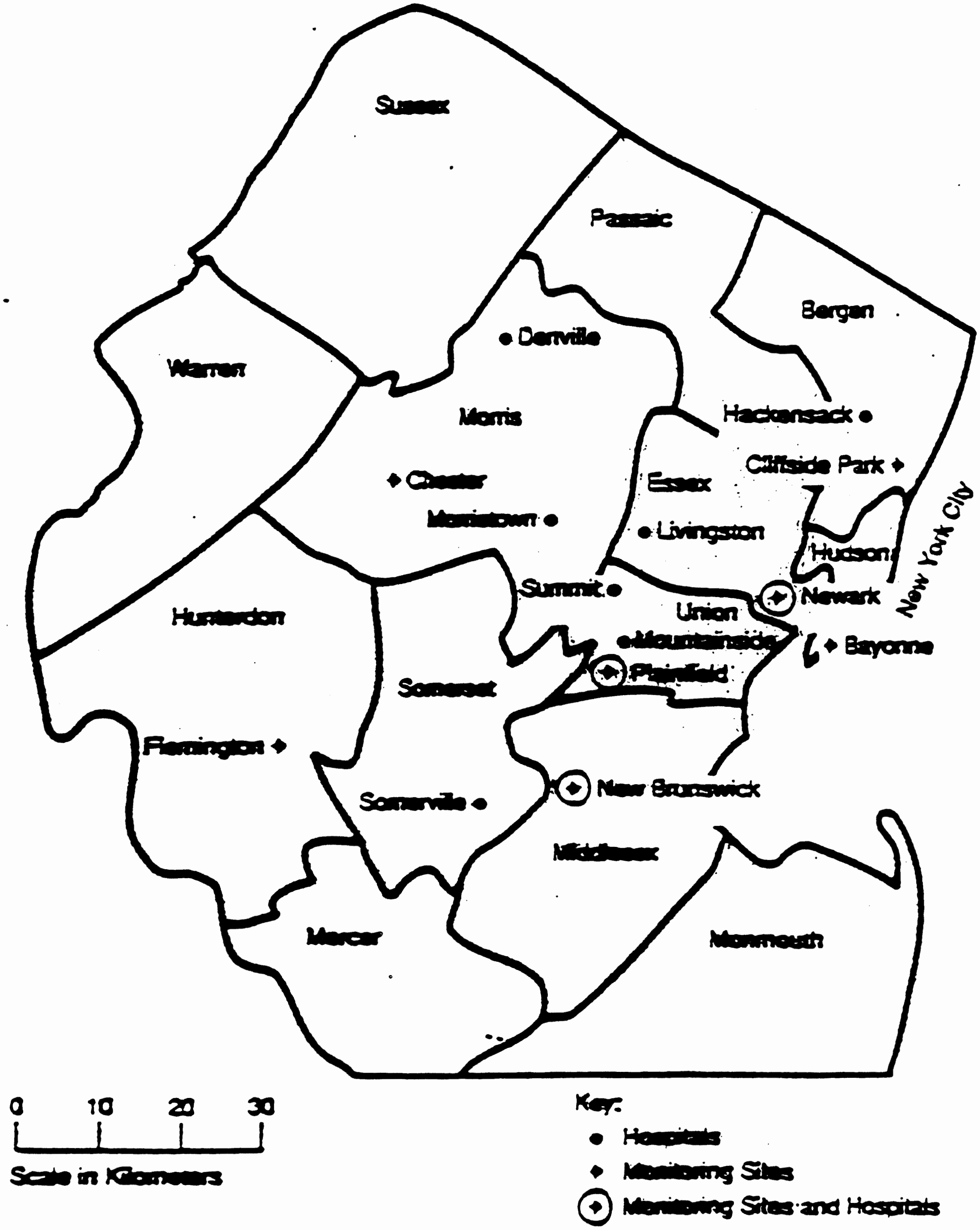
-verify emissions inventories

-monitor progress in reducing emissions

D. Recent studies indicate that anthropogenic VOC emissions especially from motor vehicles, are greater than previously believed.

E. Accurate VOC estimates will be necessary to conduct the modeling studies needed for air quality planning and estimation of exposure reductions.

F. Data used in models need to be upgraded coincident with the implementation of control strategies.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New York City
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Newark
Union
Bayonne
Hunterdon
Somerset
Flemington
New Brunswick
Somerville
Middlesex
Mercer
Monmouth
0 10 20 30
Scale in Kilometers
Key:
Hospitals
Monitoring Sites
Monitoring Sites and Hospitals

ANALYSIS OF RESULTS

1. THE RELATIONSHIP BETWEEN OZONE AND ASTHMA EMERGENCY ROOM ADMISSIONS WAS CONSISTENT WITH BUT STRONGER THAN OBSERVED BY BATES AND SIZTO IN SOUTHERN ONTARIO.

2. THERE WAS A CLEAR DIFFERNCE BETWEEN THE ASTHMA AND BRONCHITIS RELATIONSHIPS OBSERVED IN THE DATA SETS.
   A. ASTHMA INCREASED WITH OZONE
   B. BRONCHITIS WAS ASSOCIATED WITH PM-10

3. THE PERCENTAGE OF ASTHMA ADMISSIONS EXPLAIMED BY OZONE FOR THE BATES + SIZTO STUDIES AND OUR OUR STUDY SHOW IN DECREASING ORDER OF OZONE EXPOSURE:

NEW JERSEY	7-10 %
SOUTHERN ONTARIO	3 %
VANCOUVER	NS

CONCLUSIONS:

- DEMONSTRATED A STATISTICALLY SIGNIFICANT RELATIONSHIP BETWEEN OZONE AND ASTHMA ADMISSIONS

- DEMONSTRATED THE NEED TO CONTROL FOR TEMPERATURE VARIATIONS

- SHOWED VARIATION IN ADMISSIONS EPLAINED BY OZONE DECREASED IN THE ORDER NEW JERSEY > SOUTHERN ONTARIO > VANCOUVER

- THE MEAN AND MAXIMUM OZONE CONCENTRATION AND FREQUENCY OF OZONE MAXIMUM ABOVE 0.082 ppm WAS THE HIGHEST IN NEW JERSEY SUGGESTING THE POSSIBILITY OF A DOSE RESPONSE RELATIONSHIP EXISTING BETWEEN CITIES WITH DIFFERENT LEVELS OF SMOG

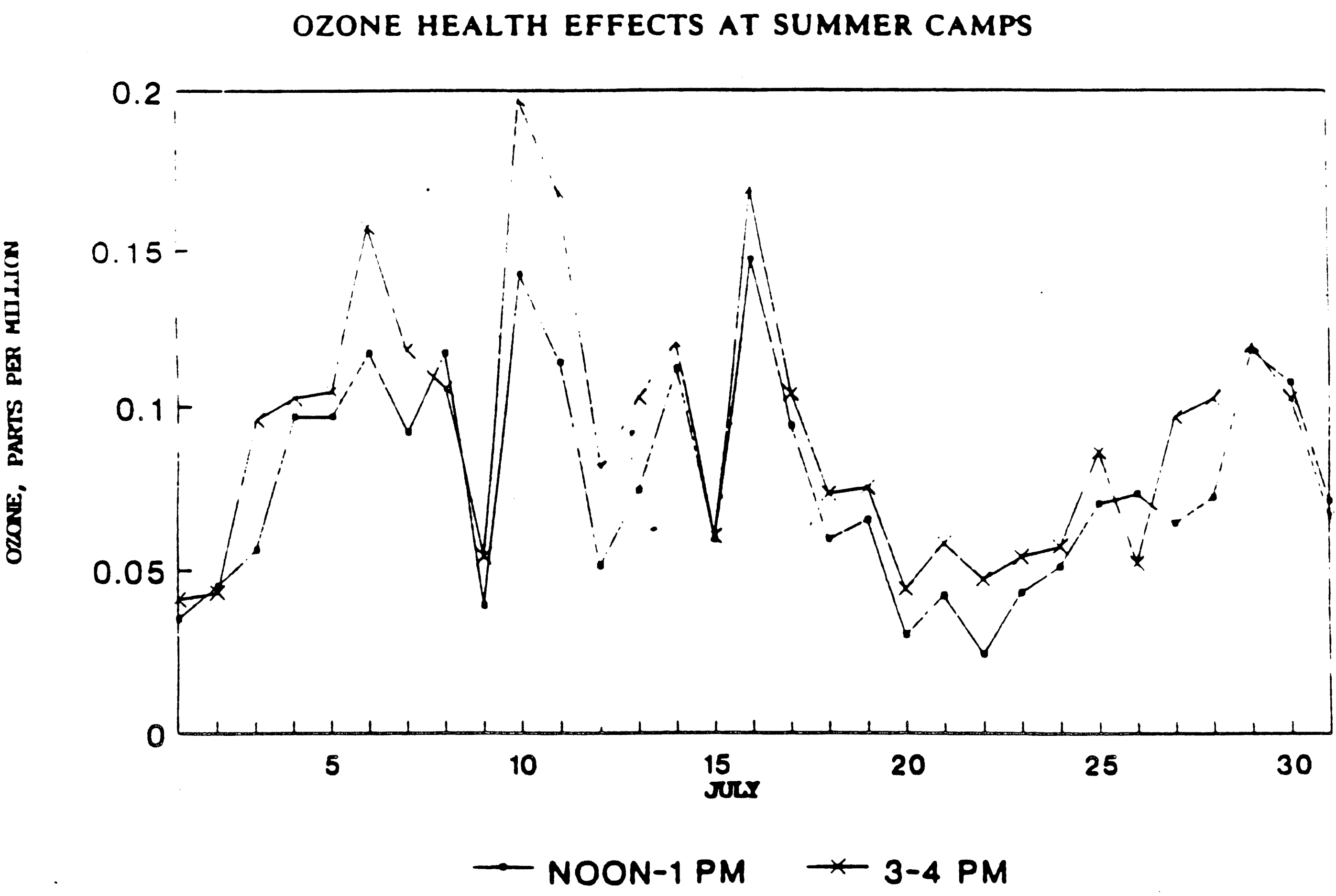


FIG. 1. Maximum 1-hr average ozone exposure levels (New Jersey Department of Health Ozone Health Effects Study, Hamilton, New Jersey; July 1988). 40X

TABLE 8

PEAK EXPIRATORY FLOW RATES AVERAGE DIFFERENCE OF OBSERVED AND EXPECTED PER DAY[a]

	Exposure estimates							
	1-hr Ave		8-hr Ave		2-day Ave		3-day Ave	
Group	Slope*	*P* value	Slope	*P* value	Slope	*P* value	Slope	*P* value
Rec-camp**	3.027	(0.29)	3.029	(0.34)	7.137	(0.08)	6.254	(0.24)
Y-Workers	0.531	(0.43)	0.344	(0.47)	−1.729	(0.36)	−5.045	(0.35)
Y-Campers	−2.961	(0.10)	−4.740	(0.05)	−3.403	(0.16)	−2.127	(0.30)

Note. *P* values are from one-tailed *t* tests.

[a] New Jersey Department of Health Ozone Health Effects Study, Hamilton, New Jersey; July 1988.

* Slope in ml/sec/ppb.

** A 4-hr ozone average was used instead of the 8-hr average and a modified 2- and 3-day exposure estimate was used for the Rec-camp.

TABLE 7

POSITIVE SYMPTOMS BY GROUP AND OZONE LEVEL[a]

Group and symptoms	Low ozone (<80 ppb) No.	Low ozone (<80 ppb) %	Moderate ozone (80–120 ppb) No.	Moderate ozone (80–120 ppb) %	High ozone (>120 ppb) No.	High ozone (>120 ppb) %	Total No.	Total %
Y-Camp campers (N)	87		76		40		203	
Scratchy throat	12	13.8%	15	19.7%	6	15.0%	33	16.3%
Cough	11	12.6%	18	23.7%	11	27.5%	40	19.7%
Hoarseness	9	10.3%	3	3.9%	6	15.0%	18	8.9%
Phlegm	25	28.7%	18	23.7%	14	35.0%	57	28.1%
Chest pains	6	6.9%	6	7.9%	4	10.0%	16	7.9%
Wheeze	2	2.3%	1	1.3%	1	2.5%	4	2.0%
Runny or stuffy nose	42	48.3%	39	51.3%	23	57.5%	104	51.2%
Eye irritation	11	12.6%	14	18.4%	11	27.5%	36	17.7%
Shortness of breath	3	3.4%	3	3.9%	3	7.5%	9	4.4%
Y-Camp workers (N)	65		78		38		181	
Scratchy throat	9	13.8%	14	17.9%	6	15.8%	29	16.0%
Cough	14	21.5%	11	14.1%	6	15.8%	31	17.1%
Hoarseness	17	26.2%	23	29.5%	10	26.3%	50	27.6%
Phlegm	20	30.8%	25	32.1%	9	23.7%	54	29.8%
Chest pains	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Wheeze	2	3.1%	4	5.1%	2	5.3%	8	4.4%
Runny or stuffy nose	21	32.3%	26	33.3%	12	31.6%	59	32.6%
Eye irritation	6	9.2%	9	11.5%	4	10.5%	19	10.5%
Shortness of breath	6	9.2%	2	2.6%	1	2.6%	9	5.0%
Rec-camp workers (N)	56		60		0		116	
Scratchy throat	5	8.9%	0	0.0%		—	5	4.3%
Cough	5	8.9%	2	3.3%		—	7	6.0%
Hoarseness	6	10.7%	2	3.3%		—	8	6.9%
Phlegm	4	7.1%	8	13.3%		—	12	10.3%
Chest pains	0	0.0%	4	6.7%		—	4	3.4%
Wheeze	1	1.8%	0	0.0%		—	1	0.9%
Runny or stuffy nose	12	21.4%	11	18.3%		—	23	19.8%
Eye irritation	3	5.4%	5	8.3%		—	8	6.9%
Shortness of breath	0	0.0%	3	5.0%		—	3	2.6%

[a] New Jersey Department of Health Ozone Health Effects Study, Hamilton, New Jersey; July 1988.

Summary of the
National Research Council Study:

Rethinking the Ozone Problem
in Urban and Regional Air Pollution

Motivation

- Progress towards meeting the NAAQS for ozone (0.12 ppm) has not progressed as rapidly as expected in spite of considerable pollution control efforts.

- Ozone adversely impacts health and the environment:
  - Respiratory and pulmonary stress
  - 0.12 standard may provide little "margin of safety"
  - Adverse impacts on trees and crops

Ozone Chemistry

- Tropospheric ozone is formed from NO2:

$NO_2 + hv \rightarrow NO + O$
$O + O_2 \rightarrow O_3$
$O_3 + NO \rightarrow NO_2 + O_2$

Net: No net ozone formation

- NO emissions can lead to local ozone decreases

- VOCs add the energy to oxidize NO to NO_2, and hence form ozone:

$VOC + OH \rightarrow RO2$
$RO2 + NO \rightarrow NO_2 + VOC'$
$NO_2 + hv \rightarrow NO + O$
$O + O_2 \rightarrow O_3$

Net: $VOC + hv + O_2 \rightarrow O_3 + VOC'$

- While not explicitly shown, NOx is required to form ozone:

$O_3 = f(VOC, NOx, hv, t)$

NRC, February 12th, 1992

NO$_x$ controls are probably needed in many areas.

- Air-quality models show that NO$_x$ controls can effectively reduce ozone in most areas.

- In many rural and some urban areas (e.g., Atlanta and Houston, which have substantial biogenic VOC emissions), VOC controls are relatively ineffective, and greater emphasis should be placed on NO$_x$ control.

- In a few urban cores (e.g., downtown Los Angeles and New York City), NO$_x$ controls alone may have little effect or may actually increase ozone.

- According to model results for the Northeast, combined VOC and NO$_x$ controls would be more effective in reducing ozone than VOC-only controls.

- The extent of controls needed depends on local amounts of VOCs and NO$_x$ and varies widely

Improve atmospheric measurements of VOCs and NO_x.

- In the lower atmosphere, volatile organic compounds (VOCs) and oxides of nitrogen (NO_x) react to produce ozone in the presence of sunlight.

- The amount of ozone that can be formed depends on the concentrations of VOCs and NO_x.

- In the past, emissions have only been estimated and have not been verified with atmospheric measurements.

- Hence the SIP process, while fundamentally sound in principle, is flawed in practice because of the lack of adequate verification programs.

- Atmospheric measurements of individual VOCs, NO_x, and other nitrogen compounds are necessary to
  - Verify emissions inventories
  - Monitor progress in reducing emissions

Develop adequate estimates of anthropogenic and biogenic VOC emissions.

- Past ozone control strategies assumed that VOC controls are more effective than NO_x controls.

- Recent studies indicate that anthropogenic VOC emissions, especially from motor vehicles, are greater than previously believed (e.g., super-emitting automobiles). Furthermore, VOC control programs have been less effective than expected.

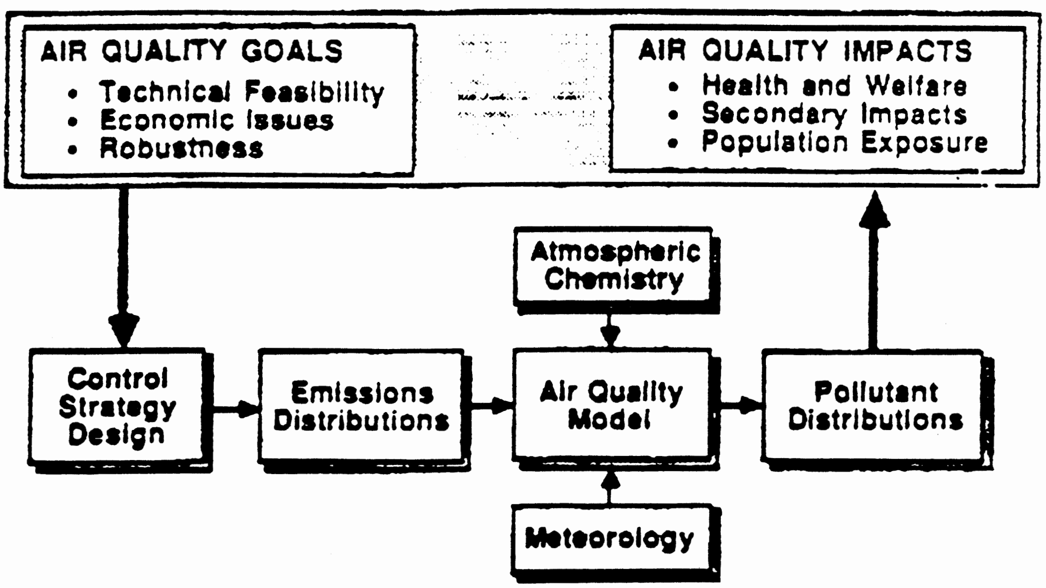
- In many areas, VOC emissions from trees and other vegetation are significant. These emissions cannot be reduced by control programs.

- A VOC-only strategy may therefore have been inappropriate in many areas.

- Accurate VOC estimates are needed to determine the best control strategy in each area.

Air Quality Models

- Mathematical description of the processes affecting pollutant dynamics in the atmosphere
- Scientifically the most sound foundation for assessing the impact that future emission changes will have on air quality
- Central for air quality planning process



NRC, February 12th, 1992

Determine the effects of uncertainties on model predictions.

- Computer air-quality models describe atmospheric processes affecting ozone formation. Model predictions are central to air-quality planning.

- The emissions data, meteorological data, and representations of chemical processes incorporated by models may be inaccurate or incomplete.

- Air-quality planners need to take these uncertainties into account when developing control strategies. The effects of these uncertainties on model predictions are largely unknown.

- However, model uncertainties do not alter the conclusion about the need for NO_x control.

The use of alternative fuels requires further study.

- The widespread use of alternative fuels would change the emissions of motor vehicles. Fuels being considered include reformulated gasoline, methanol, natural gas, ethanol, liquid petroleum gasoline, electricity, and hydrogen.

- Alternative fuels alone will not solve ozone problems nationwide. However, the use of these fuels can become part of an effective ozone control strategy.

- The effects of these fuels on air quality vary from place to place. Their use should be considered for each region separately.

- Mandating the widespread use of particular fuels at this time would be premature. An exception may be electric vehicles, which emit almost no VOCs or NO_x and could lead to ozone reductions almost anywhere. More measurement and modeling studies are needed.

Study Findings

- Routine measurement program is inadequate for :
  - Assessing control technology effectiveness
  - Validating emissions inventories
  - Determining source contributions
  - Fully elucidating atmospheric chemistry

- VOC controls not as effective as planned
  - Anthropogenic VOC emissions underestimated and unverified

- Biogenic VOC + Anthropogenic NOx ==> O3 greater than 0.12 ppm in many areas
  - NOx controls necessary in those areas, effective in most

→ Scientific evidence indicates that NOx control is necessary for effectively reducing ozone in many areas.

- Some areas, e.g. in downtown Los Angeles and New York, respond very favorably to VOC controls and less favorably to NOx controls alone

- Significant uncertainties in alternative fuel use

NRC , February 12th, 1992

NAS Recommendations

- Improved ambient monitoring of VOCs and NOx is necessary to:
  - verify emission inventories
  - monitor progress in reducing emissions
- Adequate estimates of biogenic and anthropogenic VOC emissions must be developed
- Effects of uncertainties on model predictions must be elucidated as completely as possible
- Because of uncertainties, mandated use of specific alternative fuels would be premature; coordinated studies are needed to determine which fuels are best suited to a specific region
- A coherent and focussed national program should be established to study ozone in North America
- Control of NOx emissions will probably be necessary in addition to, or instead of, the control of VOCs.
- Approaches should be able to accommodate new information after they are implemented

NRC, February 12th, 1992

E O H S I

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April 13, 1992

Mr. Raymond E. Cantor
Senior Counsel
New Jersey State Legislature
Office of Legislature Services
Legislature Office Building
CN-168
Trenton, NJ 08625-0008

Dear Mr. Cantor:

Thank you for inviting me to the Joint Public Hearing on the California Car program in New Jersey. As per my discussion at the meeting enclosed are two health related manuscripts on New Jersey which I am submitting to the file. I am also giving you a cleaner version of my testimony summary.

Sincerely,

Paul J. Lioy, Ph.D.
Professor
Director-Exposure Measurement
and Assessment Division

PJL/ab
Emclosures

Testimony provided to the: Joint Public Hearing of the
New Jersey Senate and General Assembly Environment Committees Concerning
The Proposed Adoption of the California Car

April 9, 1992, Trenton, N.J.

I am Dr. Paul J. Lioy, Director of the Exposure Measurement and Assessment Division of the Environmental and Occupational Health Sciences Instituite, a joint program of the University of Medicine and Dentistry of New Jersey-Robert Wood Johnson Medical School (UMDNJ-RWJMS) and of Rutgers University. I am also the Director of the Ozone Research Center of EOHSI/NJDEPE. In addition, I am a Member of the Board of Environmental Studies and Toxicology of the National Academy of Sciences and was recently a member of the NRC committee on Troposphere Ozone Formation and Transport. I also serve on the New Jersey Clean Air Council.

My testimony today is with regard to the need for the State of New Jersey to reduce the levels of tropospheric ozone in the atmosphere. The focus of my presentation is the health effects that we have observed in studies conducted in New Jersey, and the needs for the control of the major source of the precursors of ozone: Nitrogen oxides and reactive hydrocarbons. My presentation will draw from the recently completed NAS report "Rethinking the Ozone Problem in Urban and Regional Air Pollution", and my recent research on the effects of ozone on the respiratory system of New Jersey residents.

Key features of my testimony are:

1. The concentrations of ozone have been above the National Health Standard for over 20 years in most sections of the State, and currently the entire state is in non-attainment.

2. The results from one or more of five studies conducted in New Jersey from 1982 through 1991 have shown that: 1) the pulmonary function of healthy children participating in summer camps activities is affected by ozone, and that the accumulated dose in the prior day is associated with changes in function, 2) after extended episodes the baseline pulmonary function remains depressed for at least a week, 3) respiratory symptoms have been observed in active children at a camp during and extended episode, and 4) approximately 8% of the summertime visits by asthmatics to the emergency room in nine North/Central New Jersey hospitals were associated with photochemical smog episodes and the presence of ozone during 1988 and 1989.

3. The NAS recommendations which I believe are pertainent to the current issue of the Low Emitting Vehicle or "California Car" in New Jersey are:

A. According to model results for the Northeast combined VOC and NO_x controls would be more effective in reducing ozone than VOC-only controls.

B. The extent of controls needed depends on local amounts of VOC's and NO_x

C. Atmospheric measurements of individual VOC and nitrogen compounds are necessary to:

- verify emissions inventories
- monitor progress in reducing emissions

D. Recent studies indicate that anthropogenic VOC emissions especially from motor vehicles, are greater than previously believed (e.g., super emitting automobiles) Furthermore VOC control programs have been less effective than expected.

E. Accurate VOC estimates will be necessary to conduct the modeling studies needed for air quality planning and estimation of exposure reductions.

F. Data used in models need to be upgraded coincident with the implementation of control strategies.

The other recommendations that are associated with these specific items are found in my handouts and the full NAS report.

The Effect of Ozone Associated with Summertime Photochemical Smog on the Frequency of Asthma Visits to Hospital Emergency Departments

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Running Head: The Effects of Ozone on Asthma Visits

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KEY WORDS: Ozone, Asthma, Respiratory Disease, Air Pollutants, Meteorology

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Abstract

A retrospective study using ambient ozone, temperature and other environmental variables and their effect on the frequency of hospital visits for asthma was conducted in New Jersey, an area that often exceeds the allowable national standard for ozone. Data on emergency department visits for asthma, bronchitis, and finger wounds (a nonrespiratory control) were analyzed for the period May through August for 1988 and 1989. Asthma visits were correlated with temperature while the correlation between asthma visits and ozone concentration was nonsignificant. However, when temperature was controlled for in a multiple regression analysis, a highly significant relationship between asthma visits and ozone concentration was identified. Between 13% and 15% of the variability of the asthma visits was explained in the regression model by temperature and ambient ozone levels. This association, when compared to similar studies in Canada, shows the contribution of ozone to asthma admissions to be stronger in areas with higher ozone concentrations. Thus, among regions with periodic accumulations of ozone in the ambient atmosphere, an exposure-response relationship may be discernible. This supports the need to attain air quality standards for ozone to protect individuals in the general population from the adverse health effects caused by ambient ozone exposure.

75-8

Introduction:

Over 150,000,000 Americans live in communities where levels of the air pollutant ozone exceeds the allowable health based National Ambient Air Quality Standard (NAAQS) of 0.12 ppm (EPA 1986). Ozone is an intense irritant which has been shown to produce bronchoconstriction in controlled human exposures (Bates et al. 1972; Koenig et al. 1987), apparently through a process involving inflammation (Koren et al. 1989; Seltzer et al. 1986; Whittemore and Korn 1980). It has been suggested that asthmatics are an at risk group to ozone exposure at levels currently present in the ambient atmosphere (EPA 1988). Controlled exposure studies of asthmatics and healthy individuals while exercising failed to show statistically significant differences in pulmonary function between the two groups, when ozone was the only bronchoactive agent (Koenig et al. 1987). However, when asthmatics and healthy individuals undergo bronchoprovocation with methacholine followed by exposure to 0.40 ppm ozone while exercising, significant differences were found (Kreit et al. 1989).

Results of epidemiological studies conducted in three North American cities to determine whether ozone affects asthmatics at ambient levels have been inconsistent. An initial study in Los Angeles in 1961, identified a positive correlation between the frequency of attacks reported by asthmatics and ambient oxidant concentrations. A more comprehensive study done 20 years later in Los Angeles, evaluated more than 2,000 asthma hospital admissions and found a negative correlation between asthmatic morbidity in children and ambient ozone levels (Richards et al. 1981). In an eight year study conducted in Southern Ontario that encompassed 79 hospitals, positive association between hospital admissions for asthma, and ambient ozone concentrations was found (Bates and

Sizto 1986; Bates and Sizto 1987). A similar study examining emergency department visits in Vancouver, where the ozone levels are significantly lower, failed to find any association (Bates et al. 1990).

Considering the tenuous nature of the current data base relating asthma morbidity and ambient ozone levels, a study was conducted in the Central and Northern region of New Jersey to evaluate possible relationships between ambient ozone levels and reported asthma admissions to emergency departments of nine hospitals. New Jersey has ozone levels significantly higher than either Southern Ontario or Vancouver, on days associated with photochemical smog, with the daily maximum ozone concentration often exceeding the NAAQS of 0.12 ppm.

Methods

Emergency Department Data

Data on visits to emergency departments for nine hospitals in central and northern New Jersey (Figure 1) were provided by Emergency Medical Associates (EMA). The hospitals were within an area that included approximately 1100 square kilometers. Data were provided for all of 1988 and 1989. However, for the purposes of this analysis only data during the ozone season, defined as May through August of each year were used. These EMA data contained up to three ICD-9 codes which were assigned as emergency department diagnoses for each patient. Information on whether the patient was admitted to the hospital or released was not available in the data base. The date, time, sex, age and some procedural codes were also provided for each patient. Respiratory admissions with ICD-9 codes of 493.9, 493.90, 493.91 were classified as asthma cases and those with ICD-9 codes of 466.0, 466.1, 490, 491.2 and 496 were identified as bronchitis cases. Other respiratory symptoms, such as upper respiratory infections, were not included. Finger wounds, with an ICD-9 code of 883.0, were used as a non-respiratory control. During the ozone season of 1988 and 1989 the total number of emergency visits at the nine hospitals was approximately 147,000 with 814 classified as asthma, 912 classified as bronchitis, and 4066 classified as finger wounds. The mean age of our asthma patients was 28.7 (sd=19.8) for 1988 and 29.9 (sd=19.9) for 1989.

Air Pollution Data

Criteria air pollutant data collected by the New Jersey Department of Environmental Protection and compiled by the National Air Data Branch of the U.S. Environmental Protection Agency, within their AIRS data base were used. The data for the period May through August for 1988 and 1989 were obtained for the five monitoring sites in central and northern New Jersey closest to the area serviced by the hospitals (Figure 1). The ozone and sulfur dioxide data were measured hourly. Thoracic particulate matter, PM-10, was measured every 6th day. Hourly temperature and visibility measurements collected at the Airways Surface Measurement Station in Newark, New Jersey were obtained from the National Climatic Data Center of NOAA, in North Carolina. Visibility data were used as surrogates for the amount of sulfate aerosol present in the region. The mean and frequency distribution of all of the environmental data were examined as a quality assurance check.

Statistical Methods

SAS software (version 6.03) was used to assemble and merge databases, and conduct statistical analyses (Cody and Smith 1991). The analyses were restricted to the period when the maximum amount of photochemical smog production occurs in New Jersey, defined as May 1 to August 31. This time frame minimizes the influence of seasonal variations in asthma and bronchitis, and the major allergic reactions of individuals to pollen and mold that occur in the region during September and October. Tests were conducted to examine the uniformity of the pollutant concentrations over the geographic area containing the hospitals. Pearson correlation coefficients were calculated across the sampling sites for the average ozone concentration measured each day from 10:00 to 15:00 hours and for the daily maxima. The time period from 10:00 to 15:00 was chosen because it represents the time when peak production of ozone occurs. Our assumption is that this represents the time of the greatest change in ozone which could influence a pulmonary response, and result in a visit to an Emergency Department. The values of the correlation coefficients among the sites for the 10:00 to 15:00 average ozone concentration ranged from 0.58 to 0.88. For the daily maxima the correlation coefficients ranged from 0.73 to 0.88. All these inter-site correlations were statistically significant at $p<0.0001$. Pair wise analyses of the 10:00 to 15:00 average ozone value and maximum ozone value each day had a correlation at 0.97. Therefore, it was decided to use the average ozone value, between the hours of 10:00 and 15:00, as our primary exposure variable for comparisons with the respiratory admission codes. A mean ozone value was calculated across all sites as a representative concentration for the region. The visibility measured at noon was examined in two ways: 1) the visibility for all days during the study period and 2) the daily visibility excluding days which reported rain. Pearson correlation coefficients were calculated among all air pollutant and meteorological data. The daily totals for asthma visits, for bronchitis visits and finger wound visits were computed for all the hospitals in our data base, as well as only visits that occurred from noon to midnight. The latter was used to test if the relationship between ozone and Emergency Department visits was triggered by the time period immediately after an exposure, since high ozone primarily occurs in the afternoon and evening. To test for a possible spurious correlation between emergency department visits and ozone concentration as a result of both variables being affected by a weekday versus weekend factor, we reran our regression models with weekends excluded. The frequency distribution for daily asthma visits was slightly positively skewed. We conducted a chisquare goodness-of-fit test, comparing this distribution to both a normal and a Poisson distribution for the 1988 and 1989 data sets. In both years a normal distribution provided a better fit and we chose to conduct ordinary least squares multiple regression. Because the temperature-respiratory admission relationship reported by Bates and Sizto (1987) and the known correlation with ozone (Wolff and Lioy 1978), a temperature correction had to be made before determining any association between air pollutant exposures and asthma or bronchitis admissions. Initially this was done by developing a forward stepwise multiple regression model using temperature, temperature change and ozone as independent variables and asthma or bronchitis admissions as a dependent variable. The modeling effort was then expanded to include 24 and 48 hour lags of the ozone levels, mean daily relative humidity, mean daily sulfur dioxide and visibility at noon. Analysis for PM-10 sampled at 6 day intervals was added as a separate model. All multiple regression equations were calculated individually for the summers of 1988 and 1989. Both years were subsequently merged to develop an overall regression model. To test for the effects of autocorrelation, models for 1988 and 1989 were also run using the SAS procedure AUTOREG which checks and corrects for autocorrelation.

Results

General Associations Among Environmental Variables

Table 1 lists the mean daily values reported for the air pollutants, meteorological parameters and emergency department visits along with the values at the 25% and 75% percentile. Little difference exists between the meteorological parameters, sulfur dioxide for 1988 and 1989. The mean ozone was 20% higher in 1988. The number of days that exceed the NAAQS of .12 ppm was also greater in 1988 than in 1989, 34 and 8 respectively. This represents 27% and 8% of the days during the ozone season, May through August, for 1988 and 1989, respectively. A significantly higher number of days exceeded the Canadian standard of 0.082 ppm, 59 days and 43 days, during 1988 and 1989, respectively. There was no change in the frequency of finger wounds or total admissions during the two years (Table 2). A slight increase in the mean daily admissions of asthma and bronchitis was observed.

Table 3 shows the correlation coefficients among the meteorological and pollutant measurements, and Table 4 the correlation among the 10:00 to 15:00 average ozone levels each day and ozone levels from the previous two days (24 and 48 hours lagged values) during the summer months. Average ozone levels were moderately correlated with daily mean sulfur dioxide, daily mean temperature and negatively correlated with daily mean humidity and the visibility at noon (when rain days were excluded). Daily mean sulfur dioxide had statistically significant correlations with all meteorological parameters examined. The daily and lagged ozone concentrations were all correlated.

Table 5 lists the correlation coefficients of the meteorological and pollutant measurement with asthma, bronchitis and finger wound admissions. The only statistically significant relationship was ambient temperature with asthma visits. By limiting the data to the summer, seasonal trends such as the decrease in ozone levels during the winter were eliminated. This also effectively reduced the probability of observing statistically significant non-causal correlations.

Multiple Regression Analysis

Regression analyses were conducted on the combined 1988, 1989 data set to examine the relationship of respiratory admissions with environmental variables and to try to develop a statistical model between asthma visits, and the independent variables: temperature, change in temperature and ozone. The resultant least squares fit had a total r^2 = 0.09 (p=.0001). The partial r^2 for temperature, ozone concentration and daily temperature changes were 0.052 (p=.0006), 0.025 (p=.0147) and 0.011 (p=.109) respectively.

Based upon the assumption that there will be a lag between ozone exposure and an emergency department visit, a second model was attempted which included lagged ozone (24 and 48 hours), sulfur dioxide, relative humidity and visibility as independent variables. The model was attempted using the combined data set, and 1988 and 1989 individually. For 1988 and 1989 individually, the ozone level lagged 48 hours was not significant and did not appreciable increase the total r^2. We therefore chose to include only the same day ozone level and the 24 hour lagged value in our models. The results are shown in Table 6. Only temperature and ozone contributed to the regression analysis, using an entry criteria of $p < 0.15$. The r^2 explained by the regression equation for the combined 1988-1989 data, for 1988, and for 1989 were 0.099, 0.132, and 0.154, respectively. The variable order in the regression analysis varied among the models. However, the order is of minor importance since once a single variable, from a group of highly correlated variables is included, the remaining variables will contribute little additional unique variance to the model. For 1988 and the combined 1988-1989 data sets, ozone LO did not meet the entry requirement in the multiple regression analysis. We suspect this is due to its strong correlations with the L24 value (see Table 4). Similar results were obtained when weekends were omitted, indicating that any weekday-weekend differences were not a confounding factor.

A multiple regression analysis was also completed using bronchitis as the dependent variable. The results, however, did not show any statistically significant relationship with the independent variables used in the previous models. Similarly, no significant association was observed among finger wounds and air pollutant concentrations or meteorological parameters. Thus, it is improbable that the relationship observed for asthma is an artifact. The regressions using PM-10 did not add any significant associations for asthma visits. However, there was a non-significant relationship observed between Bronchitis and PM-10. This weak association is inconclusive and the subject of further study.

The results of running the autoregression procedure were as follows: For 1988, the Durbin-Watson statistic was 1.75, the total r^2 was reduced from .13 to

.10, with the p-values for ozone (lagged 24 hours) and temperatures still highly significant. For 1989, the Durbin-Watson statistic was 1.8, the total r^2 dropped from .15 to .14 and the p-values remained highly significant.

Discussion

A strong relationship was observed in New Jersey between summertime ozone concentration and emergency department visits for asthma. These results extend the associations observed in Southern Ontario (Bates and Sizto 1987). The negative results for a similar study of asthmatic children in Los Angeles (Richards et al. 1981), a region with higher ozone levels than New Jersey, is probably due to the covariance between temperature and ozone during smog episodes and temperature and asthma attacks that they reported but did not address statistically. We observed nonsignificant correlations between emergency department visits for asthma and ozone L0 and L24 when the covariance with temperature was not taken into account. The relationship between ozone and asthma was only identified after the covariance between temperature and ozone was taken into account. Decreases in temperature have been related to marked increases in the number of emergency department visits for asthma (Greenburg et al. 1964). It would therefore appear to be essential to account for temperature in any analysis. A second factor that differentiates Los Angeles and New Jersey is the adaptation by responsive individuals, including asthmatics, to continual exposure to the high ambient ozone levels, that occurs in Los Angeles but not New Jersey (Linn et al. 1988). Individuals who showed changes in their pulmonary function when exposed to ozone in a controlled setting, immediately prior to the photochemical smog season in Los Angeles, lost much of their reactivity by the fall after being exposed to the ambient levels of ozone in Los Angeles for 2 to

3 months. Richards et al. (1981) evaluated children starting in August, when the adaptation mechanism would have reduced their response to ozone. Thus, direct comparisons of our results with asthma admission analyses conducted in Los Angeles is not possible.

A clear demarcation between two respiratory ailments: asthma and bronchitis, was observed in the New Jersey Data set. Asthma visits were found to increase with ambient ozone levels, while bronchitis did not. This differs from the results reported by Bates and Sizto (Bates and Sizto 1987), who found similar associations of ozone with total respiratory admission and asthma alone. When our bronchitis and asthma data were combined the total amount of variance explained by ambient ozone level and temperature declined. Whenever admission diagnoses are used in an epidemiological analysis, bias due to misclassification of a diagnosis is possible. Differences in the accuracy of the diagnosis of asthma and bronchitis exist. The asthmatic patient presents with typical symptoms of wheezing, cough and dyspnea. These symptoms are acute and recurrent in nature with interspersed asymptomatic periods (McFadden 1991). Specific diagnostic criteria for asthma have been produced (ATS 1987). Due to the recurrent nature of the disease and fairly classic symptomatology, the diagnosis of asthma in the emergency department is often straightforward. For asthma, bronchospasm has been demonstrated acutely after exposure to elevated ozone concentrations (Kreit et al. 1989); however, other mechanisms involving airway inflammation must be considered.

Bronchitis is an ambiguous diagnosis and is frequently used by clinicians to describe several different disorders. The diagnosis of bronchitis may be applied in situations ranging from upper respiratory infection with cough to severe chronic obstructive pulmonary disease with cough. Although ozone is believed to be related to the resistance to infection (Ryer-Powder et al. 1988), we did not expect to see the respiratory infection contribution to bronchitis to show up because of the longer exposure to admission times involved and the general "catch-all" nature of a bronchitis diagnosis in an emergency department setting. We limited our analysis to lags of 24 and 48 hours. However, it is possible that due to the mechanisms involved with the development of bronchitis (i.e. buildup of mucus in the airways, infection) symptoms would take longer than 48 hours to become manifest. Finally, since bronchitis is a chronic rather than an intermittent disorder, patients may have experienced greater symptoms on high ozone days but not presented to an emergency department for treatment. They could wait for symptoms to resolve at home or consult their personal physician if symptoms persisted.

The association between ambient ozone levels and asthma visits in different regions can further be examined by considering the ambient ozone levels and the number of days that the values exceed health standards for New Jersey, Ontario and Vancouver. The highest ambient ozone levels are in New Jersey, intermediate values are present in Southern Ontario and lowest values in Vancouver. The variance in Emergency Department visits explained by ozone decreased in the same order. The number of days that the ozone levels exceeded the Canadian permissible limit of 0.082 ppm occurred about twice as often in New Jersey as in Southern Ontario. In Vancouver, this value was only exceeded once in 1984, twice in 1985 and was not exceeded in 1986. The amount of the variance in the asthma data that could be explained by the ozone concentrations in New Jersey (7-9%) was more than twice the amount accounted for in Southern Ontario (3%) and not significant in Vancouver. Thus, it appears that an ozone exposure-response relationship is discernable among cities with different levels of ozone accumulated in the ambient atmosphere and had periodic accumulations of ozone during smog events rather than the continuous exposures seen in Los Angeles. Since we prepared this manuscript, recent results presented at a meeting in Atlanta, Georgia showed a highly significant association between ozone levels and hospital visits for asthmatic children (White et al. 1991).

Numerous reports have shown increases in asthma morbidity and mortality in the past ten to twenty years (Evans III et al. 1987). Future studies should be designed to determine if the relationship between ambient ozone levels and occurrence of asthma attacks is one of the causes of this increase.

Conclusion

The results obtained in this study demonstrate a statistically significant association between ozone exposure and asthma visits. It also supports the plausibility of hospital emergency department data becoming a useful measure of the adverse health effect from ambient ozone exposure and other smog products to the general population. The current results showed the need to control for the variations in temperature. A comparison of our results with Bates and Sizto (1987) and Bates et al. (1990) show a consistent trend. Of the 3 locations, the average ambient ozone levels are the highest in New Jersey, followed by Southern Ontario and Vancouver, respectively. Although the Southern Ontario study utilized hospital admissions as the dependent variable and our study and the Vancouver study used visits to an emergency department, the relationships between asthma and ozone should be comparable. In addition, the number of days that the ozone levels exceeded the Canadian permissible limit of 0.082 ppm or the U.S. NAAQS is more frequent in New Jersey than in Southern Ontario and almost non-existent in Vancouver. The amount of the variance in the asthma data that could be explained by the ozone concentrations followed the same order, being highest in New Jersey (7-9%), intermediate in Southern Ontario (3%) and not significant in Vancouver. Thus, the beginning of an exposure response relationship was discernable.

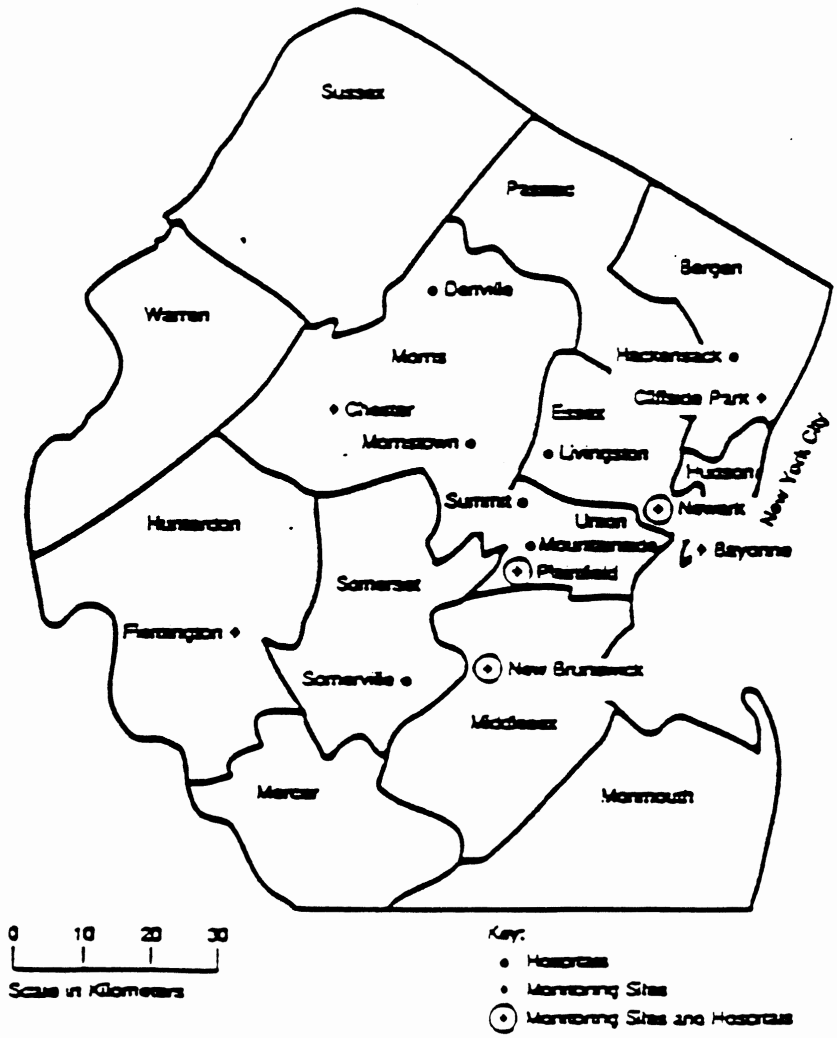
Acknowledgements

The authors wish to acknowledge Dr. David McKee of EPA as Project officer, for contract supported from EPA/OAQPS, Peter L. Sawchuk, M.D., President of EMA, for his assistance in providing the hospital emergency department admission data, and Dr. Bernard Goldstein, EOHSI, for his insightful discussions and comments. This research also was supported in part by the NIEHS Center Grant #ES05022 and the New Jersey DEP Ozone Research Center Grant #C29387.

Figure 1

New Jersey Cities That Contain Monitoring Location for Ozone

and Available Emergency Department Data



Tables

The Effect of Ozone Associated with Summertime Photochemical Smog on the Frequency of Asthma Visits to Hospital Emergency Departments

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KEY WORDS: Ozone, Asthma, Respiratory Disease, Air Pollutants, Meteorology

Abstract

A retrospective study using ambient ozone, temperature and other environmental variables and their effect on the frequency of hospital visits for asthma was conducted in New Jersey, an area that often exceeds the allowable national standard for ozone. Data on emergency department visits for asthma, bronchitis, and finger wounds (a nonrespiratory control) were analyzed for the period May through August for 1988 and 1989. Asthma visits were correlated with temperature while the correlation between asthma visits and ozone concentration was nonsignificant. However, when temperature was controlled for in a multiple regression analysis, a highly significant relationship between asthma visits and ozone concentration was identified. Between 13% and 15% of the variability of the asthma visits was explained in the regression model by temperature and ambient ozone levels. This association, when compared to similar studies in Canada, shows the contribution of ozone to asthma admissions to be stronger in areas with higher ozone concentrations. Thus, among regions with periodic accumulations of ozone in the ambient atmosphere, an exposure-response relationship may be discernible. This supports the need to attain air quality standards for ozone to protect individuals in the general population from the adverse health effects caused by ambient ozone exposure.

Introduction:

Over 150,000,000 Americans live in communities where levels of the air pollutant ozone exceeds the allowable health based National Ambient Air Quality Standard (NAAQS) of 0.12 ppm (EPA 1986). Ozone is an intense irritant which has been shown to produce bronchoconstriction in controlled human exposures (Bates et al. 1972; Koenig et al. 1987), apparently through a process involving inflammation (Koren et al. 1989; Seltzer et al. 1986; Whittemore and Korn 1980). It has been suggested that asthmatics are an at risk group to ozone exposure at levels currently present in the ambient atmosphere (EPA 1988). Controlled exposure studies of asthmatics and healthy individuals while exercising failed to show statistically significant differences in pulmonary function between the two groups, when ozone was the only bronchoactive agent (Koenig et al. 1987). However, when asthmatics and healthy individuals undergo bronchoprovocation with methacholine followed by exposure to 0.40 ppm ozone while exercising, significant differences were found (Kreit et al. 1989).

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Sizto 1986; Bates and Sizto 1987). A similar study examining emergency department visits in Vancouver, where the ozone levels are significantly lower, failed to find any association (Bates et al. 1990).

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Data on visits to emergency departments for nine hospitals in central and northern New Jersey (Figure 1) were provided by Emergency Medical Associates (EMA). The hospitals were within an area that included approximately 1100 square kilometers. Data were provided for all of 1988 and 1989. However, for the purposes of this analysis only data during the ozone season, defined as May through August of each year were used. These EMA data contained up to three ICD-9 codes which were assigned as emergency department diagnoses for each patient. Information on whether the patient was admitted to the hospital or released was not available in the data base. The date, time, sex, age and some procedural codes were also provided for each patient. Respiratory admissions with ICD-9 codes of 493.9, 493.90, 493.91 were classified as asthma cases and those with ICD-9 codes of 466.0, 466.1, 490, 491.2 and 496 were identified as bronchitis cases. Other respiratory symptoms, such as upper respiratory infections, were not included. Finger wounds, with an ICD-9 code of 883.0, were used as a non-respiratory control. During the ozone season of 1988 and 1989 the total number of emergency visits at the nine hospitals was approximately 147,000 with 814 classified as asthma, 912 classified as bronchitis, and 4066 classified as finger wounds. The mean age of our asthma patients was 28.7 (sd=19.8) for 1988 and 29.9 (sd=19.9) for 1989.

Air Pollution Data

Criteria air pollutant data collected by the New Jersey Department of Environmental Protection and compiled by the National Air Data Branch of the U.S. Environmental Protection Agency, within their AIRS data base were used. The data for the period May through August for 1988 and 1989 were obtained for the five monitoring sites in central and northern New Jersey closest to the area serviced by the hospitals (Figure 1). The ozone and sulfur dioxide data were measured hourly. Thoracic particulate matter, PM-10, was measured every 6th day. Hourly temperature and visibility measurements collected at the Airways Surface Measurement Station in Newark, New Jersey were obtained from the National Climatic Data Center of NOAA, in North Carolina. Visibility data were used as surrogates for the amount of sulfate aerosol present in the region. The mean and frequency distribution of all of the environmental data were examined as a quality assurance check.

Statistical Methods

SAS software (version 6.03) was used to assemble and merge databases, and conduct statistical analyses (Cody and Smith 1991). The analyses were restricted to the period when the maximum amount of photochemical smog production occurs in New Jersey, defined as May 1 to August 31. This time frame minimizes the influence of seasonal variations in asthma and bronchitis, and the major allergic reactions of individuals to pollen and mold that occur in the region during September and October. Tests were conducted to examine the uniformity of the pollutant concentrations over the geographic area containing the hospitals. Pearson correlation coefficients were calculated across the sampling sites for the average ozone concentration measured each day from 10:00 to 15:00 hours and for the daily maxima. The time period from 10:00 to 15:00 was chosen because it represents the time when peak production of ozone occurs. Our assumption is that this represents the time of the greatest change in ozone which could influence a pulmonary response, and result in a visit to an Emergency Department. The values of the correlation coefficients among the sites for the 10:00 to 15:00 average ozone concentration ranged from 0.58 to 0.88. For the daily maxima the correlation coefficients ranged from 0.73 to 0.88. All these inter-site correlations were statistically significant at $p<0.0001$. Pair wise analyses of the 10:00 to 15:00 average ozone value and maximum ozone value each day had a correlation at 0.97. Therefore, it was decided to use the average ozone value, between the hours of 10:00 and 15:00, as our primary exposure variable for comparisons with the respiratory admission codes. A mean ozone value was calculated across all sites as a representative concentration for the region. The visibility measured at noon was examined in two ways: 1) the visibility for all days during the study period and 2) the daily visibility excluding days which reported rain. Pearson correlation coefficients were calculated among all air pollutant and meteorological data. The daily totals for asthma visits, for bronchitis visits and finger wound visits were computed for all the hospitals in our data base, as well as only visits that occurred from noon to midnight. The latter was used to test if the relationship between ozone and Emergency Department visits was triggered by the time period immediately after an exposure, since high ozone primarily occurs in the afternoon and evening. To test for a possible spurious correlation between emergency department visits and ozone concentration as a result of both variables being affected by a weekday versus weekend factor, we reran our regression models with weekends excluded. The frequency distribution for daily asthma visits was slightly positively skewed. We conducted a chisquare goodness-of-fit test, comparing this distribution to both a normal and a Poisson distribution for the 1988 and 1989 data sets. In both years a normal distribution provided a better fit and we chose to conduct ordinary least squares multiple regression. Because the temperature-respiratory admission relationship reported by Bates and Sizto (1987) and the known correlation with ozone (Wolff and Lioy 1978), a temperature correction had to be made before determining any association between air pollutant exposures and asthma or bronchitis admissions. Initially this was done by developing a forward stepwise multiple regression model using temperature, temperature change and ozone as independent variables and asthma or bronchitis admissions as a dependent variable. The modeling effort was then expanded to include 24 and 48 hour lags of the ozone levels, mean daily relative humidity, mean daily sulfur dioxide and visibility at noon. Analysis for PM-10 sampled at 6 day intervals was added as a separate model. All multiple regression equations were calculated individually for the summers of 1988 and 1989. Both years were subsequently merged to develop an overall regression model. To test for the effects of autocorrelation, models for 1988 and 1989 were also run using the SAS procedure AUTOREG which checks and corrects for autocorrelation.

Results

General Associations Among Environmental Variables

Table 1 lists the mean daily values reported for the air pollutants, meteorological parameters and emergency department visits along with the values at the 25% and 75% percentile. Little difference exists between the meteorological parameters, sulfur dioxide for 1988 and 1989. The mean ozone was 20% higher in 1988. The number of days that exceed the NAAQS of .12 ppm was also greater in 1988 than in 1989, 34 and 8 respectively. This represents 27% and 8% of the days during the ozone season, May through August, for 1988 and 1989, respectively. A significantly higher number of days exceeded the Canadian standard of 0.082 ppm, 59 days and 43 days, during 1988 and 1989, respectively. There was no change in the frequency of finger wounds or total admissions during the two years (Table 2). A slight increase in the mean daily admissions of asthma and bronchitis was observed.

Table 3 shows the correlation coefficients among the meteorological and pollutant measurements, and Table 4 the correlation among the 10:00 to 15:00 average ozone levels each day and ozone levels from the previous two days (24 and 48 hours lagged values) during the summer months. Average ozone levels were moderately correlated with daily mean sulfur dioxide, daily mean temperature and negatively correlated with daily mean humidity and the visibility at noon (when rain days were excluded). Daily mean sulfur dioxide had statistically significant correlations with all meteorological parameters examined. The daily and lagged ozone concentrations were all correlated.

Table 5 lists the correlation coefficients of the meteorological and pollutant measurement with asthma, bronchitis and finger wound admissions. The only statistically significant relationship was ambient temperature with asthma visits. By limiting the data to the summer, seasonal trends such as the decrease in ozone levels during the winter were eliminated. This also effectively reduced the probability of observing statistically significant non-causal correlations.

Multiple Regression Analysis

Regression analyses were conducted on the combined 1988, 1989 data set to examine the relationship of respiratory admissions with environmental variables and to try to develop a statistical model between asthma visits, and the independent variables: temperature, change in temperature and ozone. The resultant least squares fit had a total $r^2 = 0.09$ ($p=.0001$). The partial r^2 for temperature, ozone concentration and daily temperature changes were 0.052 ($p=.0006$), 0.025 ($p=.0147$) and 0.011 ($p=.109$) respectively.

Based upon the assumption that there will be a lag between ozone exposure and an emergency department visit, a second model was attempted which included lagged ozone (24 and 48 hours), sulfur dioxide, relative humidity and visibility as independent variables. The model was attempted using the combined data set, and 1988 and 1989 individually. For 1988 and 1989 individually, the ozone level lagged 48 hours was not significant and did not appreciable increase the total r^2. We therefore chose to include only the same day ozone level and the 24 hour

82x

lagged value in our models. The results are shown in Table 6. Only temperature and ozone contributed to the regression analysis, using an entry criteria of $p < 0.15$. The r^2 explained by the regression equation for the combined 1988-1989 data, for 1988, and for 1989 were 0.099, 0.132, and 0.154, respectively. The variable order in the regression analysis varied among the models. However, the order is of minor importance since once a single variable, from a group of highly correlated variables is included, the remaining variables will contribute little additional unique variance to the model. For 1988 and the combined 1988-1989 data sets, ozone L0 did not meet the entry requirement in the multiple regression analysis. We suspect this is due to its strong correlations with the L24 value (see Table 4). Similar results were obtained when weekends were omitted, indicating that any weekday-weekend differences were not a confounding factor.

A multiple regression analysis was also completed using bronchitis as the dependent variable. The results, however, did not show any statistically significant relationship with the independent variables used in the previous models. Similarly, no significant association was observed among finger wounds and air pollutant concentrations or meteorological parameters. Thus, it is improbable that the relationship observed for asthma is an artifact. The regressions using PM-10 did not add any significant associations for asthma visits. However, there was a non-significant relationship observed between Bronchitis and PM-10. This weak association is inconclusive and the subject of further study.

The results of running the autoregression procedure were as follows: For 1988, the Durbin-Watson statistic was 1.75, the total r^2 was reduced from .13 to

.10, with the p-values for ozone (lagged 24 hours) and temperatures still highly significant. For 1989, the Durbin-Watson statistic was 1.8, the total r^2 dropped from .15 to .14 and the p-values remained highly significant.

Discussion

A strong relationship was observed in New Jersey between summertime ozone concentration and emergency department visits for asthma. These results extend the associations observed in Southern Ontario (Bates and Sizto 1987). The negative results for a similar study of asthmatic children in Los Angeles (Richards et al. 1981), a region with higher ozone levels than New Jersey, is probably due to the covariance between temperature and ozone during smog episodes and temperature and asthma attacks that they reported but did not address statistically. We observed nonsignificant correlations between emergency department visits for asthma and ozone L0 and L24 when the covariance with temperature was not taken into account. The relationship between ozone and asthma was only identified after the covariance between temperature and ozone was taken into account. Decreases in temperature have been related to marked increases in the number of emergency department visits for asthma (Greenburg et al. 1964). It would therefore appear to be essential to account for temperature in any analysis. A second factor that differentiates Los Angeles and New Jersey is the adaptation by responsive individuals, including asthmatics, to continual exposure to the high ambient ozone levels, that occurs in Los Angeles but not New Jersey (Linn et al. 1988). Individuals who showed changes in their pulmonary function when exposed to ozone in a controlled setting, immediately prior to the photochemical smog season in Los Angeles, lost much of their reactivity by the fall after being exposed to the ambient levels of ozone in Los Angeles for 2 to

3 months. Richards et al. (1981) evaluated children starting in August, when the adaptation mechanism would have reduced their response to ozone. Thus, direct comparisons of our results with asthma admission analyses conducted in Los Angeles is not possible.

A clear demarcation between two respiratory ailments: asthma and bronchitis, was observed in the New Jersey Data set. Asthma visits were found to increase with ambient ozone levels, while bronchitis did not. This differs from the results reported by Bates and Sizto (Bates and Sizto 1987), who found similar associations of ozone with total respiratory admission and asthma alone. When our bronchitis and asthma data were combined the total amount of variance explained by ambient ozone level and temperature declined. Whenever admission diagnoses are used in an epidemiological analysis, bias due to misclassification of a diagnosis is possible. Differences in the accuracy of the diagnosis of asthma and bronchitis exist. The asthmatic patient presents with typical symptoms of wheezing, cough and dyspnea. These symptoms are acute and recurrent in nature with interspersed asymptomatic periods (McFadden 1991). Specific diagnostic criteria for asthma have been produced (ATS 1987). Due to the recurrent nature of the disease and fairly classic symptomatology, the diagnosis of asthma in the emergency department is often straightforward. For asthma, bronchospasm has been demonstrated acutely after exposure to elevated ozone concentrations (Kreit et al. 1989); however, other mechanisms involving airway inflammation must be considered.

Bronchitis is an ambiguous diagnosis and is frequently used by clinicians to describe several different disorders. The diagnosis of bronchitis may be applied in situations ranging from upper respiratory infection with cough to severe chronic obstructive pulmonary disease with cough. Although ozone is believed to be related to the resistance to infection (Ryer-Powder et al. 1988), we did not expect to see the respiratory infection contribution to bronchitis to show up because of the longer exposure to admission times involved and the general "catch-all" nature of a bronchitis diagnosis in an emergency department setting. We limited our analysis to lags of 24 and 48 hours. However, it is possible that due to the mechanisms involved with the development of bronchitis (i.e. buildup of mucus in the airways, infection) symptoms would take longer than 48 hours to become manifest. Finally, since bronchitis is a chronic rather than an intermittent disorder, patients may have experienced greater symptoms on high ozone days but not presented to an emergency department for treatment. They could wait for symptoms to resolve at home or consult their personal physician if symptoms persisted.

The association between ambient ozone levels and asthma visits in different regions can further be examined by considering the ambient ozone levels and the number of days that the values exceed health standards for New Jersey, Ontario and Vancouver. The highest ambient ozone levels are in New Jersey, intermediate values are present in Southern Ontario and lowest values in Vancouver. The variance in Emergency Department visits explained by ozone decreased in the same order. The number of days that the ozone levels exceeded the Canadian permissible limit of 0.082 ppm occurred about twice as often in New Jersey as in Southern Ontario. In Vancouver, this value was only exceeded once in 1984, twice in 1985 and was not exceeded in 1986. The amount of the variance in the asthma data that could be explained by the ozone concentrations in New Jersey (7-9%) was more than twice the amount accounted for in Southern Ontario (3%) and not significant in Vancouver. Thus, it appears that an ozone exposure-response relationship is discernable among cities with different levels of ozone accumulated in the ambient atmosphere and had periodic accumulations of ozone during smog events rather than the continuous exposures seen in Los Angeles. Since we prepared this manuscript, recent results presented at a meeting in Atlanta, Georgia showed a highly significant association between ozone levels and hospital visits for asthmatic children (White et al. 1991).

Numerous reports have shown increases in asthma morbidity and mortality in the past ten to twenty years (Evans III et al. 1987). Future studies should be designed to determine if the relationship between ambient ozone levels and occurrence of asthma attacks is one of the causes of this increase.

Conclusion

The results obtained in this study demonstrate a statistically significant association between ozone exposure and asthma visits. It also supports the plausibility of hospital emergency department data becoming a useful measure of the adverse health effect from ambient ozone exposure and other smog products to the general population. The current results showed the need to control for the variations in temperature. A comparison of our results with Bates and Sizto (1987) and Bates et al. (1990) show a consistent trend. Of the 3 locations, the average ambient ozone levels are the highest in New Jersey, followed by Southern Ontario and Vancouver, respectively. Although the Southern Ontario study utilized hospital admissions as the dependent variable and our study and the Vancouver study used visits to an emergency department, the relationships between asthma and ozone should be comparable. In addition, the number of days that the ozone levels exceeded the Canadian permissible limit of 0.082 ppm or the U.S. NAAQS is more frequent in New Jersey than in Southern Ontario and almost non-existent in Vancouver. The amount of the variance in the asthma data that could be explained by the ozone concentrations followed the same order, being highest in New Jersey (7-9%), intermediate in Southern Ontario (3%) and not significant in Vancouver. Thus, the beginning of an exposure response relationship was discernable.

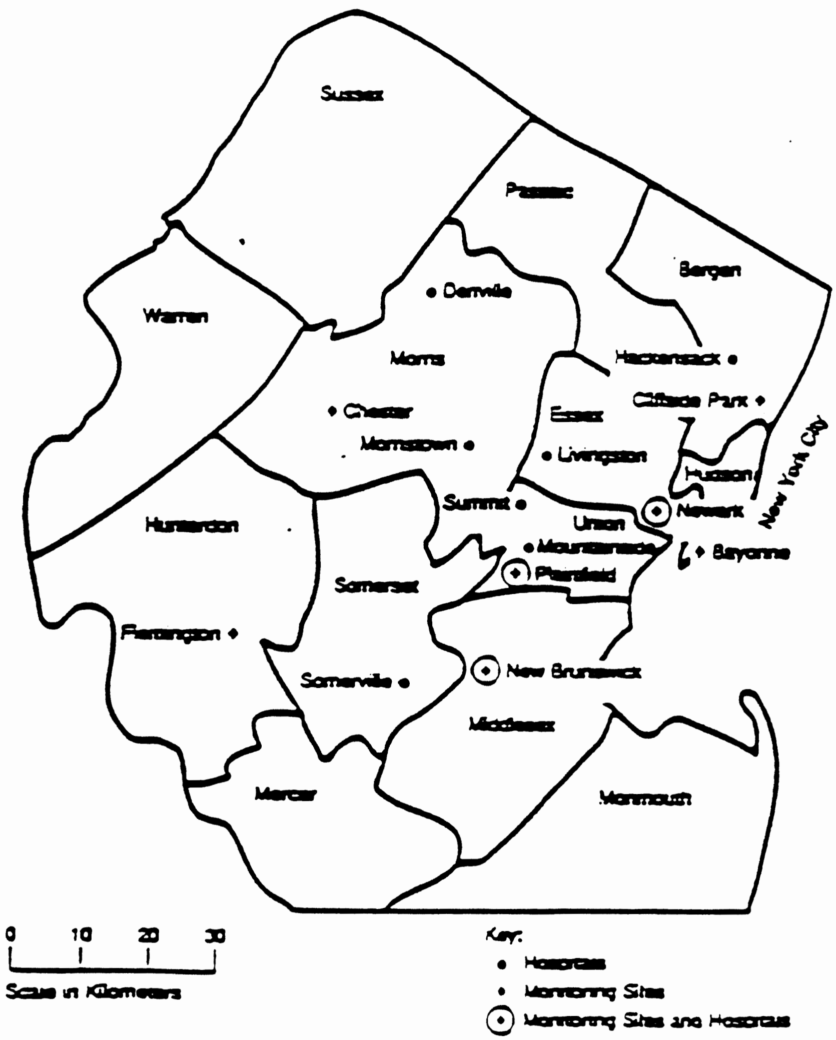
Acknowledgements

The authors wish to acknowledge Dr. David McKee of EPA as Project officer, for contract supported from EPA/OAQPS, Peter L. Sawchuk, M.D., President of EMA, for his assistance in providing the hospital emergency department admission data, and Dr. Bernard Goldstein, EOHSI, for his insightful discussions and comments. This research also was supported in part by the NIEHS Center Grant #ES05022 and the New Jersey DEP Ozone Research Center Grant #C29387.

Figure 1

New Jersey Cities That Contain Monitoring Location for Ozone

and Available Emergency Department Data



Tables

Table 1

Mean Values of the Air Pollutants and Meteorological Parameters

	1988	1989	Combined
Ozone (ppm)	0.055 (.034,.074)	0.043 (.026,.053)	0.048 (.031,.063)
Sulfur Dioxide (ppm)	0.009 (.005,.012)	0.008 (.005,.011)	0.009 (.006.011)
Pressure (mb)	101.5 (101.1,102.6)	101.6 (101.2,102.0)	101.5 (101.1,101.9)
Temperature (°C)	23 (19,28)	22 (20,25)	22 (20,27)
Relative Humidity	62 (49,72)	69 (57,80)	65 (54,76)
Visibility (Miles)	10.2 (5.8,14.6)	9.6 (6.0,11.6)	9.9 (5.8,13.6)

Numbers in parentheses represent the 25th and 75th percentiles

91K

Table 2

Mean Daily Emergency Department Visits

	1988	1989	Combined
Asthma	3.3 (2,4)	3.8 (2,5)	3.6 (2,5)
Bronchitis	3.7 (3,5)	4.3 (3,6)	4.0 (3,5)
Finger Wounds	18 (15,21)	18 (15,20)	18 (15,21)
Total Admissions	593 (562,616)	605 (577,627)	599 (571,623)

Number in parenthesis represents the 25th and 75th percentiles.

Table 3
Pearson Correlation Coefficients
Pollutant and Meteorological Measurements

	Mean Ozone	Sulf. Diox.	Temp.	Atmos. Press.	Relative Humidity	Vis.	Vis W/O
Mean Ozone (n=226)	-						
Sulfur Dioxide (n=226)	.429 (.0001)	-					
Temperature (n=226)	.641 (.0001)	.219 (.0004)	-				
Atmospheric Pressure (n=226)	.082 (.2199)	.189 (.0042)	-.006 (.920)	-			
Relative Humidity (n=226)	-.455 (.001)	.110 (.0098)	-.282 (.0001)	-.053 (.4291)	-		
Visibility (n=226)	-.091 (.1739)	-.481 (.0001)	-.155 (.0200)	-.091 (.4479)	-.736 (.0001)	-	
Visibility Excluding Rain Days (n=206)	-.212 (.002)	-.519 (.0001)	-.257 (.002)	-.041 (.562)	-.720 (.0001)	-	-

Number in parenthesis represents significance.

Table 4

Pearson Correlation Coefficients for
Mean Daily Ozone, Mean Ozone Lagged 24-Hours
and Mean Ozone Lagged 48 Hours

	Ozone L0	Ozone L24	Ozone L48
Ozone L0	-		
Ozone L24	.563 (.0001)	-	
Ozone L48	.324 (.001)	.562 (.0001)	-

Number in parenthesis represents significance.
n=226

94x

Table 5

Pearson Correlations Between Visits to Emergency Departments in Central and Northern NJ for Asthma and Bronchitis Versus Pollution and Weather Variables

Variable Word	Asthma	Bronchitis	Finger
Ozone L0	-.024 (.72)	.009 (.90)	.043 (.52)
Ozone L24	.079 (.24)	.030 (.66)	.090 (.18)
Ozone L48	-.117 (.08)	.028 (.68)	.024 (.72)
Sulphur Dioxide	.003 (.96)	.043 (.52)	.051 (.45)
Temperature	-.227 (.0006)	-.023 (.73)	.014 (.83)
Humidity	.044 (.51)	.097 (.15)	.019 (.77)
Daily Temp Change	-.093 (.16)	-.035 (.60)	.012 (.86)
Pressure	-.007 (.92)	-.007 (.92)	.033 (.62)
Asthma	----	.043 (.52)	.034 (.61)

Number in parenthesis represents significance.
n=226

95x

Table 6

Multiple Regression Coefficients Predicting Asthma Visits

Variable	Partial r^2	Coefficient	Standard Error	p-value
		Combined 1988, 1989		
Intercept		9.88	1.35	.0001
Temperature	0.0493	-0.107	0.022	.0001
Ozone L24	0.0499	20.3	7.17	.005
Total	0.0992			
		1988		
Intercept		9.49	1.62	.0001
Temperature	0.0630	-0.102	0.025	.0001
Ozone L24	0.0690	24.6	8.38	.0041
Total	0.132			
		1989		
Intercept		10.4	2.07	.0001
Temperature	0.0639	-0.129	0.033	.0002
Ozone L24	0.0322	27.7	11.8	.0206
Ozone L0	0.0576	37.2	13.5	.0067
Total	0.1537			

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New Jersey Propane Gas Association

Re: Statement Before The New Jersey Senate/Assembly Joint Environmental Committee April 9, 1992

I appreciate the opportunity to appear today before the Joint Environmental Committee.

Over the past year, the public has been hearing and seeing a plethora of environmental stories concerning the improvement of our air quality. Federally mandated standards have been debated over what type of alternative motor fuels will replace gasoline and curtail ozone pollution.

On behalf of the 150 member New Jersey Propane Gas Association, I would like to communicate some background information about an exciting - - but certainly not new - - alternative fuel for virtually all types of fleet vehicles. The word "exciting" is used advisedly. Propane does offer some excellent private-sector answers to what is justifiably perceived as a public problem: vehicular pollution.

Propane is the most widely used alternative fuel and is a vital part of the pace-setting California Clean Air program. It has been in commercial motor fuel use for over 60 years, and ranks as the leading alternative fuel in the U.S. and world wide. Currently, approximately 4,000,000 propane fueled highway vehicles are in use worldwide. Of which 370,000 are operating in the U.S., 90% of this use is in commercial fleets of light and medium duty trucks, school special purpose buses, taxicabs, and automobiles used by police departments and various carrier services.

With an octane rating of 104-110 (vs. 87-92 for most unleaded gasolines) and low carbon and oil contamination characteristics, propane-fueled vehicles are routinely documented as providing engine life two to three times that of gasoline engines. It is this very practical operating consideration, perhaps more than any other, that makes propane the fuel of choice for so many fleet vehicles.

The technology of propane has resulted in its acceptance as both a clean-burning and economically viable motor vehicle fuel. EPA motor vehicle lab tests comparing various motor fuels to the Federal clean air standards showed the following results: 93% lower carbon monoxide, 73% fewer hydrocarbons, and 57% lower nitrogen oxides, resulting in a cleaner environment when propane is used in motor vehicles.

Markedly superior to other ATF's , a like sized container of propane will take a vehicle almost twice as far as methanol and four times as far as compressed natural gas. And in the all-important miles-per-gallon consideration, propane delivers up to 80% of gasoline's MPG, 54% for methanol and 70% for ethanol.

Addressing environmental issues, the use of propane in motor vehicles essentially eliminates particulate emissions, thereby making significant contribution to improving air quality. Unlike gasoline and methanol, propane is not toxic and poses no groundwater contamination threat in the event of a storage tank leak or spill.

At present, the infra-structure for immediate propane utilization is in place. There are more than 25,000 propane retail outlets in the U.S., 10,000 of which operate motor fuel refueling stations. Practically every fleet user operates its own refueling operation, enjoying the additional advantage of bulk purchase savings.

Vehicle safety records show that propane vehicle are at least as safe as gasoline vehicles. With American Society of Mechanical Engineers fuel tanks rated 20 times as puncture-resistant as gasoline, methanol or ethanol tanks, propane tanks are especially effective in reducing collision-induced fire risk.

All of us in the propane gas industry, producers and marketers alike, are actively cooperating with the New Jersey Department of Environmental Protection and Energy for the positive contribution of propane to provide both our energy needs and a safe, clean environment for New Jersey.

Thank you for your kind attention to our presentation.

TYPICAL VAN CONVERSION

Fleet of 20 Vans

	Propane	CNG
Conversion Kit[1]	$ 716.10	$ 988.20
Fuel Container[2]	285.05[3]	628.00[3]
Gallons Stored	18.56	5.30
Labor to Install	375.00	600.00
Conversion Cost per Van	$ 1,394.71	$ 2,221.50
Conversion Cost, 20 Vans	$27,894.20	$44,430.00
Fuel Consumption Cost (100,000 miles)	$ 5,173.61[4]	$ 4,583.34[5]
Cost of Fill System	10,000.00[6]	50,000.00[7]
TOTAL COSTS	$43,067.81	$99,013.34
Driving Range on Full Cylinder	267.26 miles	95.4 miles

FOOTNOTES

TYPICAL VAN CONVERSION

1 Fleet quantity price includes carburetor closed loop technology.

2 Mounts on frame rail - driver's side

3 Includes bracket

4 100,000 miles based on 14.4 mpg propane,
11 cents per gallon Federal Tax
4 cents per gallon NJ State Tax
60 cents per gallon propane

5 100,000 miles based on 18 mpg gasoline,
1.1 therms per 18 miles on CNG,

based on 60 cents therm, includes:

10 cents per gallon equivalent compression costs, and
5 cents compressor maintenance costs

6 1000 gallon propane tank, pump, and meter-skid mounted

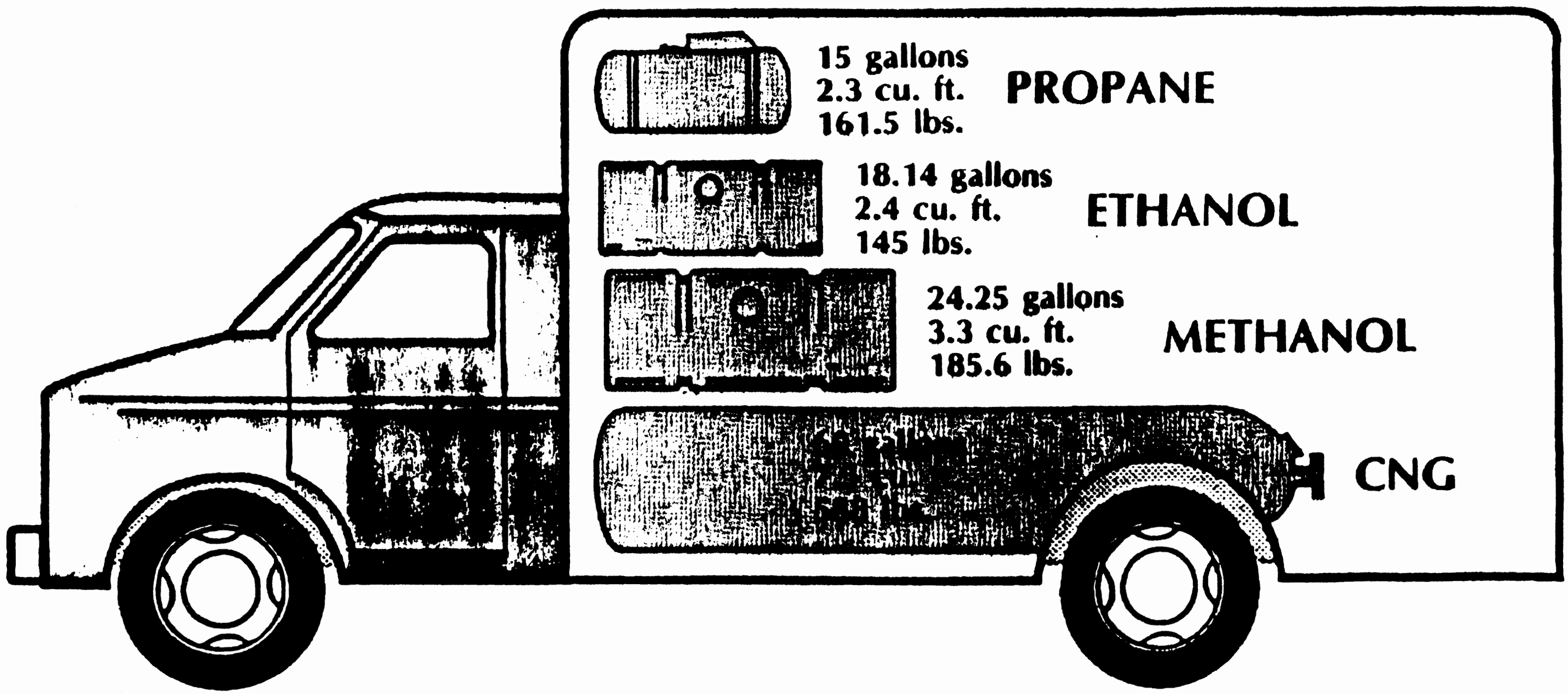
7 Time fill - overnight

NOTE: The propane vehical can be dedicated.
The CNG vehicle will probably be dual fuel.

PROPANE vs. OTHER ALTERNATIVE FUELS FOR PAYLOAD

Propane saves fuel, space and weight while delivering the same miles on the smallest fuel load

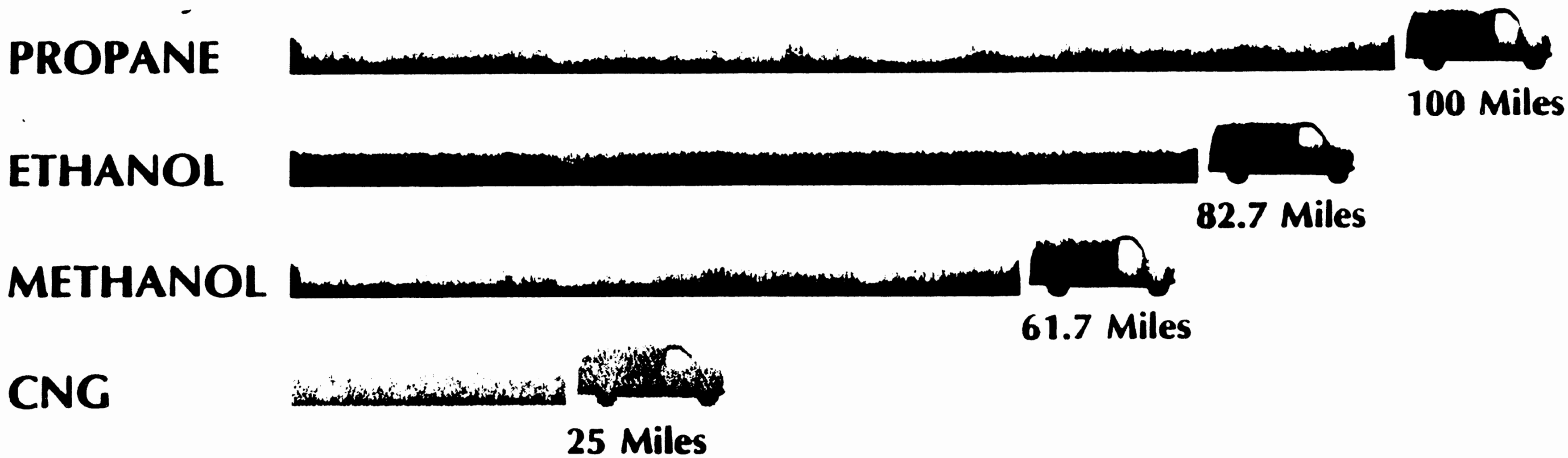
103X



Source: Western Liquid Gas Association

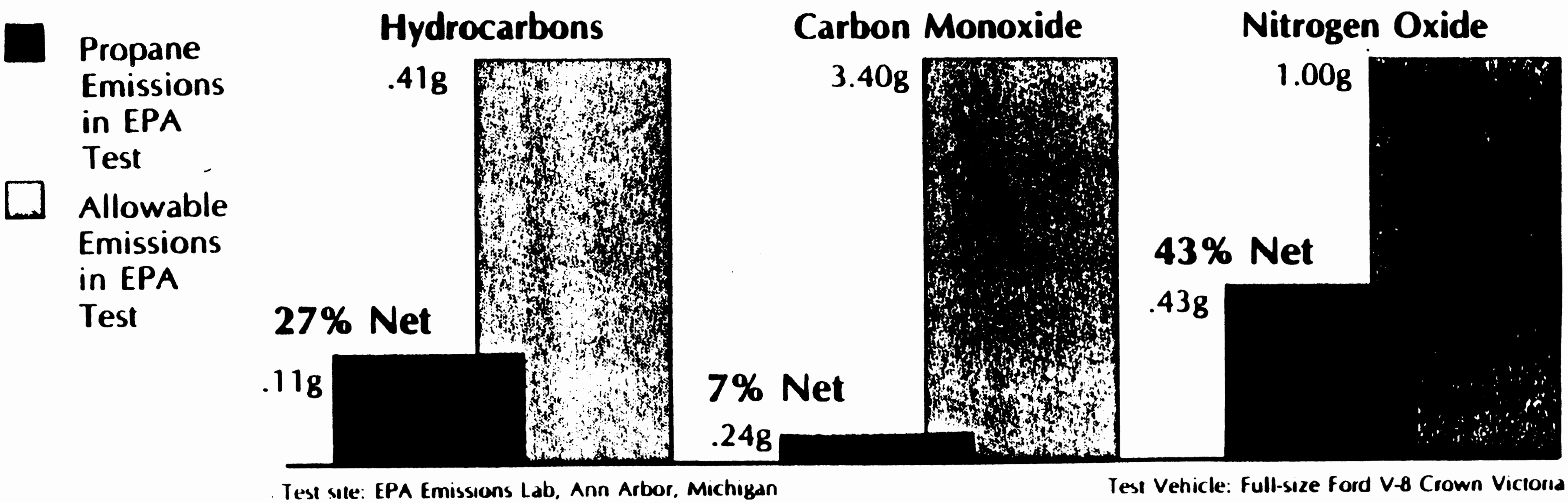
PROPANE vs. OTHER ALTERNATIVE FUELS FOR RANGE

Comparison based on the energy content of each fuel in equal size tanks
Baseline is a propane-fueled vehicle with enough fuel to travel 100 miles



PROPANE EMISSION TEST RESULTS

(Grams per mile)



Propane: Cleaner Air

In brief, propane was almost 4 times cleaner in hydrocarbons, 14 times cleaner in carbon monoxide and 2.3 times cleaner in nitrogen oxides than EPA's emission standards at test time.

Source: Western Liquid Gas Association

105x

Testimony of A. Blakeman Early
Washington Director, Pollution and
Toxics Program of Sierra Club

before the joint hearing

Senate Environment Committee and
Assembly Environment Committee

April 9, 1992

106X

My name is A. Blakeman Early, Washington Director of the Pollution and Toxics Program of the Sierra Club. I greatly appreciate the opportunity to testify before the Committee, today.

As the Committee considers the need for California Tailpipe standards, it is important to consider, also, the requireents of the new Clean Air Act Amendments of 1990. You have heard representatives from the auto industry tell you that the California Taipipe standards are not needed to comply with the Clean Air Act Amendments, I do not agree. Allow me to review with you some of the key changes made by the Amendments.

STATE PLANS MUST ATTAIN AND MAINTAIN HEALTH STANDARDS

The Amendments clearly require the State Implementation Plans to attain health standards on a date "by which attainment can be achieved as expeditiously as practicable", but no later than the dates specificed in the Amendments. (Sec 171(a)(2)) In addition, each state seeking recognition of attainment for its cleaned up non-attainment areas must submit a plan for the maintenance of attainment over the next 20 years. (Sec 175A(a) and (b))

STATE PLANS MUST ASSURE ANNUAL PROGRESS TOWARD ATTAINMENT

The Amendments require that annual progress in the reduction of pollutants that cause a violation of the health standards be made. In serious, severe, and extreme non-attainment areas for ozone, a 3 percent annual or a 15 percent over six year reduction in pollutants must be demonstrated. A failure to show such progress will result in the imposition of additonal federal control requirements.

NORTHEAST STATES MUST REDUCE OZONE TRANSPORT

New Jersey and other Northeast states are required to reduce pollutants that contribute to ozone transport. State Implementation Plans must "prohibit any source or other type of emissions activity from emitting any air pollutant in amounts which will contribute significantly to non-attainment in or interfere with maintenance by, any other State with " any primary air quality standard. (Sec101(b)(2)) The Amendments also create an Ozone Traonsport Region to control interstate air pollution which imposes additional pollution control requirements over broader areas of each member state. Any state can ask EPA to declare any other state's State Implementaiton Plan as invalid because of its failure to reduce pollution transport. (Sec 176A(b))

SANCTIONS PENALIZE STATES THAT FAIL TO ADEQUATELY PLAN, PROGRESS TOWARD, AND ACHIEVE ATTAINMENT WITH HEALTH STANDARDS

As you may already know, any state which fails to develop an adequate State Implementation Plan is subject to a loss of federal highway funding, a requirement that new sources locating in a sanctioned non-attainment areas off-set its pollution additions from existing sources on a 2 for 1 basis. (Sec 179) Failure to make progress toward or attain standards will result in the imposition of "all necessary" measures to rectify the failure. In addition, areas in severe and extreme non-attainment for ozone wich fail to attain by the deadline risk the imposition of a federal fee of $5,000 per ton for each major source's "excess" emissions until attainment is achieved. (Sec 185)

In light of the impressive array of requirements contained in the Amendments I find the auto industry's claim that New Jersey does not "need" California tailpipe standards to be a gross understatement. But this is not surprising to me. As a lobbyist for the Sierra Club before Congress, I have found few representations made by the auto industry on the subject of air pollution to be credible. Indeed, I ask: WHY SHOULD WE BELIEVE THE AUTO COMPANIES?

The history of the Clean Air Act debate has shown that the auto companies have routinely exagerated the cost of compliance and always understated the severity of the air pollution problem. Here are some illustrations.

In September, 1970, Lee Iacocca, then Executive Vice President of Ford Motor Company stated during consideration of the original Clean Air Act, "Some of the changes in this bill could prevent continued production of automobiles.... Even if they do not stop production, they could lead to huge increases in the price of cars. They could have a tremendous impact on all of American industry and could do irreparable damage to the American economy. And yet, in return for all of this,m they would lead to only small improvements in the quality of the air.... (T)his bill is a threat to the intire American economy and to every person in America."

In November, 1973, John Riccardo, President of Crysler Corporation stated, "(T)he act, in effect, demanded the invention of totally new hardware to meet the Clean Air Act standards which were then, and still are, beyond the capability of known technology....(T)he act established a wholly unrealistic timetable for the introduction of the nonexistent new technology."

As we now know, the auto indsutry has not only survived, but survived well enough to make Mr. Iacocca one of the highest paid executives in American history. The technology developed by the auto industry, to its credit, is highly effective and being required by many countries around the world.

The auto industry is engaged in the same deception today. Here is what they do not tell you about some of their arguments against the adoption of California tailpipe standards. The auto companies argue California standards have been developed to deal with air pollution problems unique to California and are not needed in New Jersey. What they do not tell you is that the industry is challenging the use of California standards in California. The MVMA is challenging to so-called waiver EPA must grant under the Clean Air Act to enable California to require more stringent standards. This effort could, at a minimum, delay their application until the 1998 model year. Detroit doesn't want to produce cleaner cars even where they acknowledge there is a genuine need for them. How, then, can we believe these standards are not needed in New Jersey?

The MVMA asserts that emissions from California cars, without Califonia gas, are not much lower than the emissions from a car meeting Clean Air Act Amendment requirements. MVMA asserts that EPA will impose tougher fuel requirements for certification testing and the Teir II tailpipe standards. This would result in a "federal" car with emissions almost as low as California. What they do not tell you is that they adamantly oppose these new requirements and will litigate EPA's authority to invoke them all the way to the Supreme Court, if necessary. We believe such oposition could easily delay the requirements for a car meeting the "almost as clean as California" standards described by MVMA well into the next century. This is a delay well beyond what will be needed to assist New Jersey in attaining and maintaining the health standards for ozone.

I ask the simple question, "Given the history of misrepresentation, exageration, and omission engaged in by the auto industry, why should members of this Committee believe them now?"

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Testimony of

Janet D. Lussenhop

Director

Regional Plan Association/NJ

on

THE NEW JERSEY LEV PROPOSAL

to

Senate And Assembly Environment Committees

Trenton, New Jersey

April 9, 1992

Good afternoon. My name is Janet Lussenhop and I am Director of Regional Plan Association's New Jersey office. I am here today to testify in support of the adoption of the low emission vehicle program in the state of New Jersey.

Regional Plan Association bases its support of this program on the work of Project: CLEAN AIR, which we staffed over the last three years. Project: CLEAN AIR was established several years ago to build consensus on transportation strategies to meet federal clean air mandates, on the assumption that transportation sources would be a significant target for emissions reductions in the Clean Air Act Amendments of 1990. Project: CLEAN AIR was initiated by Christopher Daggett when he was EPA Region II Administrator, and he reached out to RPA to staff the project.

Project: CLEAN AIR published its recommendations last fall and presented them to Commissioner Weiner and Commissioner Downs. I have here several copies of our final report and supporting documents. Before I describe our work and how it supports the adoption of an LEV program, I would like to provide you with a list of the members of Project: CLEAN AIR's Steering Committee. The Steering Committee was chaired by Leonard Lieberman and its members were:

Allied Signal
League of Women Voters
New Jersey Petroleum Council
Casino Association of New Jersey
New Jersey Business and Industry Association
Delaware Valley Regional Planning Commission
New Jersey Automobile Club

New Jersey Department of Transportation
New Jersey Association of Railroad Passengers
Natural Resources Defense Council
New Jersey Clean Air Council
Motor Vehicle Manufacturers Association
AFL-CIO of New Jersey
New Jersey Office of State Planning
South Jersey Center for Public Affairs/Stockton State College
Port Authority of New York and New Jersey
Woodrow Wilson School/Princeton University
Public Service Electric & Gas
American Lung Association
New Jersey Motor Truck Association
Chemical Bank/NJ
New Jersey Department of Environmental Protection & Energy

The members of the Steering Committee worked together for two and a half years, studying a range of transportation control strategies that would improve air quality including emissions and fuel changes, land use planning changes, pricing strategies and a variety of other travel demand measures such as employer-based ridesharing, improvements in public transit, and HOV lanes. Our research included a consultant study of the emissions reduction potential of the measures and an economic impact analysis of each measure. The Steering Committee was advised by a Technical Subcommittee consisting of experts in the fields of transportation planning, automotive fuels, and air quality, among others. The Steering Committee also heard presentations from the Motor Vehicle Manufacturers Association and the New Jersey Petroleum Council.

Based on the technical emissions and economic impact analyses, the Steering Committee concluded that the LEV program should be one of New Jersey's top five priorities in air quality planning. In reaching their conclusions, they weighed the tradeoffs involved in implementing some of the strategies with the need for a variety of strong measures to meet the State's serious air quality problem. I should mention that while the Committee reached a consensus on these priorities, it was not a unanimous vote for the LEV program. Although a majority supported it as a top priority, there was a strong dissenting opinion from the MVMA, which is published in our final report.

I would like to explain why the Committee reached the conclusions it did. Our technical study showed that the biggest impact on emissions reductions would come from technological solutions, such as tighter emissions standards, alternative fuels, and more stringent inspection and maintenance programs. The study also showed that travel-related measures would have a significant impact on emissions in the long run, and in fact, the Committees top priority strategy was improved land use planning. But the technological solutions provided emissions improvements several times as large as the most effective travel measures, and they do not require changes in travel behavior or land use planning.

The public opinion survey conducted for Project: CLEAN AIR by the Eagleton Institute at Rutgers also provided a basis of support for the low emissions vehicle program. First, almost three in four New Jerseyans said that the quality of air poses a threat to their health or to the health of a member of their household. The survey found that making alternative, cleaner burning fuels widely available for cars and trucks was the solution of choice for the New Jersey public. Establishing tougher vehicle emissions standards was also considered very acceptable. The survey also showed that New Jerseyans think that cleaner cars would do more than any other strategy to improve air quality in the state. For obvious reasons, the public seems to be very supportive of technological solutions to air pollution and less supportive of those solutions that require changes in lifestyle. The survey found a surprisingly high level of support for funding air quality improvements - more than half those surveyed said that cleaning the air is so important that continuing improvements must be made regardless of cost. A majority also said they favor efforts to reduce air pollution even if they caused taxes to go up.

Project: CLEAN AIR's Steering Committee remained convinced in the end that, given the severity of the problem in New Jersey, the low emissions vehicle program must be a critical part of New Jersey's air quality solution.

Based on the work of Project: CLEAN AIR, Regional Plan Association supports the adoption of an LEV program in New Jersey. We also believe that other, travel-related measures will be necessary to improve our air quality and other quality of life measures in the state. Adoption of the LEV program is also an important regional issue. New Jersey is part of two Statistical Metropolitan Areas -- in Philadelphia and New York. That means that the air quality in these other states affects our planning requirements in New Jersey, so that regional cooperation becomes truly critical. Should New York or Philadelphia not meet the federal requirements, there is potential for an impact on New Jersey as well. Cooperation is particularly critical for those measures, such as the LEV program, which become more successful if they are adopted on a regional basis. Because air pollution is a regional problem, the solutions must also be regional. We have a serious health problem in this region and we need to start off on the right foot by working together in the region to adopt the LEV program. Thank you very much.

Comments of Public Service Electric and Gas Company before the Joint Legislative Committees on the Environment regarding Low-Emission Vehicle Regulations April 9, 1992

Good afternoon, I am Roger Schwarz, General Manager of Corporate Issues for Public Service Electric and Gas. With me is Gregory Dunlap of our Gas Business Unit. On behalf of PSE&G, we'd like to thank you for this opportunity to talk about New Jersey's future.

Heightened concern for the environment, as well as the reality of health risks, require all of us to come together to find solutions to New Jersey's environmental problems. Beyond the rhetoric, we must all realize that the value in cleaning up the environment is not measured in dollars, but in quality of life for all New Jerseyans. Likewise, we must all recognize our obligation to our children, and make the investment to provide them with a healthier environment.

First the good news: New Jersey's air is cleaner than it's been in years. But as is all too obvious on hot summer afternoons when a brown haze hangs in the sky, still not clean enough. Certain air pollutants stubbornly remain at unhealthful levels, and as a result, New Jersey fails to meet federal air quality standards, particularly those for ground-level ozone. There is nothing to be gained at this point from arguing about the number of days these standards are exceeded. That's history. New Jersey must come into compliance with the Clean Air Act.

As an integral part of its compliance plan, the Department of Environmental Protection and Energy has proposed new low-emission vehicle (LEV) regulations, more commonly known as the California car standards.

PSE&G supports the decision to adopt the low-emission vehicle regulations. The environmental benefits of an LEV program will assist the State in finally meeting federal air quality standards. Moreover, New Jersey's LEV program is compatible with other mobile source emissions reductions programs already required by the Clean Air Act. And, we believe that an improved environment will pay off in economic benefits by helping to continue New Jersey's reputation as a desirable place to live and to do business.

To no small extent, the debate over low-emission vehicle standards is already over. Beginning in the fall of 1997, New Jersey and other states that have failed to meet ozone limits are required to participate in the Clean Fleet Program mandated by the Clean Air Act Amendments. Under this program, a percentage of vehicles purchased by fleet operators (30% of purchases in the first year) will have to meet California's emission standards. The National Energy Strategy legislation now pending in both houses of Congress will advance that schedule.

The LEV program, as proposed both here in the Northeast and in California, will require manufacturers to sell vehicles that meet California's lower emission standards, and the Clean Fleet Program will require fleet operators to purchase them. Given the existing federal mandate to implement the Clean Fleet Program, adoption of the LEV program is thus a logical next step. By implementing programs on both the demand side and the supply side, New Jersey can facilitate acceptance of clean-fuel vehicles by ensuring a market for manufacturers and the availability of vehicles for consumers.

Many of the cars and trucks that will be built to meet the LEV standards will not be designed to run on traditional fuels. They will run on the so-called alternative fuels. At Public Service Electric & Gas, we sell two of those fuels, and it should come as a surprise to no one that we hope to sell electricity and compressed natural gas for use in cars and trucks. The use of those fuels will help to clean our air, and we believe that we can do well by doing good.

As I noted at the outset, we all know that, the seemingly intractable problem of ground-level ozone aside, New Jersey and New Jersey businesses have for more than twenty years -- often ahead of federal schedules -- been working to clean up the air we breathe. At PSE&G we converted generating stations from coal to oil and then from oil to gas. We burn only low sulfur-content fuels, and we have spent millions of dollars on pollution control equipment to improve New Jersey's air quality. We're proud that, as a result, all of our generating stations in the State already meet the Clean Air Act's Phase I and Phase II limits for sulfur dioxide.

If New Jersey is going to meet the standards for ground-level ozone, however, both stationary and mobile sources will have to reduce emissions that contribute to the problem. At PSE&G we recently announced plans to repower and rehabilitate our Bergen and Burlington generating stations. Once the work is completed, the result will be more efficient, more economical power for our customers <u>and</u> cleaner air. We expect emission rates for nitrogen oxides to be reduced by as much as 97 percent and carbon monoxide by as much as 85 percent. This investment in our Bergen and Burlington stations is part of an overall environmental plan to reduce emissions from our fossil-fuel plants.

Merely improving stationary source emissions won't do the trick. Mobile sources have to be part of the solution. Even though cars have become cleaner over the years, the greater number of cars on the road has prevented New Jersey from meeting federal air quality standards. Motor vehicles contribute approximately 50 percent of emissions of volatile organic compounds and nitrogen oxides during the summer months and are responsible for 75 percent of carbon monoxide emissions on a typical winter day. Unless action is taken now, growth in economic activity and a projected increase in vehicle miles traveled will increase emissions making it more difficult for New Jersey to have cleaner, healthier air.

Over the past few years, PSE&G has worked hard to encourage a collaborative effort between the public and private sectors to promote the use of clean-fuel vehicles. While we have our own in-house projects, we believe that the introduction of clean-fuel vehicles will be most successful by demonstrating their value to government officials, transit agencies and private industry.

PSE&G currently operates 30 natural gas powered service vans and eight electric vans, one of which is driven and tested daily by DEPE. We are also developing our own plans to have the most extensive fleet of alternative-fuel vehicles in the State.

In partnership with New Jersey Transit, we installed a refueling facility in Orange to support NJT's five natural gas-powered buses. And as part of our contribution to New Jersey's Alternative Fuel Demonstration Project, later this year PSE&G will construct a refueling facility for 200 natural gas-powered cars, trucks and vans that will be converted or purchased by the State.

We are also moving to offer refueling capability for businesses and individuals. Currently we provide New Jersey Bell with refueling for 25 natural gas-powered vans, and we continue to explore various refueling options, including public stations and home compressor equipment.

All of these efforts and more will be needed if we are going to have healthy, breathable air in New Jersey. PSE&G is confident that an LEV program can be implemented in a practical and workable fashion. Clean-fuel technology offers a realistic, cost-effective approach for New Jersey to move a step closer to achieving federal air quality standards. We encourage the Legislature to support the Department of Environmental Protection and Energy's program for low-emission vehicles.

New Jersey Automobile Dealers Association

Headquarters • 856 River Road • P.O. Box 7510 • Trenton, New Jersey 08628 • (609) 883-5056

JOHN ZANGER, JR.
Chairman

CHARLES E. WALTON
President

**STATEMENT OF CHARLES E. WALTON, PRESIDENT
NEW JERSEY AUTOMOBILE DEALERS ASSOCIATION
TO JOINT COMMITTEES ON THE ENVIRONMENT
APRIL 9, 1992**

The New Jersey Automobile Dealers Association—which represents 760 franchised new car and truck dealers—does not envy the task confronting the Committee as you study this important environmental issue which may dramatically change our lives.

As auto retailers, we're concerned with some narrower issues that might be of less importance to other people from whom you are hearing. Our concern is that New Jersey not become an island of competitive disadvantage with neighboring states with respect to the cost of motor vehicles sold here. If New Jersey is out front in mandating the California car it would be devastating to our auto retailers. Thus, we can support the proposed changes only if they are implemented on a regional basis. We know that consumers will travel a good distance to save a relatively small amount of money. Certainly if the California car is more expensive than the standard vehicle—whether it is DEPE's estimate of $170 or the industry's ballpark figure of $1,000+—business will flee to other states.

It is not enough to say that New Jersey will register only "California" cars. As we learned all too well with the heavy truck fiasco in 1990, purchasers of vehicles will find ways to register them in less costly jurisdictions. Of course, autos are not heavy trucks. But what if we lose 10% to 15% of our normal sales to a non-participating New York, Pennsylvania or Delaware? It could destroy scores of dealers.

Also of serious concern to us is the inventory of vehicles with which dealers could be "stuck." DEPE would require a certain percentage of the fleet to be low emission vehicles, ultra low emission vehicles, and zero emission vehicles. The marketplace will determine whether these vehicles will sell or not. Dealers, however, are going to be forced to buy all varieties from car makers. They will have little or no choice. Therefore, they run the risk of being stuck with inventory that may never sell, which we must purchase in order to satisfy the New Jersey regulations. We think DEPE should carefully consider some marketplace and consumer incentives to ensure dealers that this new type of product will sell. Getting them on the road—not merely onto the dealer's lot—is the real key to improvement in air quality.

Our third concern deals with the Enhanced Inspection/Maintenance program. We think New Jersey DEPE should continue to work with New Jersey DMV and EPA to develop the required vehicle inspection program that will keep the private inspection center licensees involved if they choose to make the hefty capital expenditures for the required new equipment.

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STATEMENT OF THE NEW JERSEY CLEAN AIR COUNCIL ON LOW EMISSION VEHICLES

PRESENTED TO THE LEGISLATURE ON APRIL 9, 1992 AT TRENTON

BY HERBERT WORTREICH, PUBLIC MEMBER

The New Jersey Clean Air Council was created by the New Jersey Air Pollution Control Act to be an advisory body to the Commissioner of Environmental Protection. The Council consists of 18 persons representing a broad spectrum of the state's population such as business and industry, government, labor, physicians, health officers, agriculture, professional engineers, industrial hygienists, municipalities, and the public in general. Council meetings are held every month except August and are open to the public. The members are reimbursed for expenses but otherwise receive no compensation for their services.

By statute, the Council is obligated to conduct at least one public hearing annually and submit a report to the Commissioner. During the past few years, some of these hearings have dealt either directly or indirectly with air pollution from mobile sources, a subject which has been high on the Clean Air Council's list of concerns for over two decades. I call to your attention and wish to introduce into the record three of the reports of hearings, namely those of 1987, 1990, and 1991.

The 1987 hearing was entitled "Ozone: New Jersey's Health Dilemma". One of the Council's conclusions was that "Even with regional controls, New Jersey will not be able to meet the ambient air quality standard and protect public health without further reduction of in-state hydrocarbon emissions." Among the recommendations to the Commissioner were a caveat about the ambient standard's being sufficient to protect human health, and that "The choice of control strategy should be driven by the need to protect the public health, rather than by political or economic considerations." The then Commissioner, Richard T. Dewling, stated in his testimony, "Ozone control can be accomplished. Although control will not be without substantial cost, it will neither be more expensive nor more difficult than the tough regulation of fuel and sulfur achieved during the 1970s. All that is needed is the political will." I would also point out that this report includes information about the adverse effects of ozone on human health and on vegetation including many of the food crops and ornamental plants so vital to the state's economy. Despite the subsequent adoption of Stage 2 and some other regulations, the conclusions and recommendations in this report remain pertinent for today.

In 1990, the subject of the Council's public hearing was "Trucks, Buses and Cars: Emissions and Inspections". From that hearing, the Council came to two general conclusions, namely that to derive full benefit for its citizens from technology for measuring and controlling vehicular emissions, New Jersey must take advantage of advancements promptly, and that any program for reducing vehicle emissions must be multi-faceted. The Council then recommended that the department pursue advances in emission control technology with particular attention to those in California and, if the 1990 Clean Air Act does not adequately address New Jersey's needs, the state should join with other states in the region to implement the California program. This 1990 report also deals with a variety of vehicle and transportation-related issues including inspection and enforcement, mass transit, car and van pooling, and alternative fuels.

The 1991 public hearing was devoted to the subject of air pollution emergencies. A major concern here was that the criteria for triggering such emergencies, particularly for ozone, are far from being protective of the public health. There is no criterion for a first stage or alert and for the second stage the concentration is more than twice that of the federal ambient air quality standard and the exposure four times as long. Consequently, there have been no ozone emergencies declared in New Jersey even though large segments of the population have on numerous occasions been subjected to dosages higher than the federal health standard of 0.12 parts per million for one hour. Incidentally, this federal standard which we are mandated to attain is itself questionable as adequate health protection. Whether the emergency criteria are revised or not, it seems prudent for the state to do everything feasible to keep the concentrations within safe limits. From all of the information available to the Clean Air Council, adoption of low emission vehicle standards appears to be one of the best and least disruptive strategies available at this time.

In addition to the reports of the Clean Air Council, I call to your attention the October, 1991 report of Project: CLEAN AIR, a public/private partnership seeking to improve New Jersey's air quality through consensus building and public participation. As a result of its studies on transportation and economics and a survey of public opinion, an initial list of 125 strategies was reduced to the 21 expected to yield the most benefits. These were then put into first, second, and third priority groups. Significantly, the California motor vehicle emissions program appeared in the first group.

There are only two ways to reduce pollution from mobile sources; technology - the "technical fix" - and reduced vehicle use. On the whole, the public has shown little appetite for curbing its use of automobiles. The deterioration and inconvenience of public transportation and the trend toward urban and suburban sprawl have, in fact, fostered ever-increasing dependence on the motor vehicle. Without the imposition of mandatory restrictions on vehicle use and the allocation of considerable funding for expanding and improving public transportation facilities and services, we cannot expect much contribution to improving air quality in the near future through reductions in vehicle miles traveled. This leaves the technical fix as the first line of defense. From this view, the California standards represent the most preferable strategy at hand. Given New Jersey's environmental and geographical situation, the cooperation of its neighbors in proceeding with regional strategies, and the list of options available, we should move with no further delay toward adopting advanced low emission vehicle strategies.

Although the main impetus for vehicle control is ozone and, to a lesser degree but not of lesser importance, carbon monoxide, there are some other compelling reasons. Shortfalls in required pollution reduction not realized from mobile sources must inevitably be obtained from stationary, particularly industrial and commercial, sources most of which are already subject to some of the most stringent requirements in the nation. Reducing emissions of nitrogen oxides, one of the most important elements of the California standards, contributes to acid rain control as well as ozone reduction. Vehicle exhausts are dependent on vehicle operation along with vehicle design and maintenance. Rapid acceleration, especially from a standstill, excessive speeds, and rapid deceleration produce increased exhaust pollutants. Since New Jersey has a fair share of drivers who operate their vehicles in this fashion, improved emission control will compensate in part for their superfluous damage to air quality. Finally, we are disappointed that medium and heavy duty vehicles which contribute a whole host of pollutants, including toxics, to the atmosphere, are being bypassed. It is poor public relations to ask the motoring public to accept restrictions and some added costs on their personal cars when they know that the larger and more visibly polluting vehicles are not required to share the burden.

On behalf of the Clean Air Council, I thank you for this opportunity to present the Council's views.

NEW JERSEY STATE LEGISLATIVE
JOINT SENATE AND ASSEMBLY ENVIRONMENTAL COMMITTEE'S
INVESTIGATION OF PROPOSED LOW EMISSION VEHICLE LEGISLATION

JOINT PUBLIC HEARING PRESENTATION

APRIL 9, 1992

Presented By:

WELSH TECHNOLOGIES

P.O. Box 4214, River Edge, NJ 07661 201-489-3465

WELSH TECHNOLOGIES

Senator McNamara, Assemblywoman Ogden, and other members of the Joint Legislature Environment Committee, I thank you for the privilege of allowing me to address this committee.

Past testimony heard here reveals that the state is engulfed in an environmental tragedy. Draconian measures to combat our problem were outlined by the DEPE on April 2nd. Tough choices now face this legislature that may force the people of this state and beyond major sacrifices, that will effect their lives into the future. The brief message that I would like to convey to this committee is that the path to a cleaner environment that is energy secure must be embraced by the people of this state. The committee must maintain a clear vision and be objective without dictating to the people.

The main cause of our pollution is tailpipe emissions. As per the Federal Department of Energy, motor vehicle emissions account for 30 to 50 percent of urban hydrocarbons, 80 to 90 percent of carbon monoxide, and 40 to 60 percent of nitrogen oxide emissions. It is for this reason that you must review all the technology available with respect to alternate fueled vehicles. Whether it be LPG, CNG, renewable fuels, or new technology so as to reduce low level ozone. We must weigh the experience of other states and countries and not prohibit new technology, but encourage it.

Welsh Technologies, Inc. of River Edge New Jersey represent one possible solution to solve the environmental and energy needs of this state through the use of Multi-Fuel Systems on motor vehicles. This technology utilizes alternate fuels as a catalyst with gasoline, diesel, or renewable fuels for complete internal combustion. The results of this technology are near zero emission vehicles that have increased performance and fuel economy. By utilizing the existing refueling infrastructure in place today, not only the CNG stations of the future, we are able to give positive results today.

Ours is an example of an economical, practical solution that is a means to combat the northeast's environmental problems today. With the assistance of state incentives to install clean air management systems, such as now exist in other states, and reduction of road taxes on alternate fuel purchases we can move forward with a solution that will not hurt New Jersey economically nor require adjustments in our lifestyles.

For the DEPE to state that natural gas is the fuel of choice shows a clear lack of understanding. Natural gas is naturally one of our non-renewable assets, it will serve its duty and time. The federal government has not come to the conclusion that New Jersey and the DEPE have, nor for that matter have other states. The state must not continue its closed door policy on this issue but realize that there exists a host of other solutions that would better serve its goals. We must not make rash decisions that are clearly at the expense of ratepayers and taxpayers and be an unwarranted waste of money.

I know of my own closed door experiences with New Jersey and question how many other new technologies and good solutions were turned away because of some narrow reasoning.

In conclusion, I ask that the committee review all possible solutions to the bettering of our environment and the state foster legislation that will encourage citizens and business to actively become involved in "green" solutions that will improve the way of life for all and foster economic development.

Rating Fuel Options

FUEL	RANGE	MAINTENANCE	OPERATING COST	POLLUTION	PERFORMANCE	FUEL SUPPLY	CONVERSION COST	REMARKS:
GASOLINE	=	=	=	— —	=	=		Future clouded by clean-air legislation.
DIESEL	=	=	=	— —	=	—		A future clouded by soot.
MULTI-FUEL SYSTEM	++	++	++	++	++	—	—	Increased range and performance; decreased cost, maintance, and pollution.
METHANOL	—	— —	— —	—	=	—		Decreased range, toxic, formaldehyde pollution, corrosive.
ETHANOL	—	— —	— —	—	=	—		Renewable resource, if space permits. High production cost.
PROPANE (LPG)	—	— —	— —	++	— —	—	— —	Has a history and potential in specialized clean-air use.
COMPRESSED NATURAL GAS (CNG)	— —	— —	— —	++	— —	— —	— —	Limited range and bulky onboard storage.
ELECTRIC	— —	— —	— —	++	— —	=	— —	Limited range, low speed, and bulky batteries.
REFORMULATED CONVENTIONAL FUELS	=	=	—	+	=	—		Must rid gasoline of its benzene and rid diesel of its soot.
HYDROGEN	— —	— —	— —	++	— —	— —	— —	Future potential if complex technology ever matures.

130X

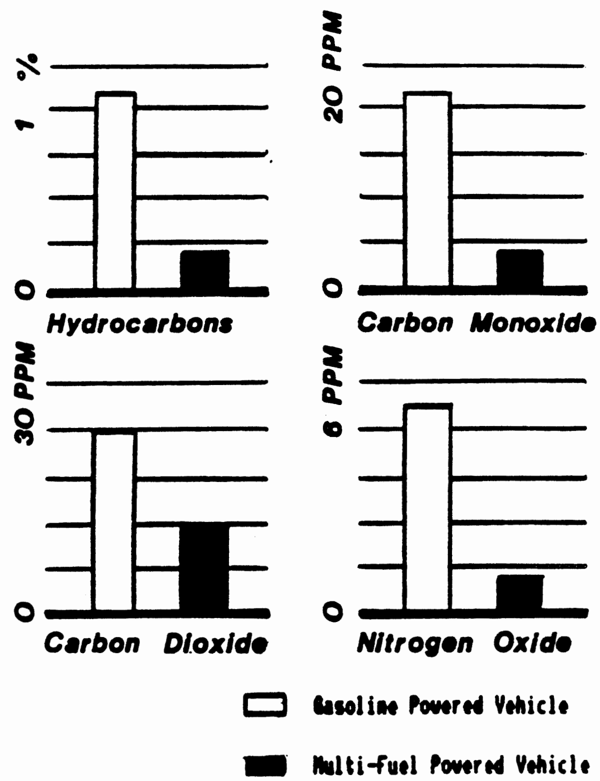
WELSH TECHNOLOGIES

Environmental Solution

The Welsh Technologies Multi-Fuel System development began over a decade ago to find a practical economic solution to reduce the emissions of smog-producing hydrocarbons, carbon monoxide, and nitrogen oxides of existing vehicles. The inherent drawbacks of dedicated alternative fuel use lead to the development of improving the combustion process of gasoline. The Multi-Fuel System utilizes clean burning alternative fuels, Propane or Natural Gas, to complete the combustion process and literally "burn-up" all of the harmful pollutants.

The Clean Air Act Amendment of 1990, President Bush's National Energy Strategy, and state legislative acts, such as California's have sought to set tougher emission standards for vehicles to improve the quality of the nation's environment. Currently, motor vehicle emissions account for 30% to 50% of urban hydrocarbons, 80% to 90% of carbon monoxide, and 40% to 60% of nitrogen oxide emissions. The Welsh Technologies Multi-Fuel Systems offer the potential to reduce these motor vehicle emissions by 70% or more.

The harmful effects by motor vehicles to the environment are increasingly becoming aware to each american. Welsh Technologies through the use of its Multi-Fuel Systems offers the first real solution to reduce these emissions and allow our environment to recover.



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WELSH TECHNOLOGIES

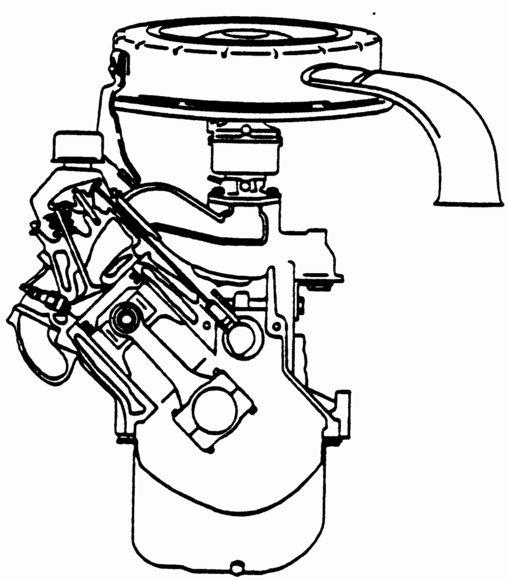
National Energy Security

The major concerns that face our nation today directly involve the importation of oil. The nations growing reliance on foreign sources of oil has forced all of us to become dependant on foreign nations and sacrifices the very security of our nation.

Currently, transportation accounts for over 63% of the total petroleum consumption in the United States. Through the use of the Welsh Technologies Multi-Fuel System the transportation petroleum consumption could be reduced by 50%. This reduction in petroleum consumption has the potential to eliminate any need for the nation to import oil and would insure the maximum potential for national security.

The National Energy Strategy seeks to decrease U.S. oil consumption by 1.3 million barrels per day, whereas the Multi-Fuel System projects a decrease in U.S. oil consumption by 19.8 million barrels per day.

Natural Gas is in abundant supply within the nation and does not require any importation to meet the potential needs of the country. Propane fuel is produced in the processing of natural gas and the refining of crude oil and also does not require any importation to meet the nations potential requirements.



WELSH TECHNOLOGIES

Economies

The Welsh Technologies Multi-Fuel System is the first practical solution to address the nation's concerns of destruction to the environment and the increasing dependancy on the importation of oil, that does not place an increasing economic burden on every american.

The cost of the Welsh Technologies Propane Multi-Fuel System for a typical six cylinder vehicle is $ 850.00 exclusive of installation. This includes the Multi-Fuel System's Controller and Fuel Reservoir. System cost for other applications, including light-duty trucks, is comparable. Installation is simple and quick, taking only a few hours to perform and does not involve any modifications or adjustments to the vehicle. Since there are no adjustments to the vehicle's engine there is no concern with the tampering provision of the Clean Air Act or the possible $ 10,000.00 possible fine. For Recreational Vehicles that already contain a propane tank, a specially designed Multi-Fuel Controller Unit is available for $ 645.00. The Welsh Technologies Multi-Fuel System is currently available for the majority of existing gasoline powered internal combustion engine vehicles with fuel injection or carburetion. Diesel engine applications are currently under development and will be introduced shortly.

Purchase and installation of the Multi-Fuel System by a local certified installer can be arranged by calling Welsh Technologies at (201) 489-3465 or (203) 656-3620. For fleet users, Welsh Technologies will train and certify their own maintenance personnel at no additional cost so the fleets can install the system themselves for additional savings.

The Multi-Fuel System's cost is shortly paid back in the reduced fuel expenses alone. At consumer retail prices the operation of the Propane Multi-Fuel System saves the consumer 30% or more in fuel costs. For fleet users with bulk purchase of propane the fuel savings can exceed 40%. Welsh Technologies can assist fleet users in obtaining the most competitive fuel prices available. Savings of the Multi-Fuel System extend beyond just the fuel savings. Due to the complete combustion that the system achieves, high octane gasoline is no longer required for smooth engine performance. The reduced engine maintenance, prolonged engine life, and reduced downtime for refueling vehicles can save fleets and consumers another 40% in vehicle operation expenses.

Propane refueling can be achieved thru-out the 25,000 plus retail propane locations through-out the country. In the event that alternate fuel is not available the Multi-Fuel System automatically switches vehicle operation back to gasoline with out interruption.

The Multi-Fuel System also allows automobiles that can not pass the increasingly stringent state emission inspections to be clean burning and pass. Thereby not forcing consumers to take on the increased burden of debt to purchase a new automobile.

NEW JERSEY VEHICLE EMISSION INSPECTION

The following vehicles equiped with the Welsh Technologies, Inc. Propane (LPG) Multi-Fuel System registered the the following emissions results at a State of New Jersey Inspection.

	CARBON MONOXIDE (CO)	HYDROCARBONS (HC)
New Jersey Maximum Allowable Standard.	1.20 %	220 PPM
1988 Oldsombile Cutlass Cierra 3.8 L Fuel Injected V-6 Engine Inspection Date 05/01/91		
Gasoline Fuel Only	1.18 %	200 PPM
Propane Multi-Fuel System	0.00 %	3 PPM
% of Emission Reduction	100.00 %	98.50 %
1989 Oldsombile Delta 88 3.8 L Fuel Injected V-6 Engine Inspection Date 04/30/91		
Gasoline Fuel Only	1.34 %	240 PPM
Propane Multi-Fuel System	0.34 %	61 PPM
% of Emission Reduction	74.63 %	74.58 %

OXY~FUEL NEWS

A Weekly Update on Reformulated Gasoline, Oxy-Fuels, and Alternative Fuels Worldwide

MARCH 9, 1992
PAGE 6

LPG, CNG System May Help Gasoline Vehicles Meet LEV Standards

A device that uses liquified petroleum gas (LPG) or compressed natural gas (CNG) may help gasoline-fueled vehicles meet new low emission vehicle standards, according to its manufacturer.

The device, manufactured by Welsh Technologies of River Edge, NJ, uses a serpentine-shaped reservoir for storage of LPG or CNG placed underneath the vehicle. The LPG or CNG is then injected to mix with gasoline and vaporizes the gasoline. Combustion is said to be "complete" with no engine knocking or pinging.

One LPG industry association executive questioned the emissions data. He said it was "difficult to believe the emissions data included in the [Welsh's] literature is based on an idle static test."

John Welsh, president of the company, says that the LPG or CNG is combined with the gasoline in ratios of one-fourth to one-third. The multi-fuel system provides an 80-100% increase in range, a 30% reduction in fuel cost and 75% less emissions, according to Walsh. The unburned hydrocarbons are completely consumed in the engine, he said.

Welsh says his technology is being used on 5,000-10,000 vehicles nationwide, and that many high-performance law enforcement vehicles are using his invention, but that he could not identify the fleets for confidentiality reasons. He said is "talking to one major European company" about using his technology.

While in use for a decade, Welsh has been promoting his product more because of recent clean air considerations, and recently let alternative fuel advocate and White House Counsel to the President C. Boyden Gray drive a vehicle equipped with his system. Gray mentioned the device at an American Gas Association (AGA) roundtable last week in Washington, D.C.

The technology is being studied in combination with ethanol and methanol fuels, and so far results show that formaldehyde emissions from the tailpipe can be virtually eliminated, said Welsh.

Cost of the equipment is $850, and installers are certified by Welsh Technologies. A fleet vehicle driven 30,000 miles per year can recoup the cost of the retrofit in just one year's time, according to Welsh.

The U.S. Environmental Protection Agency (EPA) and the California Air Resources Board have exempted Welsh's system from certification since it is considered an "after-market" system and simply bolts onto the vehicle with no modifications.

135X

NEW JERSEY STATE
CHAMBER OF COMMERCE
ONE STATE STREET SQUARE
50 WEST STATE STREET · SUITE 1110
TRENTON, NEW JERSEY 08608

STATEMENT

OF

THE NEW JERSEY STATE CHAMBER OF COMMERCE

AT THE PUBLIC HEARING CONDUCTED JOINTLY BY

THE ENVIRONMENT COMMITTEES OF THE SENATE & GENERAL ASSEMBLY

THURSDAY, APRIL 9, 1992

LEGISLATIVE OFFICE BUILDING

TRENTON, NJ

PRESENTED BY JAMES C. MORFORD

VICE PRESIDENT, GOVERNMENTAL RELATIONS

Senator McNamara, Assemblywoman Ogden and members of the Senate and Assembly Environment Committees, I am James C. Morford, Vice President for Governmental Relations New Jersey State Chamber of Commerce. The State Chamber, along with its affiliated local and regional chambers of commerce, represents over 45,000 businesses in our state.

Serving New Jersey since 1911 (609) 989-7888 FAX (609) 989-9696

The business community of New Jersey is very deeply concerned with our State's environment - both its physical environment AND its economic environment.

We are pleased today to share our views with you on the subject of the proposed implementation of low emission vehicle standards in New Jersey - the so called California Car Standard.

Just this past Tuesday evening I attended the NJ SEED dinner in Washington, DC and heard an address by Mr. Robert Grady. Some of you may remember that Bob Grady served as Director of Communications in the Kean Administration. Presently he serves as Deputy Director-designate of the Office of Management and Budget in the Administration of President Bush. Bob Grady was one of the significant contributors to what became the Clean Air Act Amendments of 1990.

Mr. Grady told the group that when discussions were underway over issues to be contained in the Clean Air Act Amendments, representatives from New Jersey were among the few states pleading for the most draconian measures to be mandated . Fortunately that philosophy was rejected to be employed only in the most extreme circumstances. The Clean Air Act Amendments as adopted will cause major reductions in air pollution on top of the considerable achievements already realized under Clean Air Law. These measures will be very expensive. It is estimated they will cost some $30 billion a year in addition to the more than $30 billion industry now spends each year to meet Clean Air obligations.

Governor Florio recently remarked, "Given the current fragile economic state of the Northeastern economy, we should make doubly certain that in these difficult economic times we are sensitive to adding to the economic burdens imposed on the citizens of our State."

We would hope that all in his administration and in the Legislature would embrace that philosophy.

State Chamber Board Chairman, Clyde H. Folley recently stated, "As New Jerseyans, we must make progress in the improvement of our air quality. So far, we have done more than any other state, with the possible exception of California, to achieve the previous Clean Air Act mandates. Our concern should be that we achieve progress at costs that are not prohibitive; but, more important, that such costs do indeed accomplish a cleaner environment. Therefore, we must move carefully through 55 or more specific regulatory programs required for consideration under the 1990 Clean Air Act Amendments. It means we will need to make decisions that make sense for <u>our</u> future well-being."

The New Jersey State Chamber of Commerce is concerned that precipitous adoption of an as-yet-to-be determined California low-emission vehicle standard will result in dramatically delaying progress in reducing tailpipe emission in New Jersey.

If 30% of our vehicles generate 90% of the tailpipe pollution, should that 30% not be the target? Adoption of a California Car Standard will result in higher priced automobiles. On this point believe the people who must make and market them. A low-emission vehicle will cost more to purchase, more to maintain and more to fuel.
Instead of adopting the California low-emission vehicle extreme at this point would it not be more effective public policy to seek ways of retiring that 30% of older vehicles that are causing 90% of the problem?

Another concern we have about New Jersey's apparent rush to commit to the California Car Standard is that New Jersey does not stand alone. We are a downwind state and no matter how many extreme measures we take we are still subject to the quality of the air that crosses our borders from upwind states.

Indeed former DEP Commissioner Richard Dewling stated that we could close down every industrial facility in our state - and that may be the goal of some - we would still, however, be out of compliance even with the old Clean Air Act.

We believe it would be in the best interest of New Jersey not to move to adopt a California Car Standard until upwind states such as Pennsylvania, Virginia, West Virginia and Ohio have demonstrated a similar commitment to clean air and taken measures to reduce the airborne pollutants they send our way.

We should place priority in strategies that make sense for New Jersey. Those of us in industry should work with our friends and neighbors in the labor and environmental community. We can reach a consensus on implementation based on scientific facts and on firm programs with demonstrable benefits. Theory and assumptions should not dictate policy and bind us to programs that, as all too often in the past, have given us only negligible improvements to the environment but have added high costs to the residents of our State.

These proposals need not mean civil war between environmentalists and industry, among states, between the State and Federal government, or between stationary sources and mobile sources as to who should bear the burden of initiating or implementing control strategies. We need to make informed judgments by consensus.

As Chamber Board Chairman, Clyde H. Folley, stated ,"We believe that untested, unproven programs adopted prematurely and in haste simply do not make sense. We must be satisfied that environmental and economic tests are considered as we review all strategies. We are calling for a new sense of pragmatism in considering steps which can be taken by New Jersey and others that make sense in a timely fashion."

Let us move forward basing our determinations on the sound principles of science - rather than the emotional responses generated through political science or even worse politically correct science.

Thank you for considering the views of the New Jersey State Chamber of Commerce.

JCM/lvw

RESOLUTION

BOARD OF TRUSTEES

SOCIETY FOR ENVIRONMENTAL, ECONOMIC DEVELOPMENT

NJ SEED

WHEREAS, the vital interest of the motoring public in New Jersey is served by maintenance of a viable and affordable transportation system; and

WHEREAS, New Jersey should continue efforts to improve the environment air quality by including provisions and strategies mandated under the Clean Air Act Amendments of 1990; and

WHEREAS, Governor James J. Florio and the New Jersey Department of Environmental Protection and Energy (DEPE) have announced the adoption of the California Emission Program in 1992 which is an optional requirement; and

WHEREAS, New Jersey state gubernatorial-appointed delegates, have without benefit of public debate, voted in the Ozone Transport Commission to propose regulations on California's Emission Program effective as soon as possible; and

WHEREAS, as the California Emission Program has not yet been implemented by the California Act Resources Board in California or not yet EPA approved and the vehicle technologies necessary to achieve the emission levels not been demonstrated in commercially viable systems; and

WHEREAS, the costs to New Jersey, as well as any potential benefits have been examined by recognized experts, including the United States Environmental Protection Agency and independent analysis by technical authorities. The conclusions differ and dramatically serious differences have not been subject to the public scrutiny by such a costly program; and

WHEREAS, the cost of implementing the California Emission Program has estimated to be as much as $1,000 per vehicle and as much as 17-24 cents per gallon of fuel; and

WHEREAS, the total cost to the State of New Jersey for implementation of this program will result in job loss, personal income reduction, and economic repercussions to New Jersey commerce and employment levels at a time when the economy is experiencing recessionary difficulty, and

WHEREAS, vehicles with federal emission standards are essentially identical to the proposed California vehicle through the 1997 Model year and differ by less than 2% in hydrocarbon emissions by 2010; and

WHEREAS, continued implementation and adherence to the required Federal Clean Air Act Amendments of 1990 mandated for adoption in New Jersey, will continue to result in significant benefits to the quality of air in New Jersey, and

WHEREAS, such adoption of these Federally mandated technologies including enhanced inspection and maintenance programs; alternate fuel programs; and programs designed to remove "high emitter vehicles" from the highways will continue to improve New Jersey's leadership position in clean air control technology, therefore, BE IT RESOLVED that the Society for Environmental, Economic Development (NJ SEED):

Requests the New Jersey Legislature to carefully review all options regarding the adoption of the California Emission Program to permit consideration of economic details and environment benefits of this program; and

Urges that until the cost of implementing this California Emissions Program in New Jersey, in addition to adopting federal Clean Air Act requirements plan, is determined that all regulatory actions regarding the adoption of the California Motor Vehicle Emissions Program be suspended; and

Further urges that the Legislature require the submission of a comprehensive report analyzing the differences between the California Emissions Standards and Compliance Program and the Federal Clean Air Act be undertaken by a broadly representative panel for a limited term evaluation of specific are quality improvement needs and cost effective strategies.

BE IT FURTHER RESOLVED that NJ SEED urges the Legislature to not permit the State of New Jersey to put itself at an economic disadvantage by adopting extreme measures without commensurate actions being taken by upwind states who contribute significantly to our air pollution problems.

JAMES C. MORFORD, SECRETARY
NJ SEED
MARCH 11, 1992

H G Ingram
Manager
US Public and
Government Affairs

Corporate Communications
A Division of Texaco Inc

303 Fellowship Rd CS-18
Moorestown NJ 08057
609 866 3225

March 27, 1992

The Honorable Maureen Ogden, Chairwoman
Assembly Environment Committee
266 Essex St.
Millburn, NJ 07041

Dear Chairwoman Ogden:

We wish to submit the following comments for your committee meeting of April 9, 1992, concerning the California Low Emission Vehicle program.

We can't recall an environmental initiative that has such a high risk/low return aspect to it as some parts of the California LEV program. The high risk results from the uncertainties in the program. These involve technical, costs, economic impact, regulatory and legal, emission benefit and gasoline uncertainties. Enclosure One gives more detail regarding these uncertainties.

The low return comes from the low reduction in emissions by the year 2000 (around one ton of VOC). The California LEV program is not the "silver bullet" needed for solving the problem and too much is being promised.

We would like to address the need for a comprehensive Air Quality Plan done by a Clean Air Task Force for the State of New Jersey. This comprehensive plan would have the following basic elements:

1. It would maximize the use of all the control strategies in the 1990 Clean Air Act, new regulatory initiatives, and other creative programs.

2. The implementation strategy would be based on the cost effectiveness of each strategy, the lowest cost strategies being developed before moving on to higher cost strategies.

3. The plan would utilize the most realistic assumptions that project the future air emissions for New Jersey.

4. Where major uncertainty exists in any area, a check and review mechanism would be incorporated before moving on.

USA
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U.S. OLYMPIC TEAM

The Clean Air Act contains a host of Clean Air strategies for mobile sources such as 1995 Federal reformulated gasolines, enhanced inspection and maintenance programs, tightened exhaust standards for vehicles, commonly called Tier I standards, Stage II nozzles at the gasoline pumps, and traffic control measures. The Clean Air Act also mandates a reduction in NO_x from power plants and since NO_x is part of the ozone problem, should be included in any ozone strategy. It is our understanding that the U.S. EPA would give SIP credits for this inclusion. On VOC equivalent basis, this might reduce emissions 10-15 percent, a significant reduction. The Clean Air Act also has a gasoline reformulation scheduled for the year 2000. The gasoline may give a 5-10 percent benefit over 1995 Federal gasoline.

In addition, there are other initiatives not spelled out in the 1990 CAA that could be included in the plan. Congress has asked the EPA to address the need for tighter future exhaust standards, commonly called Tier II, which are very close to the California LEV standards. These would be implemented after the turn of the century if necessary. The report is due to Congress by 1997.

Secondly, Congress has asked for a report on emissions not currently regulated because they recognized that the cost of further control on automobiles was becoming very expensive. The EPA has reported that approximately 20 percent of the VOC emissions come from uncontrolled sources. Those emissions are from lawn mowers, recreational vehicles, construction equipment, boats, etc. If not regulated, these emissions will surpass other mobile emissions in the future. Therefore, these emission sources will most likely be regulated and could start giving major benefits for New Jersey in the same time frame as the LEV program. EPA estimates that for Hartford there are 51 tons of VOC in this category. Most of this could be captured at low cost and much earlier than the LEV program.

Adding to these initiatives is an old car scrappage program. Old cars contribute disproportionately to emissions and significant near-term benefits can be claimed if these cars could be removed from the road. There are four studies that show the efficacy for an old car scrappage program.

No one is more aware that money is a finite resource and in tight supply during today's economic times and that everyone must get the biggest bang for their buck. Calculating the cost effectiveness of each control strategy is the methodology by which one can assess the value of each strategy. It is usually expressed by the dollars needed to prevent a ton of emissions from entering the atmosphere. Enclosure Two chart compares the dollars per ton for various mobile source controls. In addition, we estimate that mandated NO_x reduction would be a low cost control under $1,000 per ton, old car scrappage at $3500/ton and first level controls on lawnmowers, boats, recreational vehicles, etc. probably around $1,000-2,000 per ton.

The plan would be implemented with low-cost control strategies optimized before moving to higher cost.

The two key pieces of information that go into air models are (1) the amount of emissions that are currently in the air, and (2) what the projected emissions will be in the next 20-30 years. A recent National Academy of Science Report states that the current emission levels are significantly understated and may have led to the wrong control strategy over the last twenty years. Work to update inventories should be part of New Jersey's plan and should reflect the concerns shown in the NAS study. This is the appropriate time for New Jersey to assess their strategy in the light of the NAS findings.

Projected emissions depend upon the anticipated increase in travel. Projections are usually done using historic data. We believe that Vehicle Mile Travel projections will not accelerate at their historic rates because:

1. the number of people of driving age is leveling off and most of these have driving licenses;

2. part of the growth in the 1980's was due to the growth of the two-income family, where a second commuter car was necessary, and this has leveled off;

3. the 1990 CAA has elements aimed at reducing VMT.

Small changes in yearly VMT projections significantly impacts emission inventories in later years. Too optimistic projections lead to over control, at great expense, and too pessimistic, under control.

As the comprehensive plan is developed, because of the nature of the data bases, there will be areas of high uncertainty. There should be checkpoints to resolve the uncertainty before moving on. Of all the programs we have discussed, the Low Emission Vehicle program has the most uncertainty. These include technology, cost, benefits, regulatory, legal, emissions, and fuel uncertainties. Vehicle miles traveled projections also have large uncertainties.

In summary, New Jersey should write a plan with input from many parties which includes all the provisions, both in place and anticipated, of the Clean Air Act, and implement the control with the least uncertainties and the most cost effectiveness.

Sincerely,

H G Ingram

HGI:ek
Enclosures

UNCERTAINTIES ASSOCIATED WITH LEV PROGRAM

Technical Uncertainties

- No in-use experience with future (0.075 g/m and 0.04 g/m) low NO_x cars
- long-term reliability questions

Economic Uncertainties

For 0.075 g/m car, hardware cost estimates vary:

o CARB	$170
o VA, CT	$500
o Auto	$1,000

For Zero Emission Vehicle (ZEV); electric car

- Battery costs are important, range from $1,250 - $7,000
- Low cost makes EV viable even when replacing battery every four years
- High cost will inhibit acceptance

Regulatory and Legal Uncertainty

- States may get less credit for LEV program contingent upon EPA ruling favorably
- Can states cherrypick the California Program

Emission Uncertainty

- For ZEV, electricity from coal fired plants increases solid waste because more SO_2 has to be scrubbed out; and NO_x will increase. Impact not yet determined.

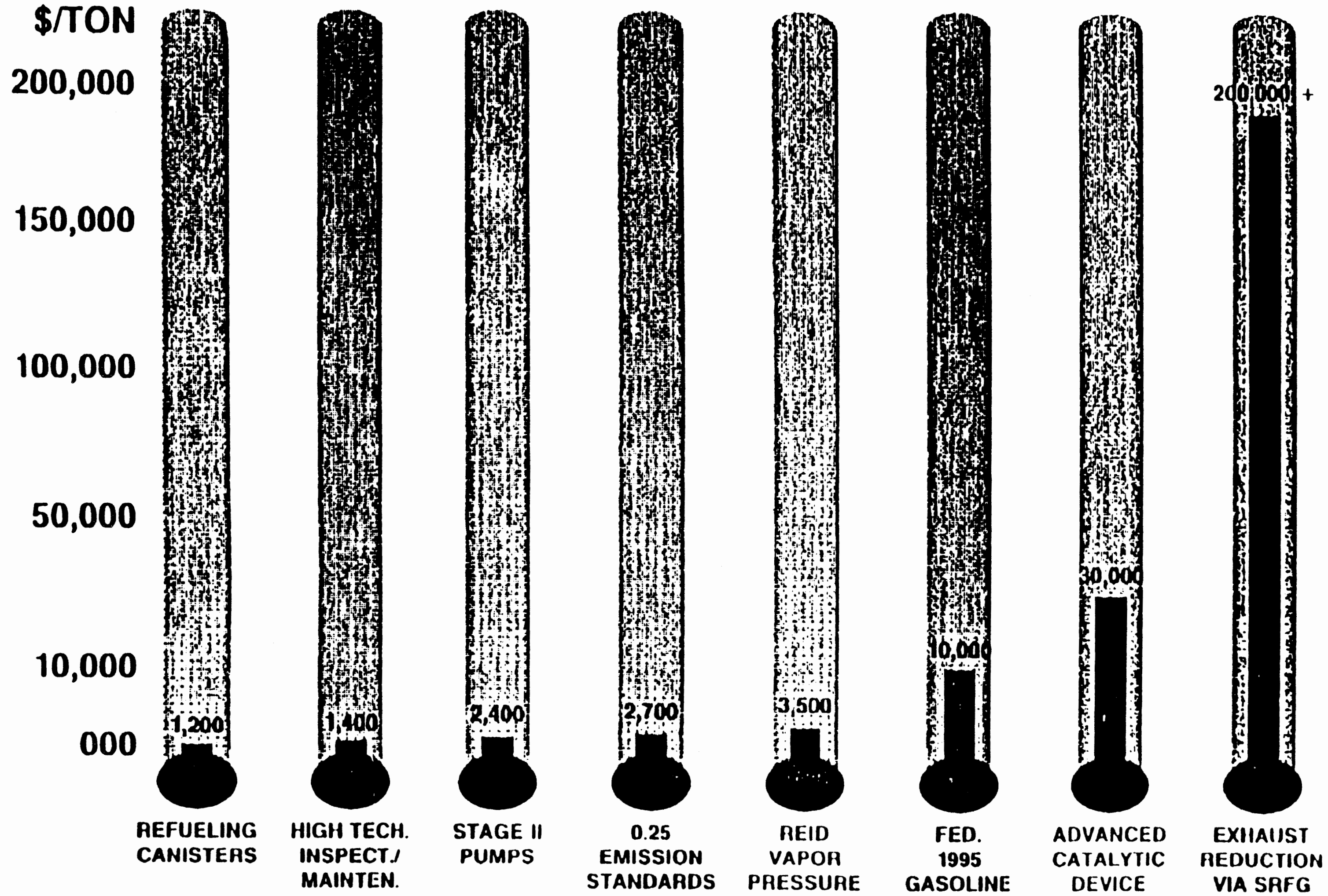
Vehicle Miles Traveled

- Growth rates are uncertain; seem high; large impact

Fuels Uncertainty

- 1995 Federal Phase I - 5-7 cents more than current
- 1996 California Phase II - 20 cents more than Federal Phase I

HYDROCARBON EMISSION REDUCTION - $/TON



Jersey Fruit
COOPERATIVE ASSOCIATION, INC.
(609) 582-7100
FAX (609) 582-9642

April 7, 1992

RECEIVED
APR - 9 1992

The Honorable Maureen Ogden
266 Essex Street
Millburn, N.J. 07041

Dear Assemblywoman Ogden:

Freshness, flavor, wholesomeness and affordability, are the qualities you have come to expect from Jersey Fruit Cooperative Association, Inc. Our ability to give you "just in time freshness" is a direct result of the motor vehicles we use in our day to day deliveries.

We use a variety of pickup, panel, straight, and all size semi trucks which are essential in making deliveries of perishable goods at affordable prices.

We operate on very tight profit margin which in turn means keeping transportation costs well under control.

It is our understanding the proposed California motor vehicle standards for New Jersey could add between $800-$1,000 to the price of a motor vehicle together with an increase in motor fuel up to 24 cents more per gallon. This could be a devastating blow to our members in New Jersey since virtually all our products move at every stage of development and marketing by motor vehicle.

We respectfully urge you to examine the full financial impact this measure will have on the economy of our state before you endorse any proposal. Ask yourself: "What measurable benefit will New Jersey derive from the California Standard vs the 1990 Clean Air Act Amendments?" At what cost: in dollars, jobs and regional competitiveness. In our opinion the proposed California low emission vehicle standard is too much, too soon and just doesn't make sense.

Sincerely,

JERSEY FRUIT COOP. ASSN., INC

William W. Yerkes, Jr.

William W. Yerkes, Jr.

LAMBS RD. & WOODBURY/GLASSBORO RD P.O. BOX 23, SEWELL, NJ 08080

150x

New Jersey
ALLIANCE for ACTION INC.
P.O. Box 6438 • Raritan Plaza II • Edison, New Jersey 08818-6438
FAX (908) 225-4694 • (908) 225-1180

WRITTEN TESTIMONY
OF
NEW JERSEY ALLIANCE FOR ACTION
ON THE IMPLEMENTATION OF THE CLEAN AIR ACT AMENDMENTS

APRIL 1992

New Jerse.
ALLIANCE for ACTION INC.
P.O. Box 6438 • Raritan Plaza II • Edison, New Jersey 08818-6438
FAX (908) 225-4694 • (908) 225-1180

Hello. I'm Erica Schiffman, Assistant Vice President of the New Jersey Alliance for Action. Thank you for the opportunity to appear today on this issue of such critical importance to New Jersey's future.

The Alliance for Action is a statewide coalition of approximately 500 business, industry, labor, professional, academic and governmental organizations. Our commitment is to improve the quality of life in New Jersey through economic progress and the creation of jobs, balanced by responsible protection of our environment.

The Alliance recognizes the value to everyone that clean air gives. At the same time, however, the Alliance believes the economic impact of how the State implements the Federal regulations must be evaluated prior to implementation. The challenge is how do we implement the Federal Clean Air Act in New Jersey without damaging our state's economy and weakening our economic competitiveness. We believe clean air and a healthy economy can be achieved at the same time.

The Alliance has asked me to present today some general proposals for your consideration.

We believe it is imperative that plans be devised to pay bounties or provide tax credits --- or any other system that is feasible --- to get old, air-polluting clunker cars off the roads. Tons of pollution emissions could be prevented by encouraging drivers and companies to switch to newer, cleaner motor vehicles. That effort could be complemented by developing even tougher emission testing standards as part of New Jersey's motor vehicle inspection program.

The Alliance also urges that strong consideration be given to greater movement of goods through water and rail transportation. New Jersey is blessed with excellent port facilities, both in the north in Port Newark and Port Elizabeth and in the south in Camden and along the Delaware.

We also believe that a strong campaign of public education is essential. The people must be made more aware of how the quality of air affects their quality of life. They must be made more aware of how the actions of each and everyone of use contribute to air pollution and of the key roles we can play in reducing the problem by changes in our life styles.

And, finally, the Alliance suggests that the State of New Jersey has a responsibility to set an example at its governmental facilities throughout the state --- particularly in Trenton. Car pooling, for example, among the thousands of state employees who drive to work alone every day is one approach that could be expanded.

We all want cleaner air in New Jersey and we all want better economic times. The challenge is how do we achieve both. It won't be easy ... but we firmly believe that where there is unity of purpose and recognition that everyone will have to make sacrifices, the challenge can be met. Thank you.

# # #

"THE CHRISTMAS SEAL PEOPLE"
AMERICAN LUNG ASSOCIATION OF NEW JERSEY
1600 Route 22 East • Union, NJ 07083 • (908) 687-9340
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TESTIMONY
HEARING ON LOW EMISSION VEHICLES
April 9, 1992
Trenton, NJ

Mr. Chairman, members of the Committee, I am Evan S. Pokorney, M.D., President of the medical section of the American Lung Association of New Jersey (ALANJ) and member of the ALANJ Board of Directors, and in the active practice of pulmonary medicine.

Today I am presenting comments on behalf of the American Lung Association of New Jersey. Based on our knowledge of the adverse health effects of air pollution, the American Lung Association places a very high priority on strengthening air pollution control programs. The adoption of the California Vehicle Emission Program is a step the American Lung Association supports to strengthen efforts to control the air pollution problem in New Jersey.

The continued degradation of our air resources is of considerable concern, especially for those population sub-groups that are potentially at higher health risk from exposure to air pollution. In general, persons with pre-existing respiratory disease including asthma and Chronic Obstructive Lung Disease or those with heart disease, the very young and the very old are considered most at risk to the adverse health effect of air pollution. For ozone--smog--in New Jersey the populations at risk include 1,394,387 children, 990,548 elderly; 293,189 individuals with asthma and 368,498 with COPD. The American Lung Association quantified these sub-groups in its report, entitled Breath in Danger. I have appended the relevant section for New Jersey to my comments.

There are two major types of ambient air pollution--both largely (but not exclusively) attributable to the combustion of fuels:

- "Stationary source" pollution is generally associated with electric power generation.
- "Mobile source" pollution is associated with automotive engine exhaust and refueling procedures.

MORE THAN 80 YEARS OF COMMUNITY SERVICE

The Low Emission Vehicle program would strengthen control of mobile source pollution--the leading cause of smog in New Jersey. Nationwide, transportation sources are responsible for 67% of the carbon monoxide, 41% of the nitrogen oxides, 33% of hydrocarbons and 20% of the particulate matter.

Health effects of air pollution are currently evaluated on the basis of three types of evidence:

- Epidemiological field studies: real-life exposures to naturally occurring ambient air pollution. Individual exposures are usually estimate from data provided form air monitoring station. Entire populations in a region can be studied over years, for example, by correlating air quality measurements with hospitals visits for respiratory complaints--morbidity, and with deaths--mortality.

- Controlled exposures: A specifically polluted atmosphere is created and controlled in an environmental chamber, such as the one at the University of New Jersey in Baltimore. Carefully selected volunteers are exposed in a precisely quantifiable manner and the effects are assessed. Chronic irreversible effects, such as cancer, or chronic obstructive lung disease, cannot be investigated in this manner.

- Animal toxicology: this form of study is particularly useful for the investigation of irreversible changes and for studies of toxicologic mechanisms. Animal studies are used when working with human subjects is not appropriate.

While stationary source pollution is responsible for the more notorious air pollution disasters such as the Meuse Valley, Belgium (1930), London (1952), and Donora, Pennsylvania (1948), mobile source pollution was first recognized as a phenomenon of the Los Angeles basin and called photochemical smog. Smog, a layer of "haze", is irritating to the eyes, nose and respiratory system. The respiratory irritant is ozone and is often called an "oxidant".

The ozone in smog is generated photochemically from hydrocarbons and nitrogen oxides present in automotive gasoline engine emissions and refueling procedures. It is now clear that long distance transport to this type of pollution occurs, and that large downwind, semi-rural or rural areas can be covered by ozone-containing air originally generated from urban pollutant emissions. It is also clear that prolonged elevations of many hours of ambient air ozone levels occur frequently throughout the northeast region of country in addition to the short-term morning and evening peaks associated with rush-hour traffic.

Field studies of the health effects of exposure to naturally occurring "oxidant" pollution clearly indicate its respiratory tract irritant properties--cough, chest pain, its ability to decrease inspiratory capacity and even its ability to reduce maximum exercise tolerance.

Four studies of children attending summer camp were performed in Indiana and Pennsylvania in 1980, in Mendham, New Jersey in 1982, and in at Fairview Lake, New Jersey in 1984. In all four studies an association was seen between declines in lung function and increasing levels of ozone. In the study conducted at Mendham, New Jersey, an air pollution episode occurred that involved four days of hazy weather and a peak one hour ozone level of 0.186 ppm. Decrements in lung function observed in this population persisted for one week following the air pollution episode.

Longitudinal studies of respiratory health in Los Angeles suggest that residence in highly polluted areas is associated with increased rates of lung function deterioration. Recent autopsy studies of the lungs of victims of trauma in Southern California have suggested the possibility that residence in polluted areas may be associated with small airways disease. This is of great concern because it is generally accepted that small airways disease is a precursor of Chronic Obstructive Lung Disease.

Controlled human exposure to ozone have yielded a great deal of information about the acute and subacute responses to this pollutant. Current research is exploring the effects of prolonged exposures-6-8 hours-to ozone at concentrations that are lower than the current 1 hour health standard of 0.12 parts per million ozone. In addition to the cough and chest pain upon deep inspiration, such exposures also cause marked acute inflammatory reaction in the airways and lungs. This response can persist for at least 18 hours. The presence of inflammation is of concern because such processes cause bronchial hyperreactivity, can lead to scarring (fibrosis) or to emphysema, facilitate development of allergies, can even contribute to the development of malignant cellular transformation.

What does this mean in the real world? The most striking of the findings about long term exposure to ozone levels at or below the current health standard is that otherwise healthy exercising individuals-children and adults-show significant health effects after 6 to 8 hours at levels of pollution common in most of our major metropolitan areas in the summer. Consider your mailman walking 3.5 miles pre hour delivering mail. By the end of the day he may have a sizable decline in this ability to breath normally--as much as 40% decline in lung function--in the short term, affecting his job performance. The effects of repeated, long-term exposures require further study.

The citizens of New Jersey deserve clean and healthful air quality--progress toward this goal can be achieved with adoption of the innovative and proven technology utilized in the California Vehicle Emission Program. While the federal Clean Air

Act Amendments of 1990 represent a step forward for many areas of air pollution control, they represent less than the status quo for the control of mobile sources. The Office of Technology Assessment of the United States Congress estimated that on average, if a nonattainment area adopted and fully implemented the clean-up strategies for its designation, it would still fall short of the necessary emissions reductions for attainment status by 45 percent. The LEV program allows New Jersey to secure additional emission reductions that it will need by the late 1990's if it is to achieve the health-based air quality standards.

The American Lung Association of New Jersey urges the adoption of the LEV program and the implementations of an aggressive air pollution clean-up program necessary to protect the health of the people of New Jersey.

Evan S. Pokorney, M.D.
American Lung Association of NJ

enclosure

"BREATH IN DANGER"

ESTIMATION OF POPULATIONS-AT-RISK OF ADVERSE HEALTH CONSEQUENCES IN AREAS NOT IN ATTAINMENT WITH NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) OF THE CLEAN AIR ACT

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Introduction

The Clean Air Act of 1970, the nation's legislative cornerstone for the control of air pollution, required the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six of the most widespread and dangerous air pollutants in the outdoor environment. In subsequent years, EPA set air quality standards to protect human health and welfare for the following pollutants: total suspended particulate matter (TSP), which changed to particulate matter with a diameter less than or equal to 10 micrometers (PM10) in 1987; sulfur dioxide (SO2); nitrogen dioxide (NO2); carbon monoxide (CO); ozone (O3), which was changed from photochemical oxidants in 1979; and lead (Pb).

Congress directed EPA to set these national air quality standards with "an adequate margin of safety" to account for gaps in scientific information on the health effects of these pollutants, with particular concern for those population sub-groups that are potentially at higher risk from exposure to these pollutants (populations-at-risk).

Communities which fail to meet the NAAQS for one or more of these five pollutants --so-called nonattainment areas-- have been identified by the EPA. Estimates of the populations-at-risk are derived from two distinct EPA-created data bases. Data on areas proposed for designation as nonattainment for carbon monoxide and ozone (as per June 5, 1988 Federal Register notice) were assembled by EPA as a necessary step in complying with the Mitchell-Conte Amendment contained in the Budget Reconciliation Act of 1987. This amendment required EPA to list those areas which failed to attain the standards for carbon monoxide and ozone by December 31, 1987 (as required by the Clean Air Act) and, additionally, prohibited the Agency from imposing sanctions on these communities before August 31, 1988. Data on areas not in attainment with the standards for total suspended particulates, sulfur dioxide and nitrogen dioxide (as of July 1988) were derived from a separate EPA-produced data base. These designations were made as established by Section 107 of the Clean Air Act.

The purpose of this report is to provide the public with information regarding the estimated number of at-risk people potentially exposed to unhealthy levels of air pollution. This information emphasizes the need for timely and effective legislation and regulatory action to deal with the widespread nature of the current air pollution problem. Such action is particularly important in protecting the health and well-being of the significant number of people who are particularly at-risk of being affected by air pollution and can least afford exposure to airborne pollutants.

ALA has derived estimates of the populations-at-risk (as identified in relevant EPA criteria documents and other sources) residing in nonattainment areas for ozone, carbon monoxide, total suspended particulates, sulfur dioxide, and nitrogen dioxide. A listing of lead and PM10 non-attainment areas was not available from EPA, and is therefore not included in this report.

DATA SUMMARY

Based on the data provided by EPA, 487 counties were designated or proposed as non-attainment for one or more NAAQS. An estimated 146 million Americans (60.5% of the resident U.S. population) reside in these communities.

Estimates of the populations-at-risk exposed to air quality not meeting the public health standard were derived for each of these communities. The totals of each at-risk population are delineated in Table 1. The number in parentheses indicates the proportional contribution of each population-at-risk estimate to the total population in that category. For example, 58% of pre-adolescent (≤13) children reside in counties nonattainment for one or more NAAQS.

TABLE 1

ESTIMATED POPULATIONS-AT-RISK RESIDING IN COMMUNITIES NONATTAINMENT FOR ONE OR MORE NAAQS *

POPULATION-AT-RISK	POLLUTANT(S)	NUMBER RESIDING IN NON-ATTAINMENT AREAS	(PERCENT)
Pre-Adolescent Children (≤13)	TSP,SO2,O3,NO2	28,145,521	(58)
Elderly (65+)	TSP,SO2,O3	17,200,368	(59)
Pediatric Asthma (<15)	TSP,SO2,O3,NO2	1,495,232	(57)
Adult Asthma (15+)	TSP,SO2,O3,NO2	4,122,729	(58)
COPD	TSP,SO2,O3,NO2	6,778,439	(57)
Coronary Heart Disease	CO	1,844,914	(38)
Pregnant Women	CO	1,443,935	(38)

* Populations-at-risk estimates should be quoted individually and not added together to form totals. These categories are not mutually exclusive.

The data included in Table 1 emphasize the massive potential impact of current air pollution problems on the most vulnerable members of society. Approximately <u>60 percent</u> of the nation's pre-adolescent children, the elderly, pediatric and adult asthmatics, and people with chronic bronchitis and emphysema (COPD) live in nonattainment areas and therefore have the potential of being affected by unhealthy levels of air pollution. More than one-third of the nation's pregnant women, and people with a history of coronary heart disease are similarly at risk of exposure to these potential threats to human health.

Table 2 summarizes the number of nonattainment areas and populations-at-risk exposed to unhealthy levels of each of the five pollutants. These data demonstrate the widespread nature of the nation's current ozone, carbon monoxide and particulate matter air pollution problem. For example, over 28 million pre-adolescent children are exposed to levels of ozone which exceed the public health standard.

The data that follow (Tables 3-5) estimate the populations-at-risk by county for each pollutant. Information on proposed nonattainment counties for the carbon monoxide and ozone standards are presented in Table 3. Data on nonattainment counties for total suspended particulates, nitrogen dioxide and sulfur dioxide, are presented in Table 4. Additionally, data on the at-risk populations exposed to ozone and carbon monoxide by metropolitan area are provided in Table 5.

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TABLE 2: ESTIMATES BY POLLUTANT OF THE POPULATIONS-AT-RISK EXPOSED TO AMBIENT AIR POLLUTANTS IN COUNTIES NOT IN ATTAINMENT WITH NATIONAL AMBIENT AIR QUALITY STANDARDS OF THE CLEAN AIR ACT AS OF JULY, 1988. *

AMBIENT AIR POLLUTANT	NUMBER OF COUNTIES	ESTIMATED TOTAL POPULATION EXPOSED (1)	POPULATIONS AT RISK						
			PRE-ADOLESCENT CHILDREN <13	ELDERLY 65+	PEDIATRIC ASTHMA	ADULT ASTHMA	COPD	CORONARY HEART DISEASE	PREGNANT WOMEN
O3	354	123807100	25040599	15370604	1289837	3582742	6074222	---	---
CO	214	89028300	---	---	---	---	---	1870659	1410053
TSP	123	59076000	12250279	6676057	643145	1750145	2802531	---	---
SO2	52	14351300	2918338	1756739	167859	418344	688467	---	---
NO2	4	12463800	2567543	---	115043	347453	584456	---	---

* SOURCE: CENTRAL PROGRAMS OPERATIONS BRANCH (CPOB), OFFICE OF AIR QUALITY PLANNING AND STANDARDS (OAQPS), U.S. ENVIRONMENTAL PROTECTION AGENCY - 1988 (NON-ATTAINMENT AREAS LISTING); U.S. DEPT. OF COMMERCE BUREAU OF THE CENSUS STATISTICAL ABSTRACT OF THE U.S. 1988- (RESIDENT POPULATION BY AGE AND STATE: 1986.)

NOTES:

--- INDICATES THAT THE POLLUTANT DOES NOT POSE AN INCREASED RISK OF AN ADVERSE HEALTH EFFECT FOR THE POPULATION INDICATED ABOVE.

1. TOTAL POPULATION RESIDING IN NON-ATTAINMENT AREAS.

POPULATIONS-AT-RISK

Air pollution does not affect the health of exposed persons with equal severity. Certain sub-groups of people potentially exposed to air pollution can be identified as particularly "at-risk" from the adverse health effects of airborne pollutants. For the purpose of this report, ALA has used the following definition of populations-at-risk, as described by the U.S. Environmental Protection Agency in the 1977 Air Quality Criteria Document for Lead: "... Populations-at-risk is a segment of a defined population exhibiting characteristics associated with significantly higher probability of developing a condition, illness, or other abnormal status. This high risk may result from either greater inherent susceptibility or from exposure to situations peculiar to that group. What is meant by inherent susceptibility is a host characteristic or status that predisposes the host to a greater risk of heightened response to an external stimulus or agent."

The specific at-risk sub-groups described below for each pollutant are based on information contained in the most recent EPA "criteria documents" used to set the National Ambient Air Quality Standards and on other sources. These sub-groups have been identified through clinical, field and epidemiological studies of the health effects of the five pollutants covered in this report.

It is important to note that the certainty of the scientific documentation supporting the identification of the populations-at-risk included in this report is highly variable. For example, there may be significant variation in the health effects associated with exposure to air pollution in the age ranges included in this study for pre-adolescent children and the elderly. Also, there is very strong scientific evidence that asthmatics are much more sensitive (i.e. respond with symptoms at relatively very low concentrations) to the effects of sulfur dioxide than the general healthy population. Conversely, there is little scientific evidence that elderly persons ($\geq$65 years old) are particularly sensitive to the effects of sulfur dioxide pollution. However, because elderly people already experience lower respiratory function than younger people and may not be able to tolerate the additional reduction in respiratory function caused by the sulfur dioxide exposure, they are identified by EPA as a population-at-risk from the impact of sulfur dioxide pollution. The difference between "sensitive populations" and "populations-at-risk" is important to understand when reviewing the statistics included in this report. A "sensitive" group is by definition, always at-risk from the effects of a given pollutant. However, a group may be "at-risk" to the adverse health effects of a pollutant without necessarily being more sensitive than the general population to a given pollution level.

Despite the variation in the level of scientific certainty regarding the risk to a given population of adverse effects from exposure to the air pollutants discussed in this report, ALA believes that prudent health protection policy dictates the groups listed below be included as at-risk for these pollutants. Rather than develop new criteria this document relies on those populations-at-risk identified by EPA in the relevant criteria document.

It should be noted that estimates for one population subgroup at risk to the health effects of ozone, exercising healthy people, have not been included in this report. While numerous clinical studies indicate that people who participate in vigorous exercise are at increased risk of experiencing acute effects from exposure to ozone at levels above the national ambient standard, ALA has limited the ozone population-at-risk to those groups with inherent physiological risk factors. In addition to exercisers, EPA also suggests that between 5 and 20 percent of the general population may be particularly sensitive to ozone. Thus, the estimates of at-risk populations in ozone nonattainment areas included in this report may substantially underestimate the number of people potentially exposed to unhealthy ozone levels.

Particulate Matter

Pre-adolescent children ($\leq$13 years old)
Elderly ($\geq$65 years old) persons
Persons with pre-existing respiratory (COPD* and asthma)

Sulfur Dioxide

Pre-adolescent children
Persons with pre-existing respiratory disease
Elderly persons

Carbon Monoxide

Pregnant women
Person with pre-existing coronary heart disease

Ozone

Persons with pre-existing respiratory disease
Elderly persons
Pre-adolescent children

Nitrogen Dioxide

Pre-adolescent children
Persons with pre-existing respiratory disease

* Chronic Obstructive Pulmonary Disease

STATISTICAL METHODOLOGY

A projection of the prevalence of populations-at-risk was derived for each community not in attainment with one or more primary National Ambient Air Quality Standards (NAAQS) by the synthetic estimation technique originally developed by the Bureau of the Census.

National prevalence rates for the medical conditions under study as measured by the National Health Interview Survey (NHIS) are applied to the populations enumerated for each community on an age-specific basis. Estimates of chronic bronchitis and emphysema (collectively, chronic obstructive pulmonary disease) prevalence are calculated for the following age groups: <18, 18-44, 45-64 and 65+. All age-specific estimates are summed to estimate the total population with this disease in each county. Estimates of pediatric asthma prevalence are calculated for those <5 and 5-14 and added together to estimate total pediatric asthma prevalence. Adult asthma is estimated for those 15-17, 18-44, 45-64 and 65+. Similarly, these estimates are added to calculate the total population with adult asthma in each county. The prevalence of coronary heart disease within each county designated as a nonattainment area for carbon monoxide is the total of the prevalence for age groups <18, 18-44, 45-64, 65+.

A respondent to the National Health Interview Survey may indicate the presence of more than one chronic lung disease (i.e. bronchitis and emphysema). As a result, overlap can exist between condition categories, leading to an overestimate of their prevalence. For example, a respondent who reports having both bronchitis and emphysema is represented in the prevalence estimate for both these conditions. We have derived these estimates using rates based on an unduplicated count of persons with bronchitis, emphysema and asthma. An individual with any one of these conditions is counted only once in the prevalence estimate. Age-specific prevalence rates for COPD (chronic bronchitis and emphysema) are based on the combined prevalence of respondents who reported the following condition categories: bronchitis only; bronchitis and emphysema; bronchitis, emphysema and asthma; emphysema only; and emphysema and asthma. Asthma prevalence estimates include those respondents who reported the following: asthma only, or asthma and bronchitis.

Expected estimates of the local prevalence of these chronic diseases are scaled in direct proportion to the base population of the area and its age distribution. No adjustments are made for other factors which may affect local prevalence (e.g. local distribution of cigarette smokers) since the health surveys which obtain such data are rarely conducted on the level of the county or county sub-division. Because the estimates do not account for geographic differences in the prevalence of these chronic diseases, the sum of the estimates for each of the counties in the United States may not reflect the national estimate derived by the National Health Interview Survey.

The Bureau of the Census has estimated the population of each of counties and county equivalents in the United States as of July 1, 1986. Estimates of the age-specific breakdown of the population residing within each state are also provided by the Census Bureau. The percentage of the population within each age-specific group delineated earlier in this section of the report (as estimated on the state level) is applied to the total county population in order to estimate the age-specific breakdown of the population within each non-attainment county. The application of age-specific national prevalence rates for chronic lung diseases and coronary heart disease to the age-specific population of each nonattainment county provides an estimate of local prevalence.

The estimate of the pre-adolescent population ($\leq$13) is based upon the application of the pediatric age distribution within each state to the total population of each county. Similarly, the elderly population-at-risk estimates were derived by applying the proportion of each state's population over age 65 to the total population enumerated by the Bureau of the Census for each county designated as a non-attainment area.

The population of pregnant women living in each nonattainment county is derived from the live birth rate reported in 1986 within states which contain areas not in attainment with the NAAQS for carbon monoxide. Although the number of newborns in each county will approximate the population of pregnant women, the affects of multiple births and fetal losses may impact on the accuracy of these estimates.

LIMITATIONS OF THE DATA

Estimates of the populations-at-risk have been derived from two distinct EPA-created data bases.

Counties proposed as nonattainment for ozone and carbon monoxide were assembled by EPA pursuant to the requirements of the Mitchell-Conte Amendment. The counties listed are those which failed to attain the standards for these pollutants by December 31, 1987, as required by the Clean Air Act. "These data will eventually be utilized in any future calls for improving State Implementation Plans or other regulatory actions the agency may take in conjunction with either future changes to the Clean Air Act under congressional consideration or implementation of EPA's final Post-87 Ozone/Carbon Monoxide Policy". 1

Counties designated as nonattainment for the standards for TSP, NO2 and SO2 as of July 1988, are designated as such pursuant to Section 107 of the 1977 Clean Air Act.

The base population exposed to unhealthy levels of carbon monoxide and ozone in the New England States varies by pollutant. The estimates of populations-at-risk have been derived to reflect these differences.

Population-at-risk estimates should be quoted individually and should not be added together to form totals since the populations-at-risk will overlap (individuals can be over 65 and have COPD, for example), and are not mutually exclusive.

The populations-at-risk represent stationary populations projected as residing in each community at the time when the EPA designated those communities as nonattainment. The attainment status of the county does not imply responsibility for the disease status of its population.

The projection techniques used to estimate the populations-at-risk for each community produce data that are subject to error when scaling national age-specific prevalence rates of medical conditions to local populations whose exposure to related risk factors in unknown. As previously noted, the certainty of the scientific documentation supporting the identification of the populations-at-risk included in this report is highly variable.

The interpretation of these data must take into account limitations of the methodology and the original source of the data base. The source of the data used in this report, the National Health Interview Survey, provides the best available estimates for the medical conditions included in the projections. The Health Interview Survey defines a condition as chronic if (1) the respondent indicates it was first noticed more than 3 months before the reference date of the interview, or (2) it is the type of condition that ordinarily has a duration of more than 3 months. Examples of conditions that are considered chronic regardless of their time of onset are diabetes, heart conditions, emphysema and arthritis. Limitations of the methodology used in deriving these estimates are described in the Statistical Methodology section of this report.

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1 EPA News Release - EPA Lists Areas Failing to Meet Ozone or Carbon Monoxide Standards. May 3, 1988

INTERPRETATION OF DATA MATRIX

In the data tables that follow, estimates of the populations-at-risk are listed by EPA designated nonattainment counties. The estimates indicate the number of persons within each county who are considered "at-risk" to the effects of increased levels of ambient air pollution by virtue of a medical condition or their age.

Data are presented for ozone (O3) and carbon monoxide (CO) in Table 3. Table 4 presents data for total suspended particulates (TSP) sulfur dioxide (SO2) and Nitrogen Dioxide (NO2). Where applicable, overall state estimates of the populations-at-risk are delineated.

Each county designated or proposed as nonattainment for one or more National Ambient Air Quality Standards appears as a row in the data matrix. The populations-at-risk appear as column headings. A (---) indicates that the county is in attainment for the air quality standard for the applicable at-risk group. Because the data on nonattainment communities has been derived from two sources and contains somewhat varying information, populations-at-risk by virtue of their exposure to CO and O3 are presented separately from that for TSP, SO2 and NO2. Counties in nonattainment for pollutants with overlapping at risk groups (e.g. ozone and total suspended particulates) will have the same at risk estimate appear in Tables 3 and 4. For example, DuPage County, Illinois is in nonattainment for TSP and O3. The following estimates for populations-at-risk appear in both tables:

STATE	COUNTY	PRE-ADOLESCENT CHILDREN ≤ 13	ELDERLY 65+	PEDIATRIC ASTHMA	ADULT ASTHMA	COPD	POLLUTANT O3	POLLUTANT TSP
Illinois	DuPage	150634	87324	9235	20484	35174	X	X

Although the exact estimates appear in each Tables 3 and 4 only 35,174 COPD sufferers are at risk by virtue of their exposure to levels of O3 and TSP, not twice that number.

Additionally, Table 5 lists the populations exposed to levels of ozone and carbon monoxide not meeting the standards within Metropolitan Areas, as designated by CMSA, MSA or county code. These codes are not available for the counties in nonattainment for TSP, SO2 and NO2.

STATE	COUNTY	METROPOLITAN AREA	CMSA, MSA OR COUNTY AREA (1)	PRE-ADOLESCENT CHILDREN <5	PRE-ADOLESCENT CHILDREN 5-13	PRE-ADOLESCENT CHILDREN 0-13	ELDERLY (65+)	CORONARY HEART DISEASE	PEDIATRIC ASTHMA	ADULT ASTHMA	COPD (2)	PREGNANT WOMEN	POLLUTANT (3) O3	POLLUTANT (3) CO
NEW JERSEY	WARREN CO	ALLENTOWN-BETHLEHEM, PA-NJ	0240	6076	9808	15884	11284	---	796	2503	4198	---	X	
NEW JERSEY	ATLANTIC CO	ATLANTIC CITY,NJ	0560	14385	23222	37607	26715	---	1885	5927	9938	---	X	
NEW JERSEY	CAPE MAY CO	ATLANTIC CITY,NJ	0560	6433	10385	16818	11947	---	843	2650	4444	---	X	
NEW JERSEY	BERGEN CO	BERGEN-PASSAIC, NY-NJ-CT	70	58583	94570	153153	108797	19252	7675	24136	40474	11479	X	X
NEW JERSEY	PASSAIC CO	BERGEN-PASSAIC, NY-NJ-CT	70	32263	52082	84345	59917	10602	4227	13292	22290	6322	X	X
NEW JERSEY	HUDSON CO	JERSEY CITY, NY-NJ-CT	70	38717	62500	101217	71903	12723	5072	15952	26749	7587	X	X
NEW JERSEY	HUNTERDON CO	MIDDLESEX-SOMERSET-HUNTERDON	70	6734	10871	17605	12506	2213	882	2774	4652	1320	X	X
NEW JERSEY	MIDDLESEX CO	MIDDLESEX-SOMERSET-HUNTERDON	70	44674	72117	116791	82966	14681	5853	18406	30865	8754	X	X
NEW JERSEY	SOMERSET CO	MIDDLESEX-SOMERSET-HUNTERDON	70	15099	24374	39473	28041	4962	1978	6221	10432	2959	X	X
NEW JERSEY	MONMOUTH CO	MONMOUTH-OCEAN, NY-NJ-CT	70	37982	61314	99296	70538	12482	4976	15649	26241	7443	X	X
NEW JERSEY	OCEAN CO	MONMOUTH-OCEAN, NY-NJ-CT	70	27482	44364	71846	51038	9031	3600	11323	18987	5385	X	X
NEW JERSEY	ESSEX CO	NEWARK, NY-NJ-CT	70	58933	95135	154068	109447	19367	7721	24281	40716	11548	X	X
NEW JERSEY	MORRIS CO	NEWARK, NY-NJ-CT	70	29337	47358	76695	54483	9641	3843	15649	20268	5749	X	X
NEW JERSEY	SUSSEX CO	NEWARK, NY-NJ-CT	70	8659	13978	22637	16081	2846	1134	3568	5982	1697	X	X
NEW JERSEY	UNION CO	NEWARK, NY-NJ-CT	70	35280	56952	92232	65520	11594	4622	14535	24374	6913	X	X
NEW JERSEY	BURLINGTON CO	PHILADELPHIA, PA-NJ-DE-MD	77	26929	43471	70400	50011	---	3528	11095	18605	---	X	
NEW JERSEY	CAMDEN CO	PHILADELPHIA, PA-NJ-DE-MD	77	34496	55686	90182	64064	---	4519	14212	23833	---	X	
NEW JERSEY	GLOUCESTER CO	PHILADELPHIA, PA-NJ-DE-MD	77	14805	23900	38705	27495	---	1940	6100	10229	---	X	
NEW JERSEY	MERCER CO	TRENTON, PA-NJ-DE-MD	77	22456	36250	58706	41704	---	2942	9252	15514	---	X	
NEW JERSEY	CUMBERLAND CO	VINELAND-MILLVILLE-BRIDGETON	77	9471	15289	24760	17589	---	1241	3902	6543	---	X	
NEW JERSEY	SALEM CO	WILMINGTON, PA-NJ-DE-MD	77	4578	7390	11968	8502	---	600	1886	3163	---	X	
TOTAL				533372	861015	1394387	990548	129395	69876	223313	368498	77154		
NEW MEXICO	BERNALILLO CO	ALBUQUERQUE, NM	0200	---	---	---	---	8790	---	---	---	7683		X
NEW YORK	JEFFERSON CO		36045	6342	10600	16942	11778	---	848	2608	4430	---	X	
NEW YORK	NASSAU CO	NASSAU-SUFFOLK, NY-NJ-CT	70	92610	154791	247401	171990	30434	12305	38088	64688	19713	X	X
NEW YORK	SUFFOLK CO	NASSAU-SUFFOLK, NY-NJ-CT	70	91840	153504	245344	170560	30181	12282	37771	64150	19549	X	X
NEW YORK	BRONX CO	NEW YORK, NY,NJ-CT	70	83552	139651	223203	155168	27457	11173	34363	58361	17785	X	X
NEW YORK	KINGS CO	NEW YORK, NY-NJ-CT	70	160524	268304	428828	298116	52752	21467	66019	112126	34169	X	X
NEW YORK	NEW YORK CO	NEW YORK, NY-NJ-CT	70	103460	172926	276386	192140	34000	13836	42550	72267	22022	X	X
NEW YORK	PUTNAM CO	NEW YORK, NY-NJ-CT	70	5712	9547	15259	10608	1877	764	2349	3990	1216	X	X
NEW YORK	QUEENS CO	NEW YORK, NY-NJ-CT	70	134631	225026	359657	250029	44243	18004	55370	94039	28657	X	X
NEW YORK	RICHMOND CO	NEW YORK, NY-NJ-CT	70	26222	43828	70050	48698	8617	3507	10784	18316	5582	X	X
NEW YORK	ROCKLAND CO	NEW YORK, NY-NJ-CT	70	18613	31110	49723	34567	6117	2489	7655	13001	3962	X	X
NEW YORK	WESTCHESTER CO	NEW YORK, NY-NJ-CT	70	60424	100994	161418	112216	19857	8080	24851	42206	12862	X	X
NEW YORK	ORANGE CO	ORANGE COUNTY, NY-NJ-CT	70	19719	32959	52678	36621	6480	2637	8110	13774	4197	X	X
NEW YORK	MADISON CO	SYRACUSE, NY	8160	---	---	---	---	1532	---	---	---	992		X
NEW YORK	ONONDAGA CO	SYRACUSE, NY	8160	---	---	---	---	10655	---	---	---	6902		X
NEW YORK	OSWEGO CO	SYRACUSE, NY	8160	---	---	---	---	2751	---	---	---	1782		X
TOTAL				803649	1343242	2146891	1492491	276955	107471	330520	561347	179389		

STATE	COUNTY	PRE-ADOLESCENT CHILDREN <5	PRE-ADOLESCENT CHILDREN 5-13	PRE-ADOLESCENT CHILDREN 0-13	ELDERLY (65+)	PEDIATRIC ASTHMA	ADULT ASTHMA	COPD (1)	POLLUTANT @ SO2	TSP	NO2
MINNESOTA	ANOKA	17696	27871	45567	27650	2774	6270	10726	X	---	---
MINNESOTA	CARVER	3272	5153	8425	5113	513	1159	1983	X	---	---
MINNESOTA	DAKOTA	18264	28766	47030	28538	2863	6471	11071	X	---	---
MINNESOTA	HENNEPIN	79032	124475	203507	123488	12388	28003	47905	X	X	---
MINNESOTA	OLMSTED	7840	12348	20188	12250	1229	2778	4752	X	---	---
MINNESOTA	RAMSEY	37920	59724	97644	59250	5944	13436	22985	X	X	---
MINNESOTA	ST. LOUIS	16152	25439	41591	25238	2532	5723	9790	---	X	---
MINNESOTA	SCOTT	4016	6325	10341	6275	630	1423	2434	X	---	---
MINNESOTA	WASHINGTON	10264	16166	26430	16038	1609	3637	6221	X	---	---
TOTAL		194456	306268	500724	68902	30481	67666	114913			
MISSOURI	BUCHANAN	6006	10725	16731	9438	1054	2353	4029	---	X	---
MISSOURI	ST. LOUIS	69524	124150	193674	109252	12201	27242	46642	---	X	---
MISSOURI	ST. LOUIS CITY	29841	53288	83129	46893	5237	11693	20020	---	X	---
TOTAL (2)		75530	134875	210405	118690	18493	29595	50672			
MONTANA	FLATHEAD	4624	7976	12600	6936	584	1566	2741	---	X	---
MONTANA	LEWIS AND CLARK	3712	6403	10115	5568	469	1257	2201	X	---	---
MONTANA	MISSOULA	6216	10723	16939	9324	785	2106	3685	---	X	---
MONTANA	SILVER BOW	2720	4692	7412	4080	343	921	1613	---	X	---
MONTANA	YELLOWSTONE	9608	16574	26182	14412	1213	3255	5696	X	---	---
TOTAL		26880	46368	73248	40320	3394	9105	15936			
NEBRASKA	CASS	1752	2847	4599	3066	283	613	1075	---	X	---
NEVADA	CHURCHILL	1224	2111	3335	1530	135	434	713	---	X	---
NEVADA	CLARK	45560	78591	124151	56950	5043	16141	26534	---	X	---
NEVADA	HUMBOLDT	848	1463	2311	1060	94	300	494	---	X	---
NEVADA	LYON	1376	2374	3750	1720	152	497	801	---	X	---
NEVADA	MINERAL	488	842	1330	610	54	173	284	---	X	---
NEVADA	STOREY	152	262	414	190	17	54	89	---	X	---
NEVADA	WASHOE	17968	30995	48963	22460	1989	6366	10464	---	X	---
NEVADA	WHITE PINE	608	1049	1657	760	67	215	354	X	---	---
TOTAL		68224	117686	185910	85280	7551	24170	39733			
NEW HAMPSHIRE	COOS	2380	4080	6460	4080	327	1243	1609	---	X	---
NEW JERSEY	WARREN	6076	9808	15884	11284	796	3310	4198	---	---	---
NEW MEXICO	BERNALILLO	42696	68314	111010	47440	5065	739	22385	---	X	---
NEW MEXICO	GRANT	2466	3946	6412	2740	293	928	1293	X	X	---
TOTAL		45162	72259	117421	50180	5357	16992	23678			
NEW YORK	ERIE	67529	112870	180399	125411	9031	36731	47169	---	X	---

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TABLE 5: ESTIMATES BY METROPOLITAN AREA OF POPULATIONS-AT-RISK OF ADVERSE HEALTH CONSEQUENCES IN AREAS CLASSIFIED AS NOT IN ATTAINMENT WITH NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) OF THE CLEAN AIR ACT FOR OZONE AND CARBON MONOXIDE. *

METROPOLITAN AREA	STATE(S)	CMSA, MSA OR COUNTY AREA (1)	PRE-ADOLESCENT CHILDREN <5	PRE-ADOLESCENT CHILDREN 5-13	PRE-ADOLESCENT CHILDREN 0-13	ELDERLY (65+)	CORONARY HEART DISEASE	PEDIATRIC ASTHMA	ADULT ASTHMA	COPD (2)	PREGNANT WOMEN	POLLUTANT (3) O3	POLLUTANT (3) CO
ALBUQUERQUE	NM	0200	---	---	---	---	8790	---	---	---	7683		X
ALLENTOWN-BETHLEHEM	PA-NJ	0240	45976	74788	120764	96784	---	6059	19066	32509	---	X	
ANCHORAGE	AK	0380	---	---	---	---	2788	---	---	---	5444		X
ATLANTA	GA	0520	204824	350761	555585	256030	---	24565	70928	120329	---	X	
ATLANTIC CITY	NJ	0560	20818	33606	54424	38662	---	2727	8577	14383	---	X	
BAKERSFIELD	CA	0680	40524	61281	101805	52385	---	4562	13777	23174	---	X	
BALTIMORE (4)	MD	0720	230153	378109	608262	328790	64655	16577	93762	154009	74755	X	X
BATON ROUGE	LA	0760	56403	90872	147275	62670	---	8120	16898	29571	---	X	
BEAUMONT-PORT ARTHUR	TX	0840	33822	52988	86810	37580	---	4782	10248	17851	---	X	
BIRMINGHAM	AL	1000	66503	123896	190399	111142	---	10714	25338	43830	---	X	
BOISE CITY	ID	1080	---	---	---	---	3687	---	---	---	3158		X
BOSTON-LAWRENCE-SALEM	MA-NH	07	246894	390537	637431	488667	107693	42725	102476	170456	49974	X	X
CINCINNATI-HAMILTON	OH-KY-IN	21	118307	219762	338069	202812	---	21009	47148	80358	---	X	
CHARLOTTE-GASTONIA ROCK HILL	NC-SC	1520	75786	133559	209345	126640	---	11734	30405	51227	---	X	
CHICAGO-GARY-LAKE COUNTY	IL-IN-WI	14	642532	1034046	1676578	975120	---	103106	228284	392082	---	X	
CHICO	CA	1620	---	---	---	---	3269	---	---	---	2849		X
CLEVELAND-AKRON-LORAIN	OH	28	193599	356775	550374	331884	58558	34806	77142	131341	40714	X	X
COLORADO SPRINGS	CO	1720	---	---	---	---	6799	---	---	---	6488		X
DALLAS-FORT WORTH	TX	31	328977	515397	844374	365530	---	46509	99684	173627	---	X	
DENVER-BOULDER	CO	34	---	---	---	---	33020	---	---	---	31510		X
DETROIT-ANN ARBOR	MI	35	322056	602705	924761	506088	91421	58936	127367	216061	68521	X	X

171X

METROPOLITAN AREA	STATE(S)	CMSA, MSA OR COUNTY AREA (1)	PRE-ADOLESCENT CHILDREN <5	PRE-ADOLESCENT CHILDREN 5-13	PRE-ADOLESCENT CHILDREN 0-13	ELDERLY (65+)	CORONARY HEART DISEASE	PEDIATRIC ASTHMA	ADULT ASTHMA	COPD (2)	PREGNANT WOMEN	POLLUTANT (3) O3	POLLUTANT (3) CO
LOUISVILLE	KY-IN	4520	67389	129422	196811	115524	---	11387	26874	46036	---	X	
MANCHESTER	NH	4760	---	---	---	---	2976	---	---	---	2278		X
MIAMI-FORT LAUDERDALE, WEST PALM BEACH-BOCA RATON-DELRAY BEACH	FL	56	256725	381420	638145	660150	---	35414	106734	186822	---	X	
MEDFORD	OR	4890	---	---	---	---	2957	---	---	---	2094		X
MEMPHIS	TN-AR-MS	4920	67801	124581	192382	116148	20363	10858	27031	45932	14385	X	X
MILWAUKEE-RACINE	WI	63	121763	209432	331194	211055	---	20517	45535	78182	---	X	
MINNEAPOLIS-ST. PAUL	MN-WI	5120	---	---	---	---	40642	---	---	---	35290		X
MODESTO	CA	5170	25961	39258	65220	33560	6208	2922	8826	14846	5411	X	X
MONTGOMERY	AL	5240	21820	40650	62470	36466	---	3515	8313	14381	---	X	
MUSKEGON	MI	5320	11095	20764	31859	17435	---	2030	4388	7443	---	X	
NASHVILLE	TN	5360	65142	119117	184259	111672	19740	10399	26338	44486	13929	X	X
NEW BEDFORD	MA	5400	11900	18700	30600	23800	---	1395	4944	8229	---	X	
NEW HAVEN (6)	CT		---	---	---	---	15423	---	---	---	8580		X
NEW HAVEN/MERIDEN	CT	5480	35840	56832	92672	30290	---	6995	14766	24816	---	X	
NEW LONDON-NORWICH	RI-CT	80	18200	29103	47303	100560	---	11621	7495	12551	---	X	
NEW YORK-NORTHERN NEW JERSEY-LONG ISLAND	NY-NJ-CT	70	1248520	2059386	3307906	2318680	410297	165578	517374	868652	257318	X	X
NORFOLK-VIRGINIA-BEACH-NEWPORT NEWS	VA	5720	91658	154509	246167	130940	---	13714	37378	61006	---	X	
OKLAHOMA CITY	OK	5880	---	---	---	---	20331	---	---	---	14295		X
PARKERSBURG-MARIETTA	WV-OH	6020	10290	20518	30808	20216	---	1843	4539	7667	---	X	
PHILADELPHIA-WILMINGTON-TRENTON	PA-NJ-DE-MD	77	431718	704679	1136397	868605	---	57690	178504	302813	---	X	
PHOENIX	AZ	6200	161517	247026	408543	233725	39788	18395	52218	91149	34861	X	X

172x

SOURCES

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3. U.S. Department of Commerce, Bureau of the Census, Local Population Estimates, Series P-26, No. 86-A (August 1987); Provisional Estimates of the Population of Counties: July 1, 1986.

4. U.S. Environmental Protection Agency, Control Program Development Division, Office of Air Quality Planning and Standards.

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6. National Center for Health Statistics: Advance Report of Final Natality Statistics, 1986.; Monthly Vital Statistics Report Vol. 37, No.3 Supp. DHHS Pub. No. (PHS) 88-1120.; Public Health Service, July 12, 1988.

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Submitted by NJ PIRG

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March 25, 1992

RECEIVED
MAR 30 1992
N.E.S.C.A.U.M.

To: Mr. Arthur Marin

From: Don Crane Don Crane

Subject: Meeting California's Emission Standards - An Update

In following up on your interest in reducing emissions from automobiles and other internal combustion powered vehicles, the attached recent information on the electrically heated converter (EHC) should be of interest.

As a re-cap, Clean Air Act automobile emission standards and the California automobile emission standards are:

	NMOG	CO	NO_x
Federal Std., 1995*	0.25	3.4	0.4
California Standards**			
TLEV	0.125	3.4	0.4
LEV	0.075	3.4	0.2
ULEV	0.040	1.7	0.2

*Mandated in California in 1993.
**(TLEV) Transitional Low Emission Vehicle; (LEV) Low Emission Vehicles; (ULEV) Ultra-Low Emission Vehicles.

The California standards were based in part on replicated test results of combining an EHC with stock original equipment (OE) converters on vehicles using regular gasoline. The EHC used in the California tests was a CAMET converter, produced by a unit of Grace.

Attached is a new product brochure for the Camet EHC, which includes durability and emission test results.

The emission reductions achieved on a 2.0 liter Toyota Camry engine shows compliance with the California LEV standard. The 600 hour aging test is a proxy for 100,000 miles of certification procedures.

Similarly the emission reductions for the 1990 Oldsmobile 2.3 liter Quad-4 engine (produced in the U.S.) shows compliance with the ULEV standard at the outset.

Over the last 18 months, significant advances have been made in this technology including: extending converter and component durability and reduction in power requirements for pre-ignition heating.

Please let me know if you would like additional information.

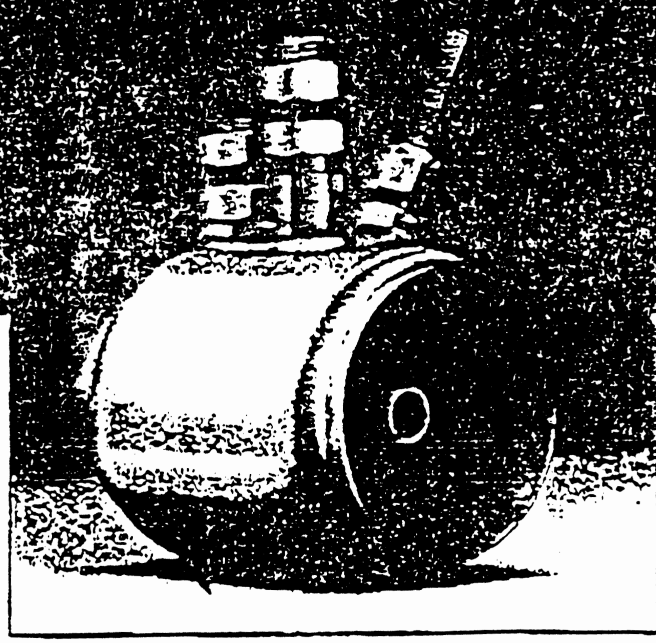
174X

EHC SYSTEM COST

	LOW	HIGH
EHC	$ 70	$ 90
PRECIOUS METALS	15	35
EHC BATTERY	20	30
POWER SWITCH	40	60
AIR PUMP	15	20
CABLING	15	20
UPGRADE ALTERNATOR	15	20
UPGRADE EEC MODULE	10	15
TOTAL	$200	$300

174X (a)

CAMET EHC
ELECTRICALLY HEATED CATALYTIC CONVERTER
REDUCES COLD-START VEHICLE EMISSIONS



For most cars, 80% of emissions originate in the first two minutes after a cold engine is started — before conventional converters can attain light-off and become active.

Camet® EHC's offer a practical solution for quick heating and reduction of cold-start emissions. In most test vehicles, Camet EHC's have demonstrated the ability to reduce emissions to levels that meet or exceed California LEV/ULEV emissions standards (in low mileage results).

An EHC is activated when energy is drawn from the vehicle's electrical system just before, or at the time of engine startup. Remote switching devices in combination with various heating strategies, including post-crank heating, can virtually eliminate user wait time. In many cases, no delay is required between turning on the ignition key and cranking the engine.

Camet EHC cores are specifically designed for rapid and uniform heating, yet they have sufficient mass to sustain light-off.

The business of Camet Co. is to provide a reliable supply of EHC devices — samples now, and production volumes later in the 1990's. Camet engineers are available to help Original Equipment vehicle manufacturers integrate the control components of the Camet EHC System into each platform (the power switches, relays and logic circuits that regulate the power required for the Camet EHC to reduce cold-start emissions).

The Camet EHC Support and Engineering Team is ready to assist you in attaining optimum emission control results.

Advances in battery and power control technology, engine technology, and converter design have made the EHC an attractive approach to solving tailpipe emission challenges.

Camet products are covered by many U.S. and foreign patents and patents pending.

CAMET

A Unit of W.R. Grace & Co.-Conn

Excellent Converter Durability

Tests performed on a 1986 2.0 liter Toyota Camry with a Camet EHC installed upstream of a standard OE ceramic main converter show that HC and CO emissions are significantly lower than when a standard, unhected OE converter is used alone.

Table 1 shows the performance of a Camet EHC after 300 and 600 hours of accelerated dynamometer aging (the equivalent of about 50,000 and 100,000 miles of driving, respectively) under emissions certification conditions.

TABLE 1 - COLD START PERFORMANCE: 300 and 600 Hours of Dynamometer Aging

		FTP TOTAL g/mi		
Condition	Mode	HC	CO	NOx
300 hours	Standard OE	0.22	1.96	0.29
300 hours	Standard OE + EHC	0.07	0.62	0.29
600 hours	Standard OE	0.25	2.39	0.45
600 hours	Standard OE + EHC	0.11	1.19	0.41

Camet EHC's survive hot vibration testing at 900°C with 50g 100Hz vibration, as well as thermal cycling engine tests with peak core temperatures of 900°C.

MAJOR IMPROVEMENT IN BAG 1 EMISSIONS

In the Federal Test Procedure (FTP) for gasoline-fueled and methanol-fueled cars, the Camet EHC typically demonstrates a 70-to-80% reduction in cold-start, or Bag 1 emissions of HC and CO. This corresponds to a substantial reduction of these emissions over the complete FTP cycle. Typically, NOx emissions are unchanged.

Using Camet EHC technology, automobiles have outperformed California Ultra-Low Emission Vehicle hydrocarbon standards in low-mileage testing.

The Camet EHC System is effective when using either pre-crank or post-crank heating strategies.

Table 2 shows FTP emissions data for a Camet EHC System installed on a 1990 Oldsmobile-Quad 4.

SUPPLEMENTAL AIR

An electrically heated converter requires either a stoichiometric or a slightly lean exhaust stream at all times during cold start, so that oxygen is available to oxidize the HC and CO.

Most electrically heated converter systems require the injection of supplemental air upstream of the catalytic unit for a short period during cold start.

When an electric air pump is used, the air pump speed and time (typically ranging from 30 to 120 seconds) can be precisely controlled by programming the Camet EHC System's Logic Module software through an IBM-compatible personal computer.

CAMET® EHC LOCATION

To improve the cold-start emission performance of existing engine exhaust systems, standard Camet EHC catalytic converters can be placed in series with conventional catalytic converters.

A single Camet EHC converter can be used in any single exhaust line. Or, if there is a need for close coupling to a V-block engine, a Camet EHC can be used in each of the dual manifold pipes.

TABLE 2 - FTP EMISSIONS DATA: 1990 Oldsmobile-Quad 4, With 4,000 Road Miles

		NON-METHANE HYDROCARBONS			
	HEATING STRATEGY	Bag 1 g/mi	% Reduction	FTP Total g/mi	% Reduction
Standard OE Converter	N/A	.58	—	.128	—
Standard OE + EHC	Pre-crank	.12	79	.029	77
Standard OE + EHC	Post-crank	.15	74	.034	73

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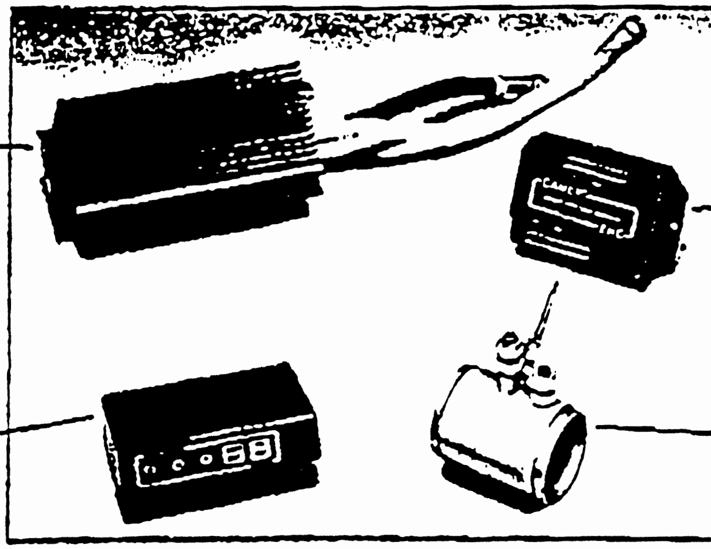
The CAMET® EHC System

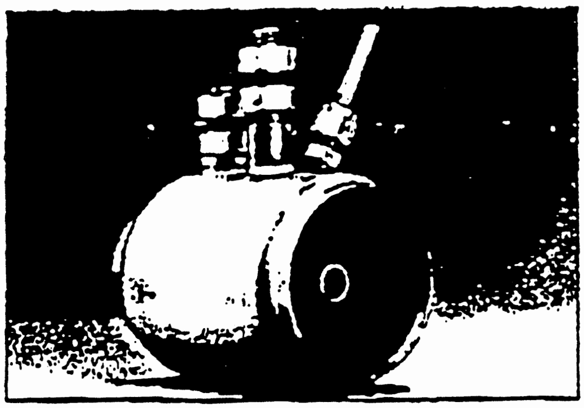


Temperature control and thermocouples are convenient for systems development purposes, but will probably not be utilized in mass production.

The Camet EHC System consists of the EHC catalytic converter (located upstream of a conventional OE converter in the exhaust system), and three dedicated system components that regulate the power required to operate the converter: the Power Module (usually located under the hood), Logic Module (mounted on the dashboard in the passenger compartment), and the Relay Module (usually located under the dash).

Continuous advances in power switching technology will affect the size and design of the EHC System components pictured. At the time an order is placed, Camet will provide the latest EHC System components.

CAMET™ EHC CATALYTIC CONVERTER



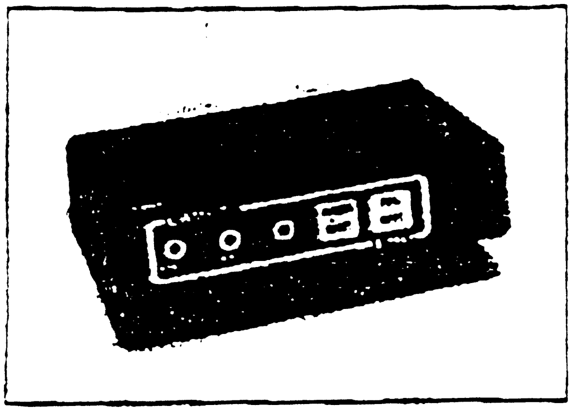
The Camet EHC catalytic converter consists of a metal casing and a metal core.

The stainless steel casing, or container, has positive and negative electrical connections, and a thermocouple for measuring temperature. (The thermocouple is for development purposes, and will probably not be utilized in mass production.)

Inside the casing, a core of metal foil is configured into a honeycomb shape, with appropriate electrical connections. The metal foil supports the catalytic materials, and also functions as the heating element.

Metal substrate catalytic converters have been commercially available for over a decade. They have been used in a variety of industrial environments, and in some automotive emission control applications.

LOGIC MODULE



The Logic Module contains a programmable microcontroller that manages the electrical power needed to regulate the temperature of the EHC catalytic converter. The microcontroller interfaces with IBM-compatible standard personal computers equipped with an RS-232 serial port.

Additionally, the Logic Module's software ensures that the EHC controls emissions regardless of ambient temperatures and driving conditions.

Using an IBM-compatible computer with an RS-232 port, the user can program the EHC System to:

- Utilize pre-crank or post-crank heating strategies.
- Activate either temperature control or time control heating strategies.
- Control electric air pump speed and time.
- Retrieve system data from an onboard EEPROM, including: number of hot and cold starts, number of long heats (cold starts), average battery voltage, and average heating time.
- Change control constants and ranges.
- Upgrade software without replacing the EEPROM.

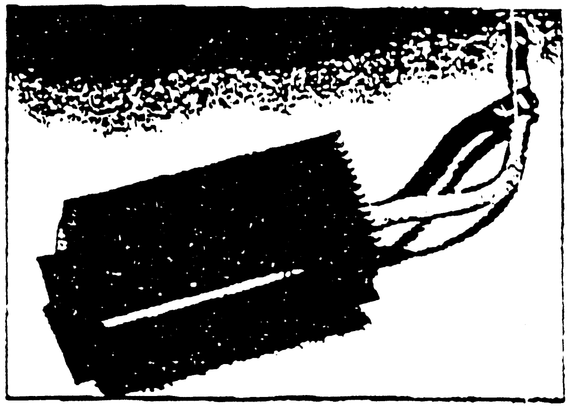
The Logic Module can be programmed while in the vehicle, or it can be removed from its quick-disconnect base and programmed on a desk.

Another function of the microcontroller in the Logic Module is to monitor battery condition. If the vehicle's battery is weak, power flow is reduced or terminated to avoid damage to the vehicle's electronic circuitry. This circuit logic assures that a driver will not be stranded because an EHC has taken too much power from the battery.

In addition, the microcontroller also manages interface logic, such as ignition on, starter interlock, and engine running. The interface logic can adapt to thermal switches on the engine block to select heating strategies, and can also work with an anticipatory device, such as a door switch or remote transmitter, to initiate the heating cycle.

The solid-state programmable Logic Module is mounted on a quick-disconnect base on the dashboard in the passenger compartment for easy access.

POWER MODULE

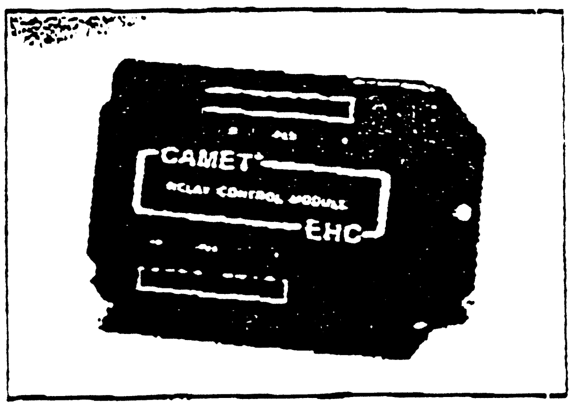


The Power Module uses the latest low-resistance MOSFET power switching technology to manage the power to run the Camet EHC converter, and to minimize power loss. The Power Module is capable of handling currents up to 800 amps.

This compact, safe and shock-resistant component gets its direction from the Logic Module, via modulated control signals. The Power Module measures ambient temperature prior to engine start, and feeds temperature information back to the Logic Module during operation.

The Power Module is usually located under the hood.

RELAY MODULE

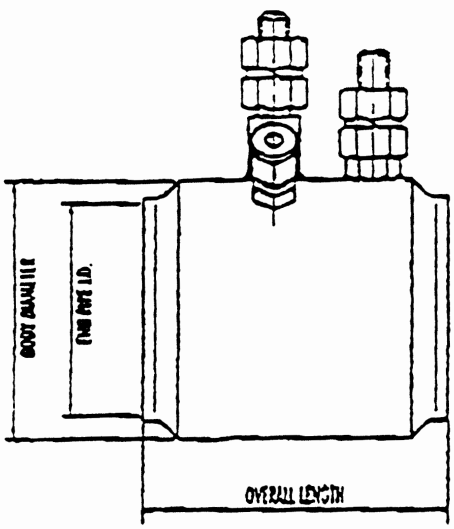


The Relay Module manages the system interface to standard automotive components, such as the starter, alternator and air pump.

The Relay Module is usually located under the dash in the passenger compartment.

CAMET® EHC
Specifications and Performance Characteristics

		Single or Dual		Single Only	
	Model Number	10-16	10-17	10-18	10-19
	Active volume (in³)	7.05	8.57	10.7	13.9
	(cm³)	116	140	176	227
	Nominal resistance, milliohms	30	24	16	13
ONE UNIT PER CAR	Rated volts	8.5	8.0	7.5	7.0
	Rated amps	280	330	480	540
	Rated watts	2380	2640	3600	3780
	Est. seconds to 650°F (343°C)	9.0	10.0	12.0	10.0
TWO UNITS PER CAR	Rated volts	7.5	7.0		
	Rated amps	250	290		
	Rated watts	1875	2030		
	Est. seconds to 650°F (343°C)	11.6	13.1		
	Body Diameter (in)	2.75	2.75	2.75	2.95
	(cm)	6.99	6.99	6.99	7.49
	End Pipe I.D. (in)	2.50	2.50	2.50	2.50
	(cm)	6.35	6.35	6.35	6.35
	Overall Length (in)	3.50	3.74	4.16	4.25
	(cm)	8.89	9.50	10.57	10.80



COST & AVAILABILITY

Standard Camet EHC converters are available from stock for qualified applications. Camet EHC's can be custom fabricated with alternate catalyst loadings or package designs.

Please consult Camet Co. for details.

LIMITATIONS

Camet EHC converters and systems are warranted for workmanship and materials only. Operating results cannot be guaranteed for individual vehicles, because results depend upon engine and air management strategy, the location of the Camet EHC converter, and interaction with other converters that may be in the system.

Camet products are covered by many U.S. and foreign patents and patents pending. Camet EHC Electrically Heated Converters are made in the U.S.A.

Camet Co.
12000 Wissbach Road • PO Box 6 • Hiram, Ohio 44234-0006
TEL 216/569-3745 • FAX 216/569-7636

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The American Society of
Mechanical Engineers

Please Reply To:
David Aronson, P.E.
9 Riverview Drive West
Upper Montclair, NJ 07043-2608
Legislative Agent No. 560
April 7, 1992

TO: Members of the Senate Environment Committee
and the Assembly Environment Committee

SUBJECT: Meeting Clean Air Act Amendment Standards

I represent the American Society of Mechanical Engineers (ASME). Our members include many who work in areas related to means of improving air quality. The March, 1992 issue of our society's monthly publication, MECHANICAL ENGINEERING contains an article on automotive transportation written by Robert Harmon. Mr. Harmon, an independent consultant in the field, prepared an extensive report for the U.S. Department of Energy. In the article he presents the views of the many people whom he interviewed in connection with future developments and critical analysis of what exists today. The views expressed are not necessarily the author's or of ASME, but show what those in the industry think.

Along these lines I would like to commend the N.J. Department of Environmental Protection and Energy for its exhaustive study of this subject and for its workshops and presentations at legislative hearings. I have a limited number of comments to offer in this connection. These, again, are not official views of the ASME but are opinions expressed by members of divisions in ASME concerned with aspects of this broad subject, and by engineering educators.

The Low Emission Automobile. Many new automobiles coming to the market now or which have been designed and manufactured recently qualify for the term "Low Emission". Unfortunately, older automobiles, for a number of reasons, have unduly high emissions. One approach to reducing these emissions is to remove such vehicles from the road. The other is to require extensive overhauls. The decision is to some extent outside of engineering. In this connection, there are proposals for extending the present emissions testing to include tests with the engine loaded. This will help to reveal the serious polluters. These comments are offered to lessen the emphasis on the contribution of low emission automobiles to the amelioration of the problem. Such cars are becoming more and more of the standard. Hopefully, in the near term, the gas turbine will be commercially available.

The American Society of Mechanical Engineers

Please Reply To:
David Aronson, P.E.

Meeting Clean Air Act Amendment Standards

The gas turbine has the characteristic of being able to burn a wide range of fuels. It would be designed for extremely low emissions.

Fuel Modification. One of the proposals which would reduce carbon monoxide emission in some spark-ignition engines is to add compounds which would introduce oxygen into the gasoline. This is a fix which would not be required in many of the newer design of engines, but which would raise the cost of fuel. Many new engines will operate with a lean mixture, that is one having an excess of air and therefore would not require oxygen in the fuel to complete combustion.

Zero Emission Vehicles. This term refers to storage battery powered electrically driven cars. The extremely low energy storage capability of batteries whether present or future design, limits the performance of such cars. This is partially overcome by making the cars smaller and lighter. I would point out that if such vehicles were to be powered with gasoline engines, the amount of fuel required would be so low as to provide a very low emission automobile. It is one thing to mandate the production of zero emission automobiles, but another thing to have the public buy them.

Storage battery powered vehicles may be suitable for delivery vehicles making frequent stops of short range. Such vehicles were common in the past and may have a role in the future.

In view of the emphasis on mass transit, mention should be made of the light rail trolley and the trackless trolley, both highly efficient compared with storage battery operation.

Alternate Fuels. Methane is about the only alternate fuel that is practical in terms of cost and availability. Recognition should be given to the fact that methane (natural gas) is ideally suited for space heating and co-generation gas turbine systems. Its use for automobiles diminishes the long range availability of this highly desirable fuel for stationary applications.

Hydrogen is not truly a fuel. It is essentially a component of a storage battery system in which electricity disassociates water into oxygen and hydrogen.

Other alternate fuels may have a role when the supply of oil runs low. Right now they are all much more expensive than gasoline.

Overall. Solutions involve an interplay of technology and social issues. It is therefore most appropriate that the legislative committees and the administrative departments are working together.

David Aronson

MVMA POSITION ON CALIFORNIA EMISSIONS STANDARDS IN NEW JERSEY

The nature and magnitude of the ozone problems in New Jersey do not compare to Los Angeles.

Major uncertainties about the benefits (emission reductions) of the program make adoption at this time premature.

> Examples: technological feasibility, in-use emission factors, state fuels policy, air quality modeling, potential for changes in CARB's rules

Despite the uncertainties, it is apparent that benefits over the federal program are extremely small and generally would be expected to occur well after the ozone attainment deadlines set forth in the CAAAs of 1990.

The program would be very costly to consumers.

New Jersey will forego no significant benefit by delaying consideration of the S.177 option for a few years so that the major uncertainties about the program can be resolved.

FREQUENCY OF OZONE EXCEEDANCES

SOUTHERN CALIFORNIA and NEW JERSEY LOCATIONS

MAY-OCTOBER 1988

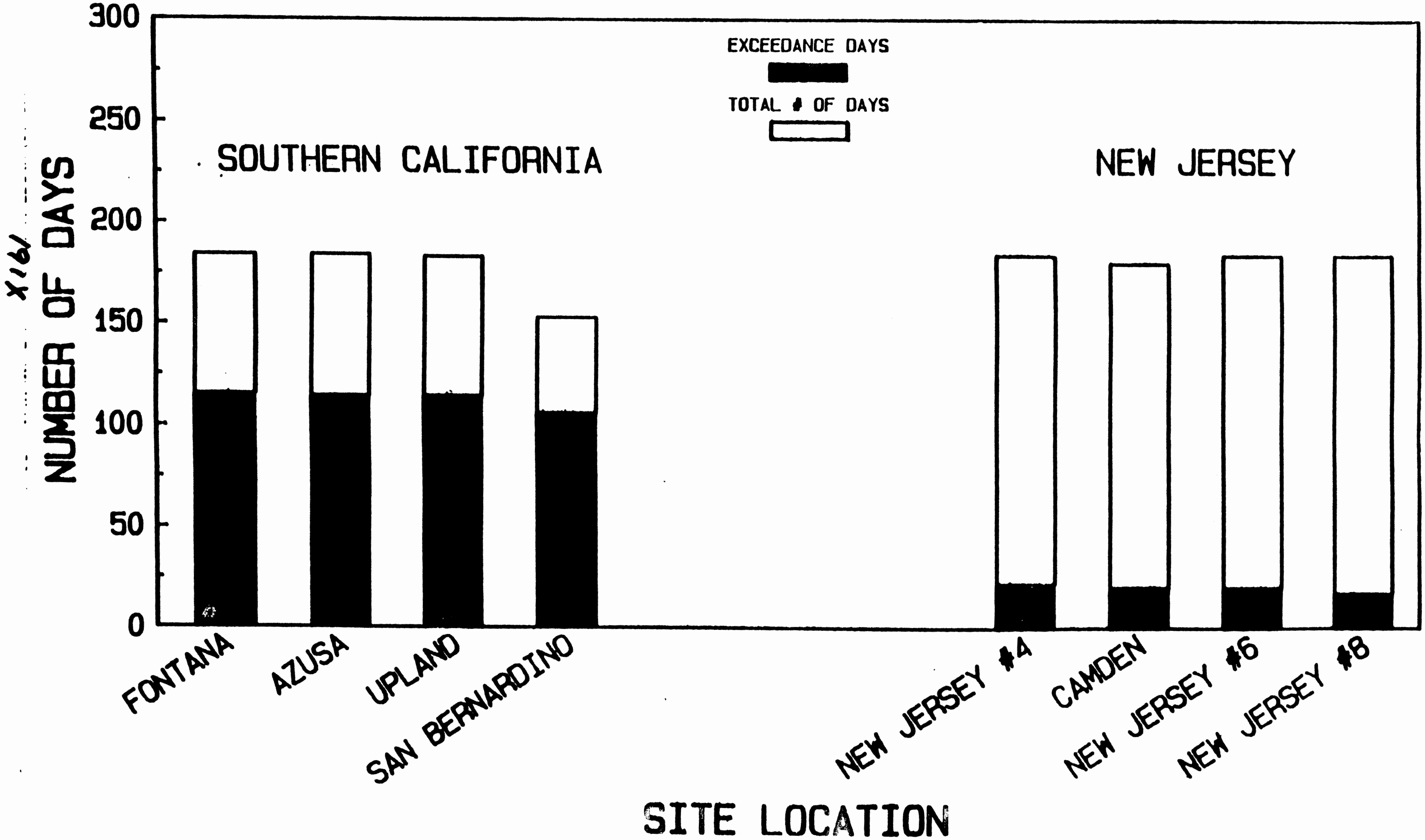
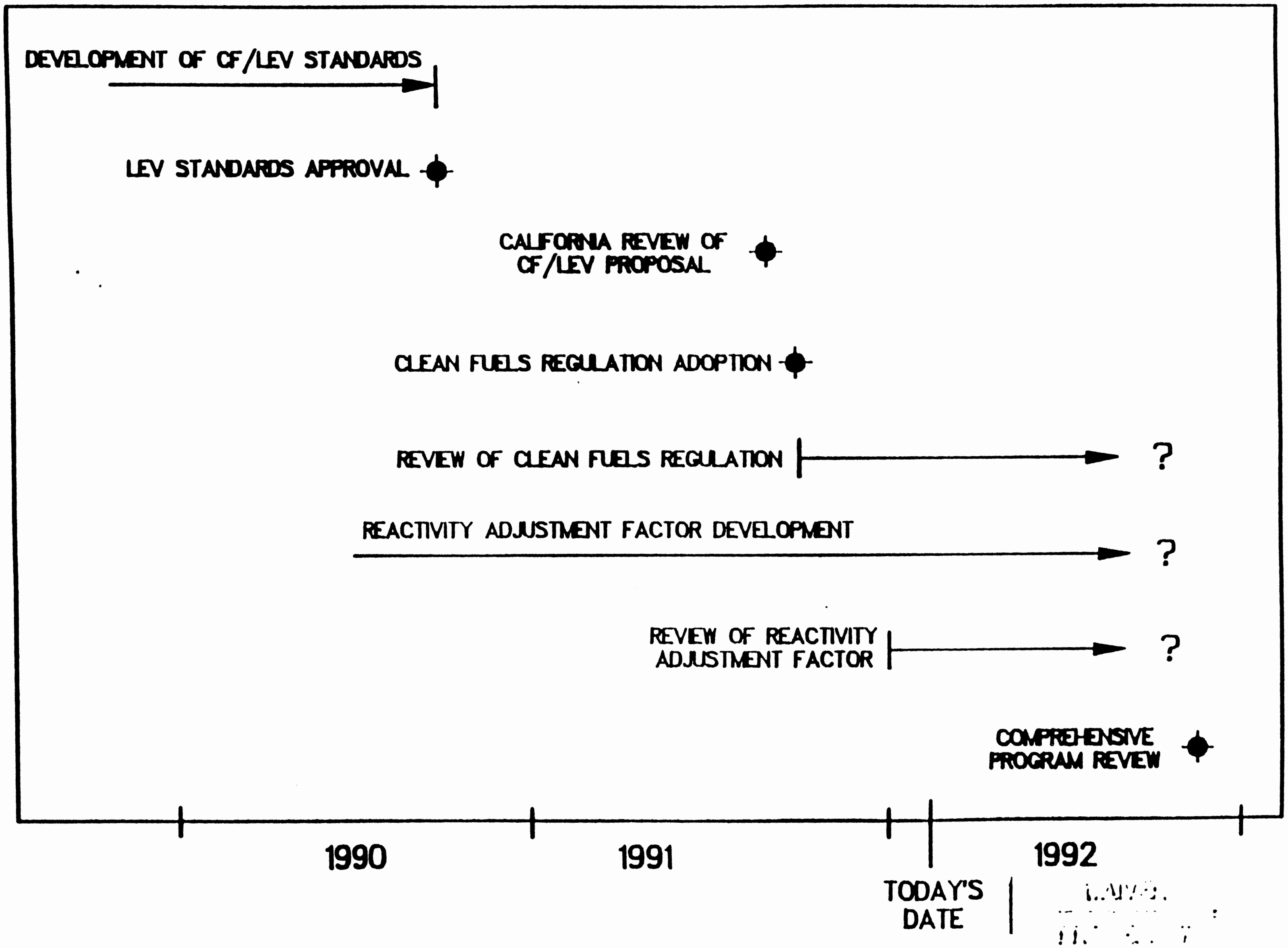


Table 1

A Comparison of Design Values Used to Designate Nonattainment Areas in the Northeast Corridor with Design Values Based on Recent Data

	DESIGN VALUES	
City	CAA	89/90/91
New York	0.201	0.175
Baltimore	0.194	0.144
Philadelphia	0.187	0.151
Hartford	0.172	0.170
Western MA	0.167	0.139
Wash DC-VA-MD	0.165	0.134
Boston	0.165	0.139
Portsmouth NH	0.165	0.143
Providence	0.162	0.150
Portland ME	0.156	0.152
Richmond	0.142	0.121
Reading	0.141	0.117
Norfolk	0.137	0.116
Allentown	0.137	0.116
Harrisburg	0.136	0.118

CALIFORNIA REGULATORY AGENDA



TECHNOLOGY/FUEL RAFS

[illegible] - Data to be provided to industry

	TLEV	LEV	ULEV
Phase 2	?	?	?
M85	.41	?	?
CNG	?	?	?
LPG	?	?	?

COSTS AND BENEFITS

195X

California Mobile Source Program
Fiscal Year 1991-1992

Regulatory Development	$ 6,800,000
Enforcement (Including Certification)	$16,500,000
Total	$23,300,000

N.T. costs

196x

Cost Estimate*

Electrically Heated Catalyst System

Component	Cost Estimate
Catalyst	224
Air Pump	98
Engine Controls	176
Battery	75
Wiring/Cables	79
Alternator	90
Remote Starter	152
Other	19
Assembly	98
Total Estimate	$1,011

* Automotive Consulting Group (September 10, 1991). Weighted Average for 4-, 6-, and 8-cylinder engines. Four-cylinder cost estimate: $1045.00.

Additional Maintenance Costs -- What the Experts Say

"The average life of today's lead-acid automotive battery is about four (4) years. The deep and rapid power drain required by the [electrically heated catalyst] will shorten battery life by an estimated one-half (1/2) its normal life. If this is the case, the vehicle owner would need to replace the battery at least three (3) times after warranty coverage expires. This additional cost would total $225."

-- Automotive Consulting Group
(Sept. 10, 1991)

Fuel Economy Penalty -- What the Experts Say

"While [Electrically Heated Catalysts or 'EHC'] technology has been demonstrated to reduce cold-start emissions, it has also proven that it will result in reduced fuel economy. A 40 pound mass increase will result in an average fuel penalty of .3 mpg while the higher electrical load over the thirty second heat cycle will result in a .6 mpg decrease. Using fuel costs of $1.25 per gallon, ACG conservatively estimates the additional fuel cost over the useful life of the vehicle at $176. If one were to consider the EHC and California Phase II reformulated gasoline, the added fuel cost would total $1,463."

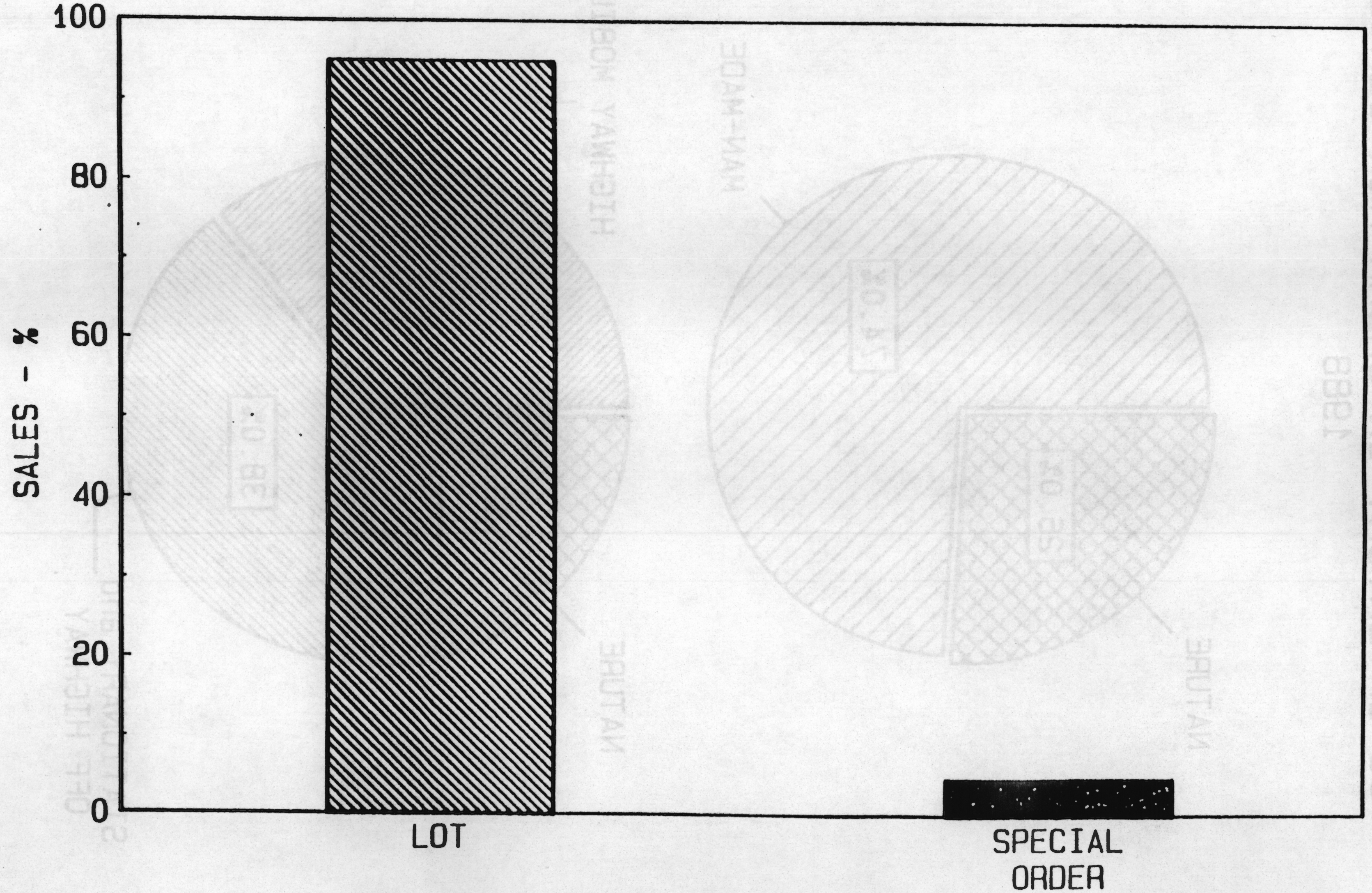
-- Automotive Consulting Group
(Sept. 10, 1991)

Impact of California Standards

"One could easily project a 10-15 percent decline in new vehicle sales as a direct result of the [electrically-heated catalyst's] added cost and consumer rejection of the delayed engine start."

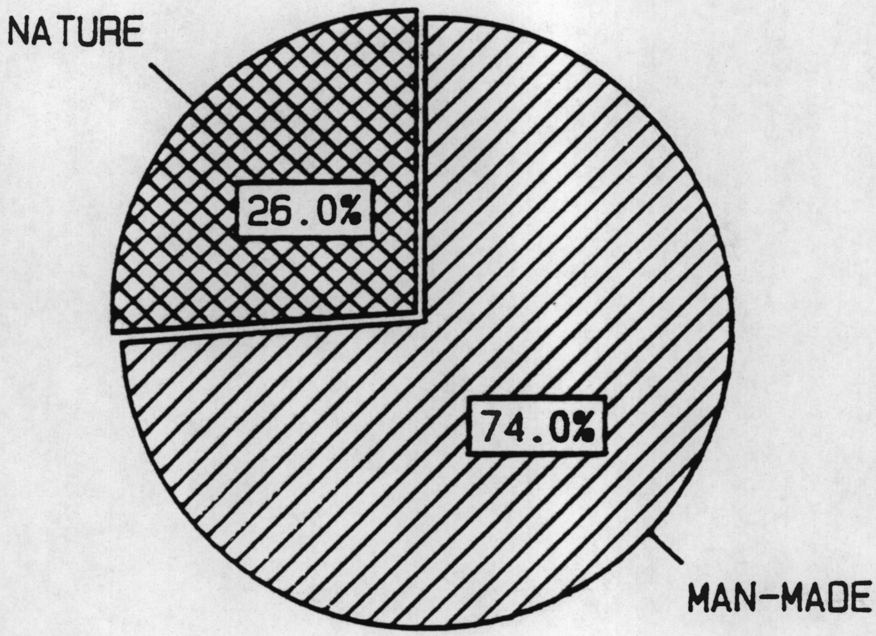
-- Automotive Consulting Group
(Sept. 10, 1991)

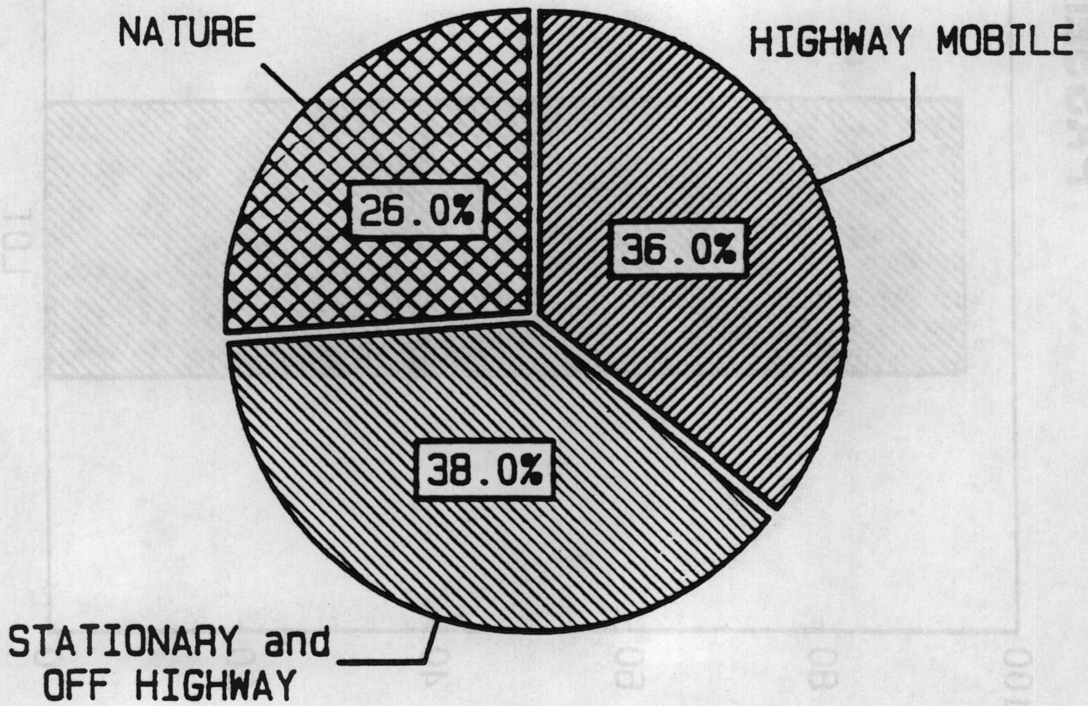
PASSENGER CAR SALES



x 201

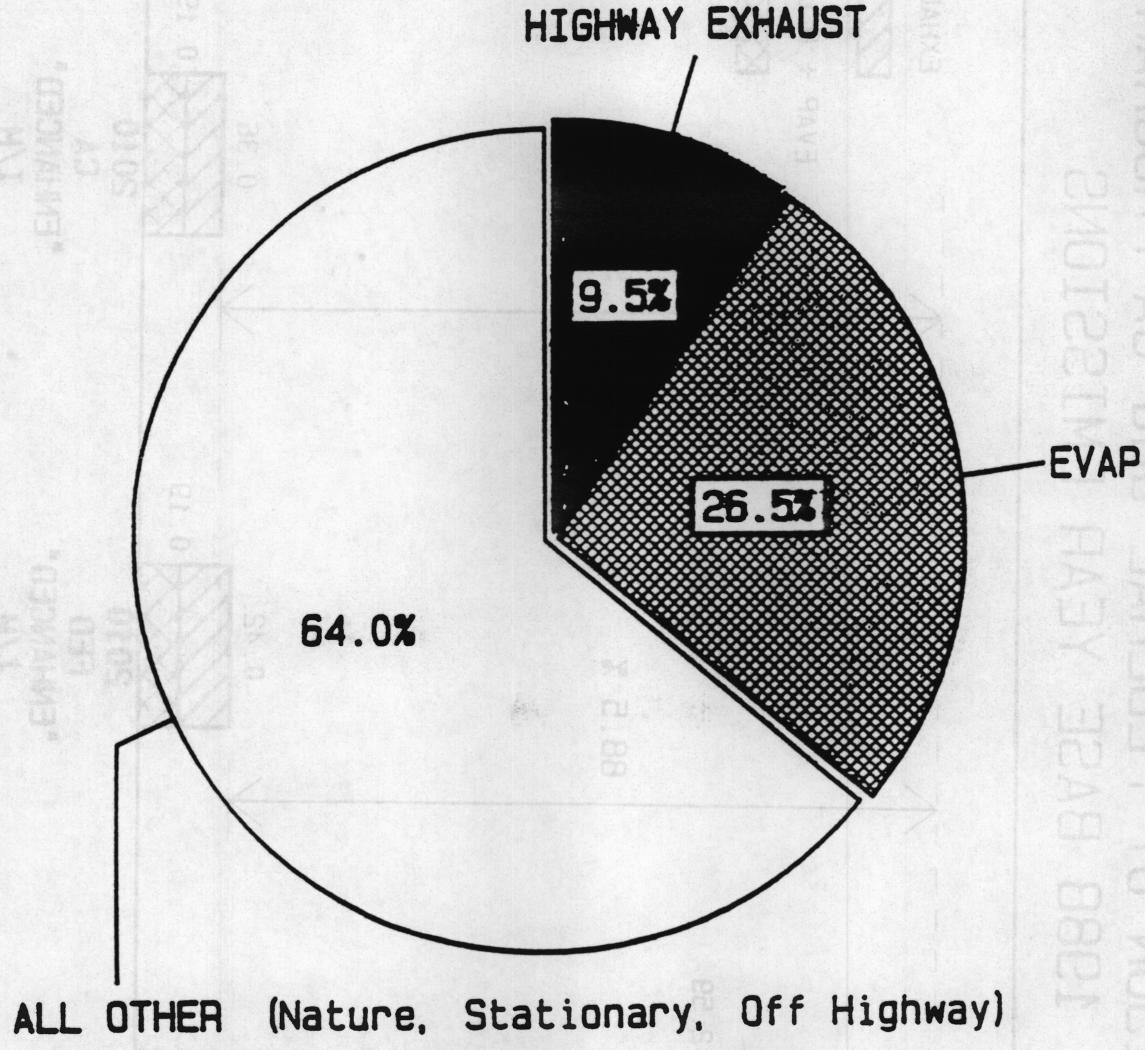
VOC INVENTORY IN URBAN NEW JERSEY
1988





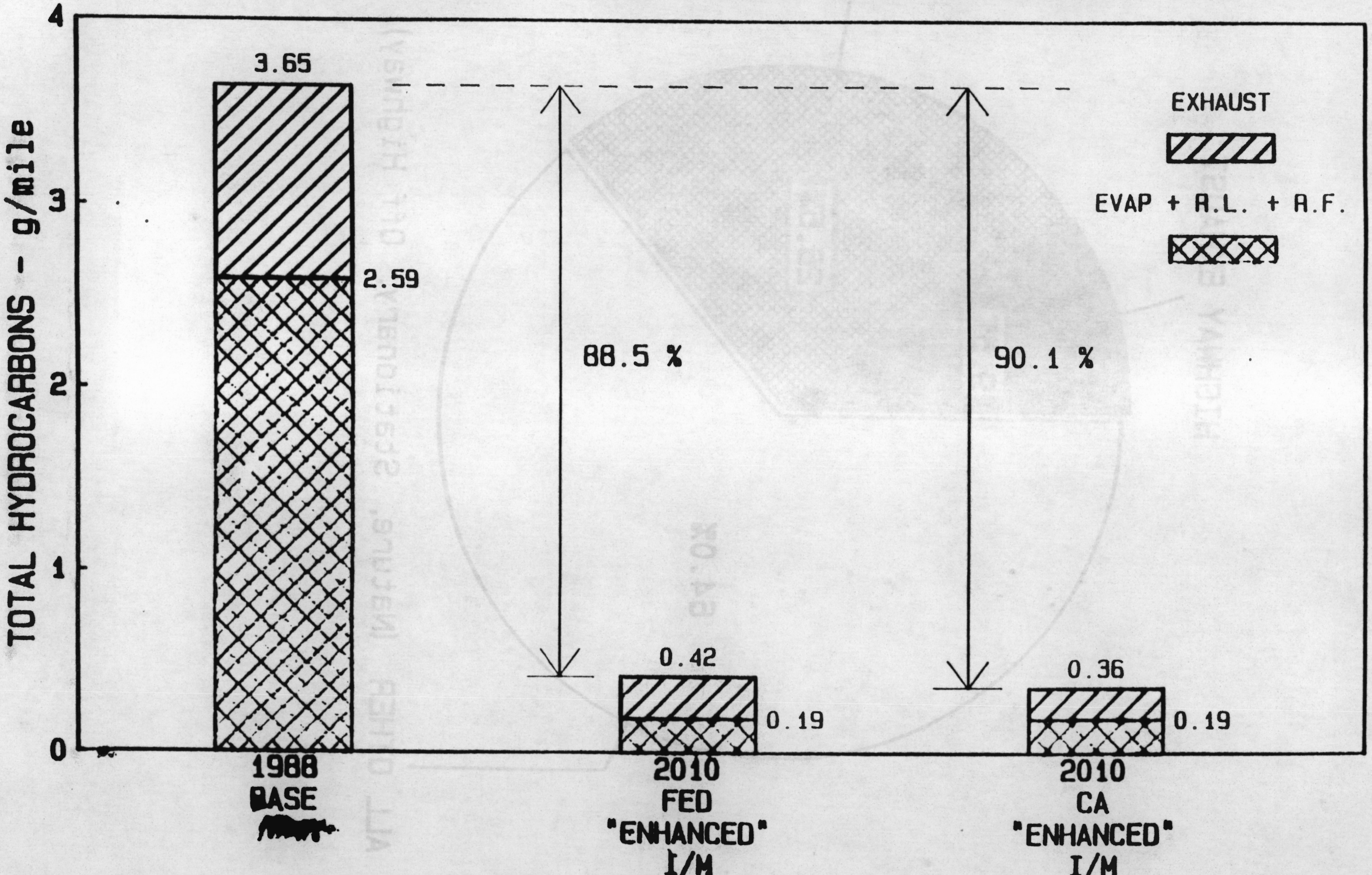
202X

HIGHWAY EXHAUST AND EVAPORATIVE EMISSIONS
% OF NEW JERSEY URBAN AREAS - 1988

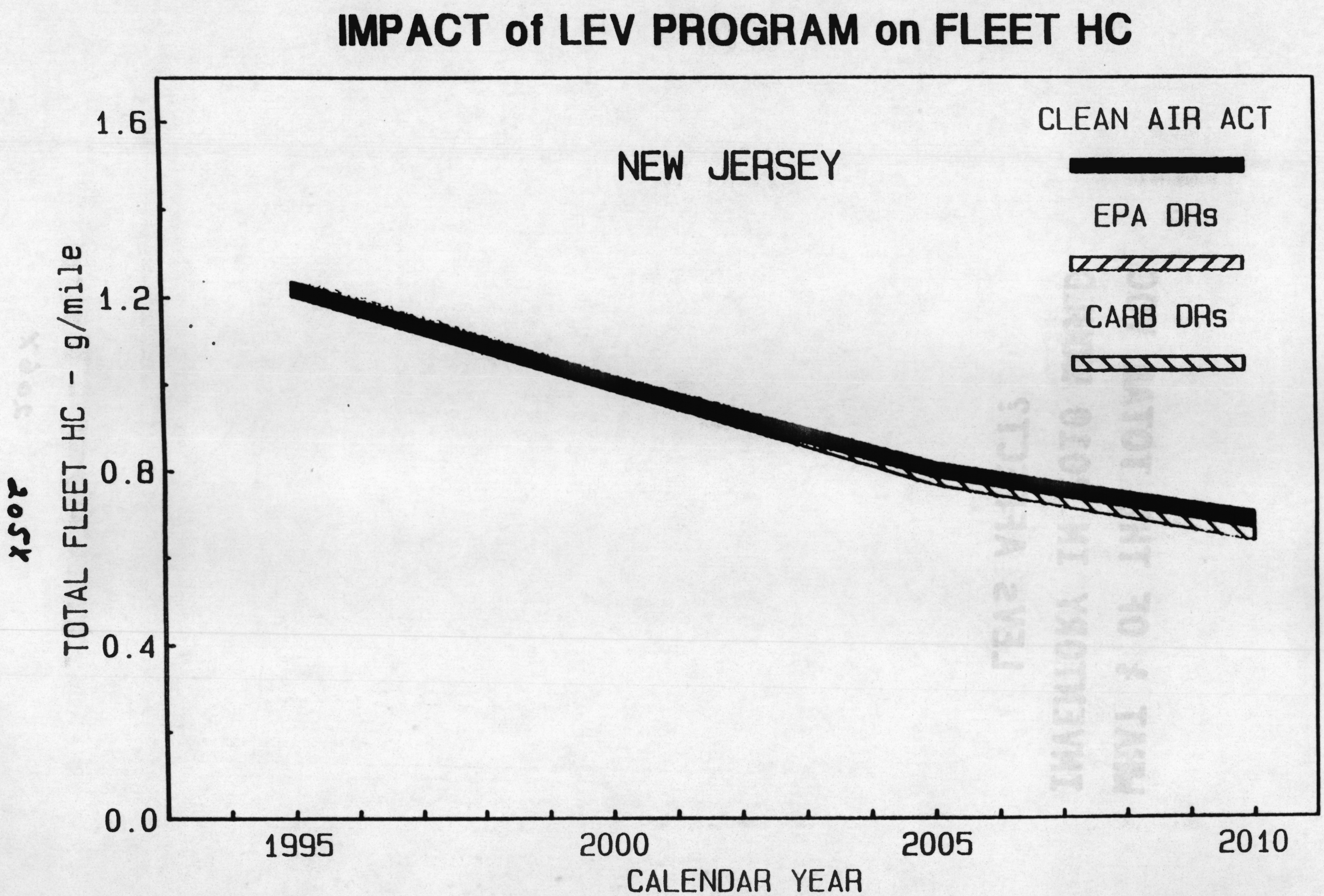


203X

COMPARISON of FEDERAL and CA PROGRAM TO 1988 BASE YEAR EMISSIONS



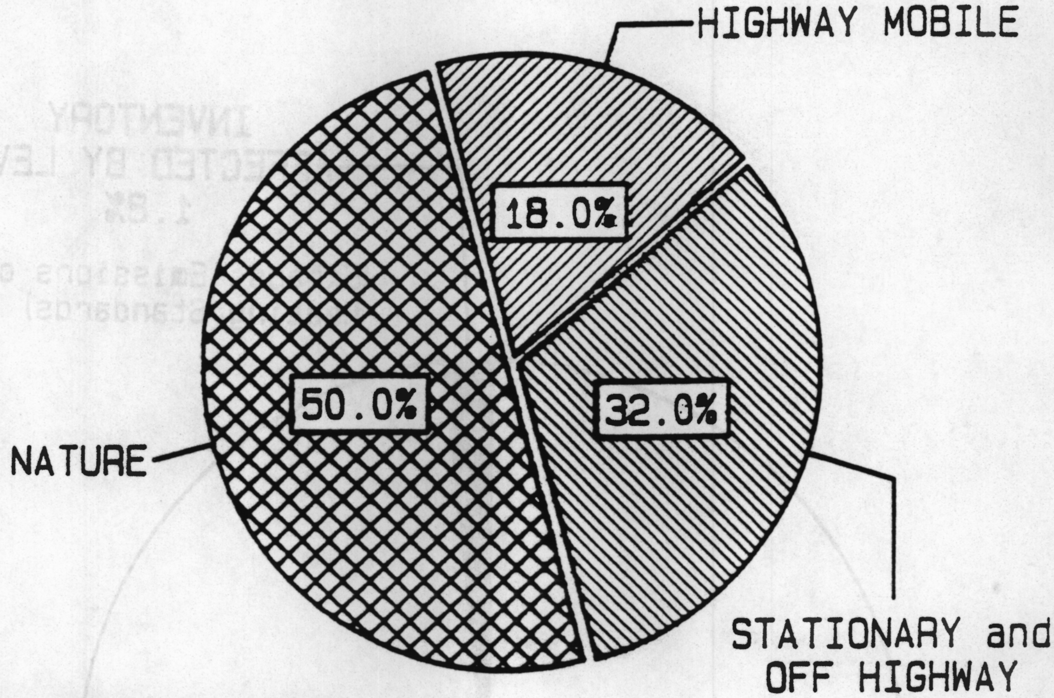
204x

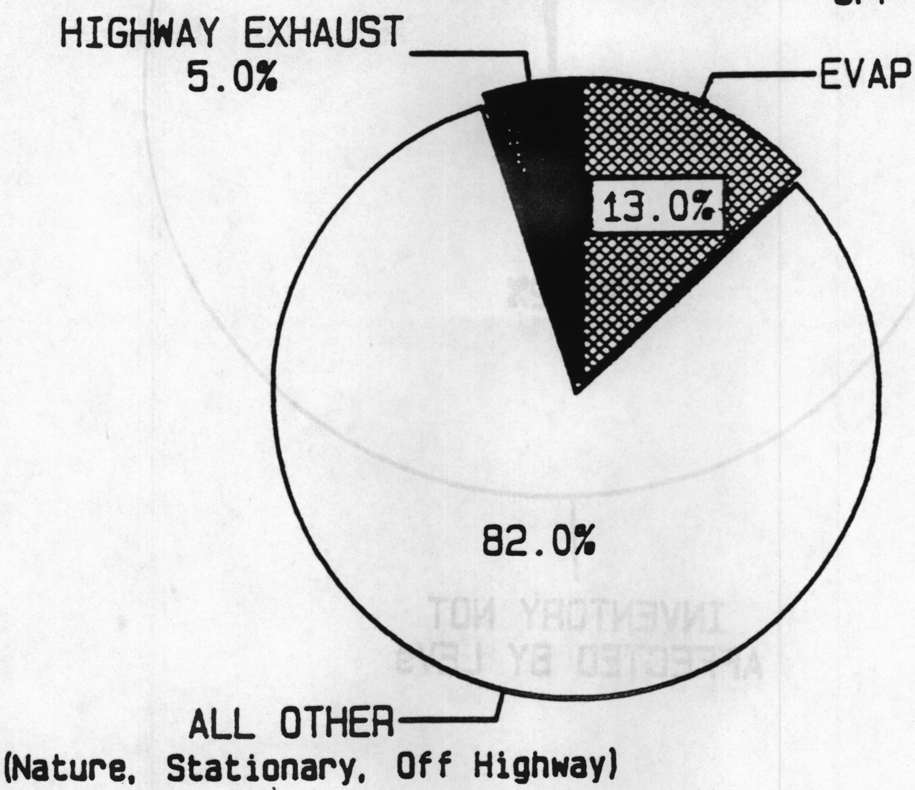

IMPACT of LEV PROGRAM on FLEET HC
NEW JERSEY
CLEAN AIR ACT
EPA DRs
CARB DRs
1.6
1.2
0.8
0.4
0.0
TOTAL FLEET HC - g/mile
1995
2000
2005
2010
CALENDAR YEAR
2052X

WHAT % OF THE TOTAL VOC INVENTORY IN 2010 WOULD LEVs AFFECT?

206X

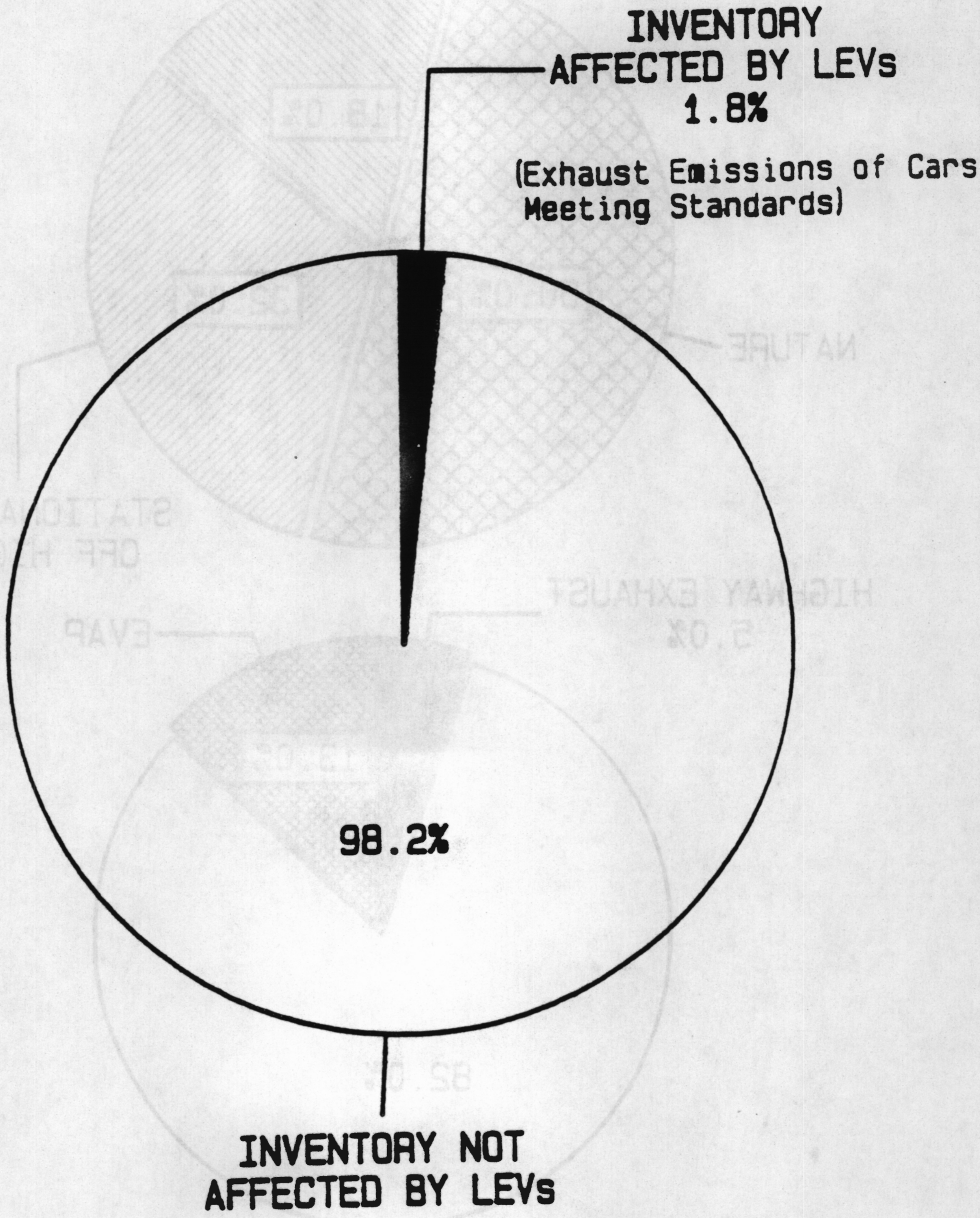
TOTAL VOC IN URBAN NEW JERSEY
2010

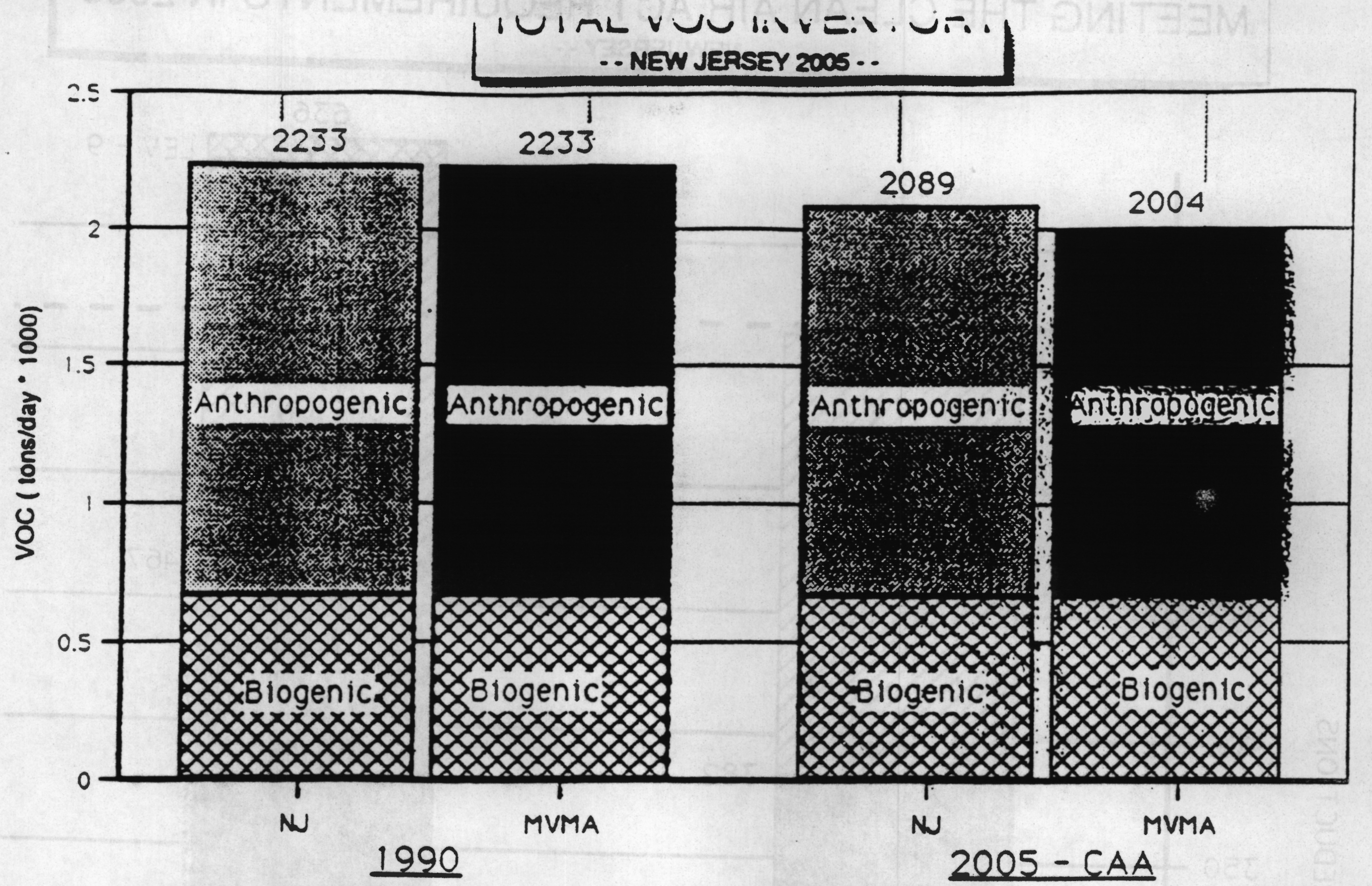


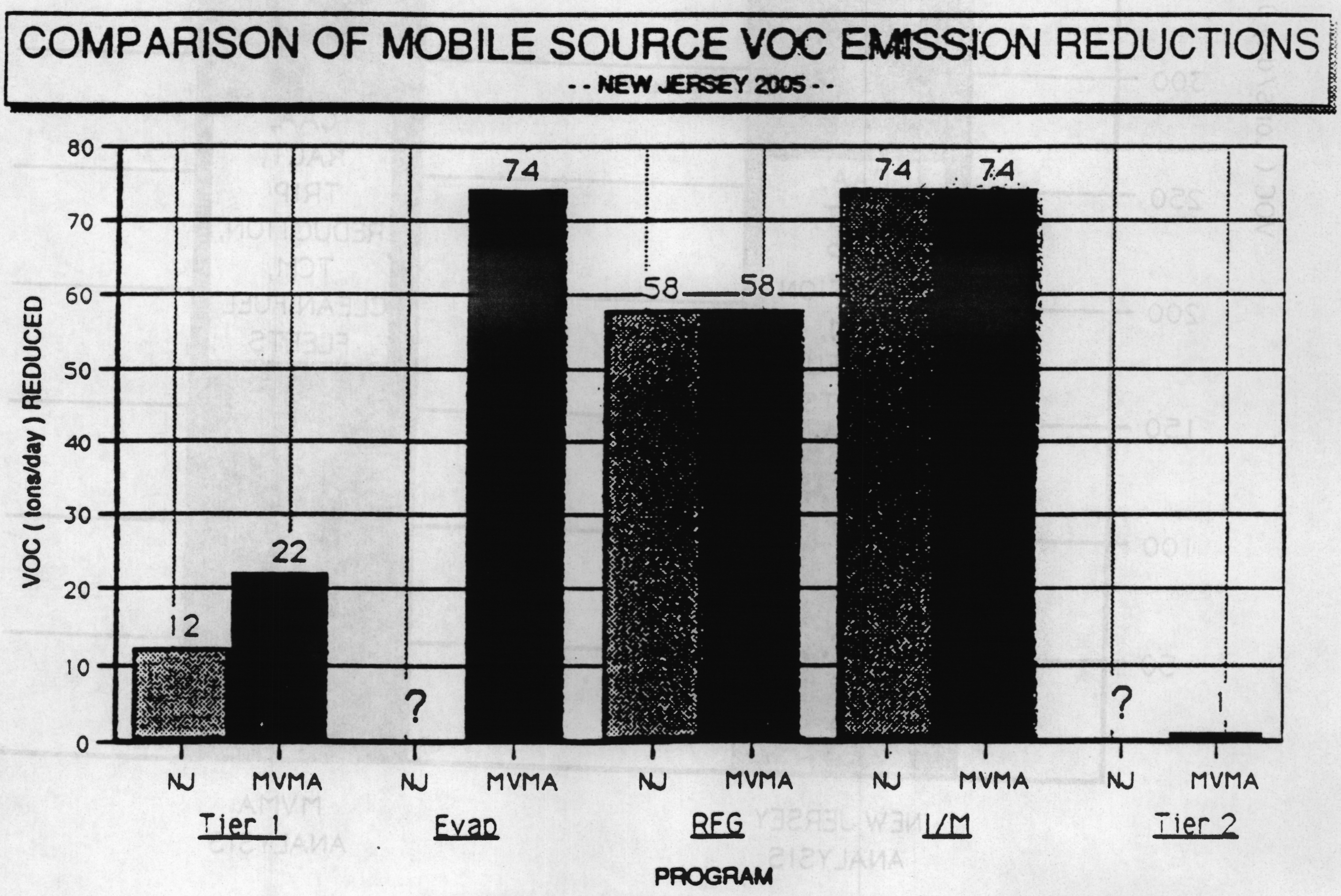


207X

TOTAL VOC POTENTIALLY AFFECTED BY LEV STANDARDS IN URBAN NEW JERSEY

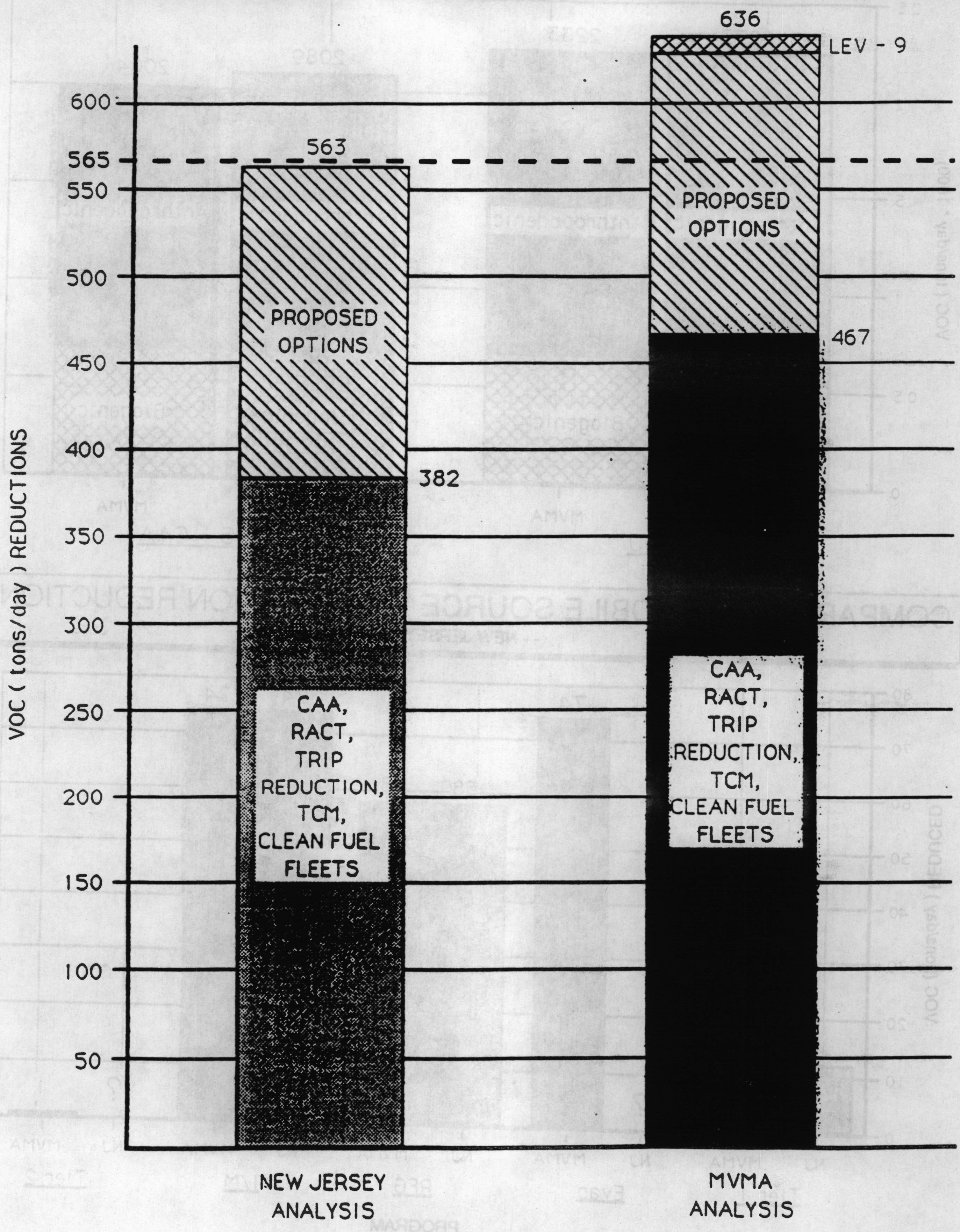



TOTAL VOC INVENTORY
- - NEW JERSEY 2005 - -
VOC (tons/day * 1000)
2233
2233
2089
2004
Anthropogenic
Biogenic
NJ
MVMA
1990
2005 - CAA
2.5
2
1.5
1
0.5
0


COMPARISON OF MOBILE SOURCE VOC EMISSION REDUCTIONS
- - NEW JERSEY 2005 - -
VOC (tons/day) REDUCED
12
22
?
74
58
58
74
74
?
1
NJ
MVMA
Tier 1
Evap
RFG
I/M
Tier 2
PROGRAM
80
70
60
50
40
30
20
10
0

209x

MEETING THE CLEAN AIR ACT REQUIREMENTS IN 2005
-- NEW JERSEY --



210X

EMISSIONS FROM OLDER CARS
NEW JERSEY*

IN 1990, THE OLDEST 30% OF THE CARS WERE DRIVEN 21% OF THE MILES, BUT CONTRIBUTED:

61% OF THE HC,

61% OF THE CO, AND

45% OF THE NOx EMISSIONS

* R.L. Polk Car Registration Data as of July 1, 1990.

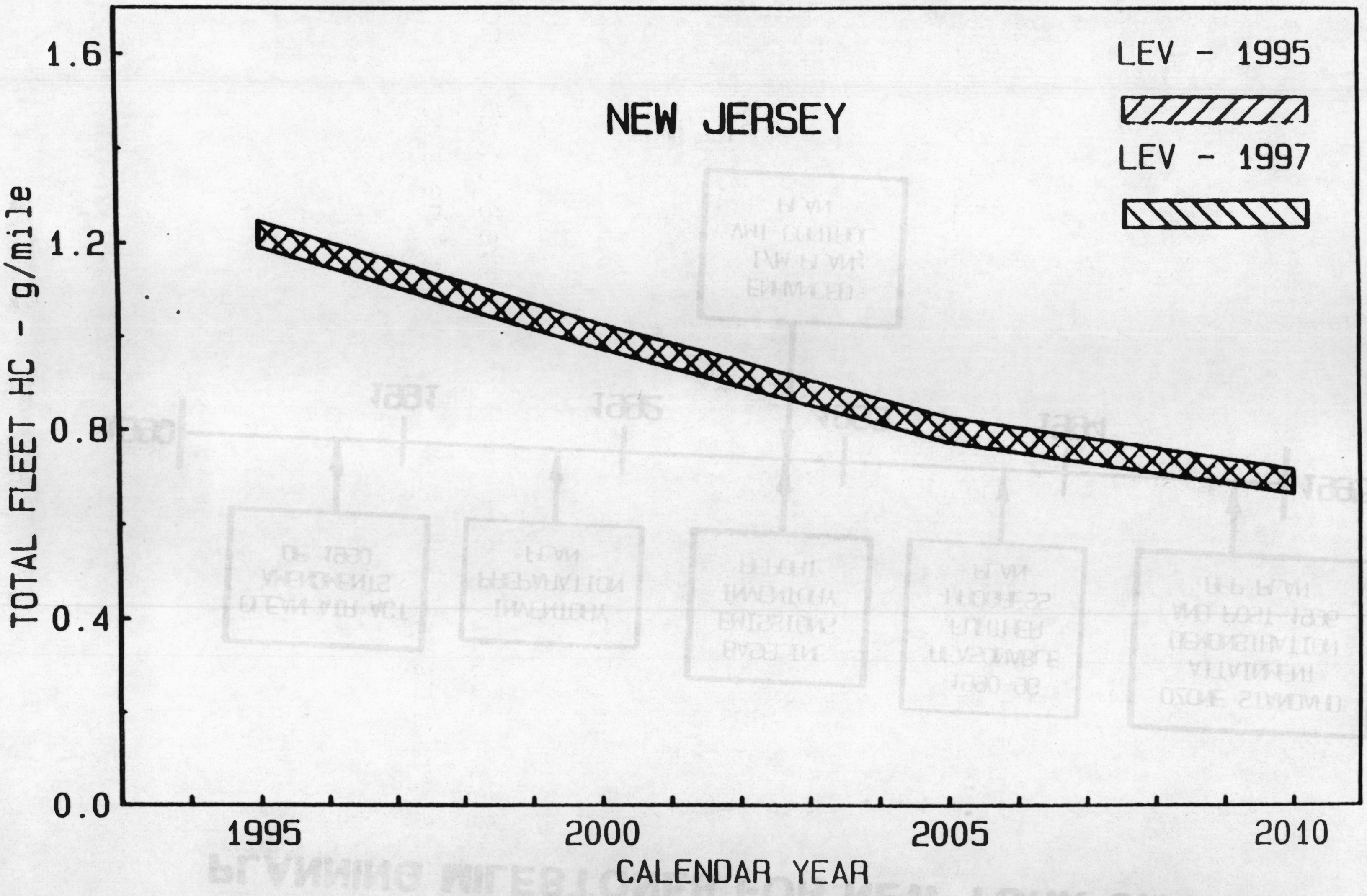
Quote in The Washington Post, November 15, 1991:

In an interview, the EPA's assistant administrator for air issues, William Rosenberg, said "it's so much cheaper" to tighten inspections for the 20 percent to 30 percent of cars now on the road that cause most pollution than to "go to the next generation of exotic cars."

"The less-polluting California cars, which would not go on sale until at least the 1994 model year, would not have an impact on reducing air pollution for several years beyond that," he said. "That would be after the 1999 deadline for the Washington area, deemed seriously polluted, to reduce smog levels so they no longer violate federal health standards," he said.

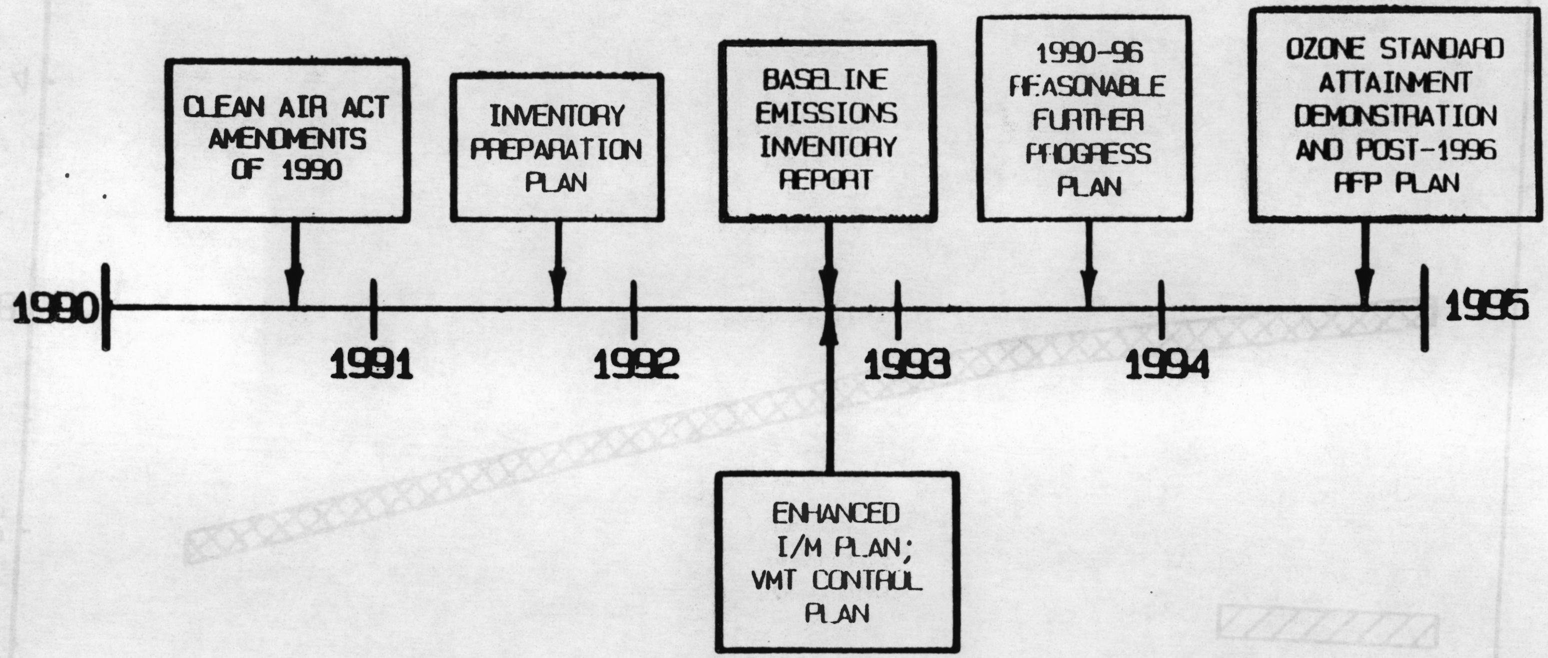
2/2x

IMPACT of LEV PROGRAM on FLEET HC



213X

STATE IMPLEMENTATION PLANS -- OZONE
PLANNING MILESTONES FOR NEW YORK CITY



New Jersey
Environmental
Lobby
204 West State Street, Trenton, NJ 08608 (609) 396 3774

Testimony before Joint Public Hearing of Senate and Assembly Environment Committees April 9, 1992

Re: California Car Standards (LEV)

The New Jersey Environmental Lobby represents some 1100 state and local organizations and individuals dedicated to the protection and preservation of New Jersey's natural resources. Nothing is of more basic concern than the air we breathe each and every day. To improve that basic element and ensure the health of the citizens of this state is the reason we come before you today in support of the adoption of the California car standards.

This single step is the cheapest, quickest and most effective move we can make toward attainment of the clean air standards as delineated under the federal Clean Air Act. New Jersey, as we all know, is second only to southern California in the severity of its ozone problems. It would certainly seem, therefore, that of all states in the union, New Jersey is the one that has the strongest incentive to adopt the California standards immediately.

Auto manufacturers will have to retool to new design standards eventually under the act. Providing ONLY the California standards or industry's own as the two alternatives lifts a burden from auto makers who feared a multiplicity of standards in the beginninng. Whether they retool now to meet safer, cleaner standards, or retool later to meet the federal law requirements, the need for change is imminent - only the timetable varies. The U.S. auto industry could well recover a large share of the market if they were to go to more stringent controls now. If they do not take advantage of this marketting opportunity, we fear that they will once again see Japan and the European manufacturers coming forward with their version of the "California car." American industry will lose market share again.

New Jersey has placed controls on stable sources of air emissions, but this is not enough. Since 1970 the frequency of those discharged from a hospital with a diagnosis of asthma has nearly tripled in the United States. For children under 15, the rate rose 43 percent from 1979 to 1987. Scientists have been unable to account for the increase.

However, studies have shown that asthma admissions are more prevalent in the summer months when ozone levels are highest. A study at the University of Toronto found that when patients inhaled air with 0.12 ppm of ozone, the health standard set by EPA, they became twice as sensitive to ragweed or grass allergies. Dr. William W. Busse of the University of Wisconsin Medical School stated that the studies confirmed that ozone pollution enhances the intensity of asthmatic reactions. The medical community had long susprecterd that this was the case.

The increased medical costs to society for the asthmatics and others with allergies and sensitivities thus intensified is very high indeed. And all of this can be lessened if we control ozone, the result of tailpipe emissions. The low emission vehicle is the first step in controlling these health problems.

New studies have shown that levels of ozone as low as 0.08 ppm can cause health problems. According to the American Lung Association, smog concentrations in 182 metropolitan areas in this country exceed that level in the summer months. We are literally poisonning our populace with our proclivity for single occupancy vehicles. Unless we are willing to make major changes in our lifestyles NOW, we will have to turn to low emission vehicles and ever more stringent standards just to maintain current levels of pollution. We cannot afford "business as usual."

The low emission vehicle is not a complete answer to New Jersey's air pollution problems, but it is a major first step. We cannot delay any longer.

[illegible] P01

MEMBER

NEW JERSEY TOURISM COALITION

New Jersey Amusement Association

48 NARRUMSON ROAD, MANASQUAN, NEW JERSEY 08736 • PHONE (908) 223-4445 • FAX (908) 223-4579

April 7, 1992

The New Jersey Amusement Association, representing 180+ members, is deeply concerned about the proposal to require California standards for motor vehicles.

Keeping transportation costs under control is a critical factor to our bottom line and profitability.

The majority of our members operate seasonally from a fixed location and their income is critically tied to tourism dollars. These are dollars that come in the form of families traveling by motor vehicle to our resorts and theme parks, the majority of which are not served by public transportation.

It is our understanding that the proposed California motor vehicle standards for New Jersey could add an additional [illegible] to the price of a motor vehicle together with an increase in motor fuel of up to 24 cents per gallon.

These are devastating increases for our members to pay as well as for the tourists who's disposable income dollars from both inside and outside New Jersey [illegible] essential to our business [illegible]

We ur[illegible] with sound [illegible] that [illegible] on New J[illegible] tourism industry.

Sincerely,

NEW JERSEY AMUSEMENT ASSOCIATION

Martin L. Shapiro

Martin L. Shapiro
President

[illegible]

Shotmeyer Bros. Petroleum Corp.
10 WAGARAW ROAD
HAWTHORNE, NEW JERSEY 07506
PHONES: (201) 427-1000 (201) 835-1000
FAX: (201) 427-6363

April 1, 1992

The Honorable Maureen Ogden
Chairperson
Assembly Environment Committee
266 Essex Street
Millburn, New Jersey 07041

Dear Assemblywoman Ogden:

It has come to my attention that the New Jersey Department of Environmental Protection and Energy (DEPE) will be holding hearings, dealing with Low Emission Vehicle standards called for by the 1990 Clean Air Act.

We strongly believe in improving air quality in our state as well as the nation. When it comes to choosing the ways to do it, we support the most cost effective solutions that get the greatest results.

Faced with the nation's most severe smog problem, California has chosen to adopt this high - cost , low benefit program. The program was developed to address conditions specific to California - including its unique climate, geography, large population growth and vehicle concentration.

Adverse Economic Impact - Data Resources, Inc., a leading economic consulting firm, found that average gasoline costs would rise as much as 24¢/gallon for severely reformulated (California) gasoline that may be needed for these California cars. In addition, auto manufacturers project that these new requirements would increase the manufacturing cost of a new car by $500-600. These addi-tional cost for automobiles and fuels would effectively reduce personal income significantly resulting in a substantial loss of jobs and major state tax revenue decreases. These costs and the California program's extraordinarily high cost for removing smog-forming chemicals from the air ($84,000 per ton), make the program one of the least cost-effective measures for emissions reductions.

I know that Governor Florio and Commissioner Scott A. Weiner are sold on the California legislation. This type of legislation is wrong and will only hurt the citizens of our fine State.

Sincerely,

Henry Shotmeyer Jr.

Henry Shotmeyer Jr.

Mobil

Arthur Vetter, Jr.
12 Winterberry Ct.
Mt. Laurel, NJ 08054

APR - 9 1992

April 7, 1992

Assemblywoman Maureen Ogden
266 Essex St.
Millburn, NJ 07041

RE: Bill A.644
California Emission Bill

Dear Assenblywoman Ogden:

Please register my opposition to the passage of The New Jersey adoption of the California Emission Standards.

We all want clean air, but it's how to achieve it economically. Quite frankly we have witnessed attempts to do something about clean air but most fail. California has a unique environmental problem where emissions are caught in the confines of their mountain ranges. New Jersey does not have this problem. Also, even though California has their emission bill in place for 15 years it has not improved air quality.

We have also witnessed New Jersey putting in vapor recovery at gas stations. This is another flop as there is no improvement in air quality because of it. In addition the cost to employ the system drove up the price of gas.

The cost factor to meet the standards would add substantial cost to automobiles and the cost of a gallon of fuel. In fact, according to industry spokesman the cost could go up 20 cents a gallon more. Also, the cost to upgrade vehicles for people moving into New Jersey would be prohibitive thus deterring migration and hurting our economy.

If the State is interested in clean air lets work together to achieve it. For every 1 cent increase in the cost of gasoline, as a result of the new standards, cut the State tax on gas by an equal amount.

Work together with Oil Companies and Automotive Manufactures in order to produce clean fuel and vehicles Nationally not just State by State.

Thank you for your time and hopeful OPPOSITION vote to this bill.

Sincerely,

Arthur Vetter

Arthur Vetter, Jr.

NEW JERSEY STATE GRANGE, P of H

JOHN U. MAPLE, Master 2785 Main Street, Lawrenceville, New Jersey 08648 (609) 896-0935

April 1, 1992

The Honorable Maureen Ogden
266 Essex St
Millburn, N.J. 07041

Dear Assemblywoman Ogden:

The New Jersey State Grange is composed of active farmers, decendents of farmers and others deeply interested in rural affairs.

Highway Transportation is essential to our daily livelihoods. We are particularly concerned about its cost.

Such proposals as imposing California car standards on New Jersey gives us great concern. Our information tells us that these regulations may add another $1,000 to the cost of a vehicle and a possible 24 cents per gallon increase for the necessary California fuel.

We are also unsure about the scientific basis for all of this. We understand that even California has not really determined what the "California Standard" will be.

It seems literally foolish for New Jersey to adopt something developed in California which has not even been defined.

Given the enormous cost, we believe that caution should prevail, and urge you to thoroughly study the matter before you allow these laws to be imposed on the citizens of our state.

Sincerely,

John U. Maple

State Master

220X

The Honorable Maureen Ogden,

266 Essex Street

Millburn, New Jersey, 07041

APR = 1992

Dear Assemblywoman, Ogden,

April 2, 1992

The New Jersey Rural Letter Carriers Association is an association who's members drive to make a living by performing an essential service in delivering the U.S. Mail to rural New Jersey citizens.

We know first hand the road and safety conditions that face rural New Jersey motorists. We also know the ever-increasing costs associated with day to day driving (on our State's roads and bridges). Keeping vehicle costs under control and affordable, is vital to how we do our job.

We are deeply concerned about the impact the proposed California low vehicle emission standards will have on our members ability to purchase and operate motor vehicles in the coming years.

We respectfully ask the Legislature to go slow and to use caution in studying the California LEV proposal before endorsing any program which will add cost to our business operations.

We thank you for your concern and consideration in this matter!

Sincerely,

Clifford W Perrine

Clifford W. Perrine,
New Jersey Rural Letter Carriers' Assn.
Repres. N.J. Highway Safety Council
1 Merritt Drive--Lawrenceville, N.J.
08648

221X

Mobil Oil Corporation

3225 GALLOWS ROAD
FAIRFAX VIRGINIA 22037-0001

J. T MANN
VICE PRESIDENT — MARKETING
MARKETING AND REFINING DIVISION — U S

April 3, 1992

The Honorable Maureen Ogden
Chairperson
Assembly Environment Committee
266 Essex Street
Millburn, New Jersey 07041

Dear Assemblywoman Ogden:

On behalf of Mobil, I am writing to express support for your Committee's recognition that New Jersey's clean air future requires legislative representation of the public interest as well as consideration of the concerns of the Department of Environmental Protection and Energy (DEPE). Determining the measures that will achieve clean air standards for the State is a complex issue that demands careful consideration with the legislature's involvement and guidance. Sufficient time must be taken for study before measures are adopted that may not be right for New Jersey and its citizens.

One example of a rush to premature judgment is the DEPE's proposed regulations for California Low Emission Vehicle (LEV) standards. Mobil supports implementation of the federal Clean Air Act Amendments (CAAA) and we feel that the measures already mandated by the CAAA will help New Jersey meet clean air goals. (Some of these measures include stricter nationwide tailpipe emission standards, enhanced vehicle emission inspection and maintenance programs, reformulated gasoline and fuel vapor control requirements.) The Clean Air Act Amendments do not require New Jersey to adopt the California LEV program. Rather, the LEV program represents a discretionary step beyond the CAAA. The program was developed specifically for California to address its extreme smog problem, which thankfully no state in the nation comes close to sharing. While the program may be appropriate for California to deal with its severe smog, it may not be right for New Jersey where geography, vehicle population, available transportation options, air quality and other factors are so different from California.

The California LEV program calls for the production of progressively stricter "low emission vehicles," leading ultimately to the "zero emission vehicle" or electric car, which must comprise 10% of all vehicle sales by 2003. It is uncertain what fuels will be needed to run LEVs. Automakers, who will determine the fuels required to meet the stricter standards, have not yet identified the fuels. These new vehicles may demand more severely reformulated gasoline than called for by the Clean Air Act or alternative fuels such as methanol or compressed natural gas.

Mobil

April 3, 1992

Mobil, along with many of our dealers and distributors, is concerned about New Jersey adopting LEV standards when the fuels to be required remain uncertain. We are also concerned about California LEV's costs. Automakers have testified that the LEV standards will add $500 to $1,000 to the price of a new car. If more severely reformulated gasoline is indeed required to meet LEV standards, it would cost 24¢ per gallon more to refine than conventional gasoline. Higher fuel prices could hit consumers hard and hurt our dealers' and distributors' businesses. Further, if alternative fuels are required, our distributors, in particular, will be impacted significantly as they incur costs to convert their storage facilities, transport trucks and station dispensing equipment. Coming on top of the costs to meet emissions control programs already mandated by the Clean Air Act, LEV requirements could spell the end of some small businesses.

Are the costs of California LEV the "price of clean air" that New Jersey businesses and consumers simply must pay? On the contrary, third-party studies indicate that there are less expensive means than California LEV that achieve greater improvements in air quality. One such economic study was done last year by the state of Connecticut. The study concluded that California LEV's costs far exceed its benefits in terms of cleaner air and, as a result, Connecticut's Governor Weicker deferred consideration of California LEV standards in his state. After consideration of California LEV, Virginia, Maryland, Delaware and the District of Columbia have all decided not to go forward with LEV this year.

Mobil believes in improving air quality. When it comes to choosing the ways to do it, we support the most cost-effective solutions that achieve the greatest results. That's why we urge you to slow down the DEPE's action on LEV standards. Hasty decision-making could mean that the best air quality solutions are overlooked or not given a chance to work. Careful study is needed to determine what measures are appropriate for New Jersey to make true progress toward cleaner air.

Sincerely,

J. T. Mann

223X

Mobil Oil

WASHINGTON POST
March 13, 1992

Schaefer Rebuffed On Guns, Emissions

2 Bills Rejected by Md. Senate Committee

By Dan Beyers
Washington Post Staff Writer

ANNAPOLIS, March 12—A Senate committee dealt two major blows to Gov. William Donald Schaefer's legislative agenda today, defeating proposals to ban the sale of certain assault weapons and to require that new cars meet California's tough emission standards.

Both bills were defeated on 6 to 5 votes in the Senate Judicial Proceedings Committee, which killed similar measures last year.

Committee Chairman Walter M. Baker (D-Cecil) led the fight against Schaefer's proposed ban on the sale of more than three dozen types of military-style assault weapons. After complaining that Maryland has not executed anyone in decades, Baker said: "If we are not going to punish criminals, I will never vote to take away a person's right to bear arms."

His committee's vote against the gun bill was expected. But Schaefer aides expressed surprise at the defeat of the auto emission bill.

"This was not a good day," said David S. Iannucci, the governor's chief legislative liaison.

The Senate committee's action follows the defeat last month of a bill in the Virginia legislature that would have applied the California emission standards to new cars sold in Northern Virginia late in this decade. Also, District officials recently announced that they are having second thoughts about moving toward the tough standards.

Opponents of the emission bill, including car manufacturers, oil companies and car dealers, "are picking us off state by state," complained Sen. Howard A. Denis (R-Montgomery), a member of the Judicial Proceedings Committee. "Eventually, someone's going to have to take the bull by the horns."

Administration officials said they will now concentrate on getting a somewhat weaker emission bill through the House of Delegates in hopes of getting Judicial Proceedings to approve the House measure.

"There's still a little ray of hope," said Robert Perciasepe, the state's environment secretary.

See MARYLAND, B3, Col. 5

Senate President Thomas V. Mike Miller Jr. (D-Prince George's) said that if the House approves the legislation, "I would hope the committee might keep an open mind." But he said many committee members have expressed reservations about adopting standards at a time when surrounding states were backing off.

"Perhaps they didn't see a sense of urgency," Miller said.

Car manufacturers had argued that the proposed standards, which would apply to new cars beginning with the 1996 model year, are too costly for the impact they would have on Maryland's air pollution problem. They contend that the strict standards could drive up new car prices by $1,000.

Meanwhile, car dealers, particularly those in the Washington area, express worry that they would not be able to sell to residents of neighboring states if Maryland had tougher and more expensive emissions standards.

Maryland must tell the federal government how it plans to clean its air by 1994. "If it's not going to be cleaner cars, it's going to have to be a cleaner something else," Perciasepe said.

Other options include restrictions on car travel or new limits on industrial pollution, he said.

In addition to regional concerns, opponents of the emission bill, led by Baker, said they were uncomfortable with provisions that would force Maryland to follow California's lead if it further tightens the standards. "I refuse to be tied into what California does," Baker said.

That Baker prevailed on the assault weapons ban came as no surprise to committee member Denis.

But Denis said he did not expect that opponents of that bill would then proceed to vote down several other unrelated gun bills. They apparently feared that an attempt would be made to add the assault weapons ban to any gun bill that makes it to the Senate floor.

"I think the bills should be debated on their merits," Denis said.

The committee has not yet voted on a requirement that loaded firearms be kept out of the reach of children.

224x

LEGISLATURE '92

Cleaner-cars measure called 'dead for today'

By Laura Lippman
Annapolis Bureau

ANNAPOLIS — Proponents of a bill to mandate cleaner cars for Maryland have not given up the fight, despite Sen. Walter M. Baker's assertion he will refuse to hold another vote on the issue in the Judicial Proceedings Committee, of which he is chairman.

The senator said yesterday he did not plan to allow his committee to vote on a House of Delegates bill that would require cars sold in Maryland to meet the California standards for tail pipe emissions. The bill is scheduled to be voted on tomorrow by the full House.

"It's dead for today," the Cecil County senator said after yesterday's Senate session, leaving open the possibility he could change his mind about the vote.

Mr. Baker said he was reluctant to let the bill out of his committee because then he could not control it. Even when a similar Senate bill was in his committee, the senator had trouble shaping it as he desired. The measure failed 6-5, after committee members rejected their chairman's amendments.

But the Schaefer administration, the Department of the Environment and environmentalists are not about to concede defeat.

David S. Iannucci, the chief lobbyist for Gov. William Donald Schaefer, said he won't give up until he talks with the senator face to face. He said the governor also may talk with Mr. Baker on the bill's behalf.

Meanwhile, the Department of the Environment has released a list of 100 industries that could be required to reduce their emissions if the state does pass tougher standards for cars.

"Without these low emission vehicle reductions, we will have to reduce emissions by approximately 25 percent from the top 100 stationary sources by 2005," states the letter from the Department of Environment, which includes Baltimore Gas & Electric plants, Sweetheart Cup and H&S Bakery.

Because of the stricter emissions standards in California, cars sold there are 75 percent "cleaner" than those sold in other states. The Schaefer administration and the Department of the Environment see California cars as a way to reduce air pollution in the Baltimore and Washington areas.

By November 1994, the state must give the federal government a clean-air plan, environment secretary Robert Perciasepe has said. If legislation on cars cannot pass the General Assembly, Maryland will take other steps, he said.

Although the Senate version of the California-cars measure failed 6-5 in the committee, Sen. Ralph M. Hughes, a Baltimore Democrat, indicated he might change his vote.

The senator, who voted against the bill because he was worried about jobs at the local General Motors Corp.'s assembly plant, said yesterday that he was willing to hear again from both sides on the issue.

Today in Annapolis

10 a.m.: House and Senate convene, State House.

1 p.m.: Senate Economic and Environmental Affairs Committee considers bill that would repeal the requirement to cancel voter registration automatically for persons who have not voted in the past five years. Room 200, Senate Office Building.

1:30 p.m.: House Ways and Means Committee considers a variety of Senate bills involving horse racing, Room 110, House Office Building.

There are 19 days remaining in the 1992 General Assembly session.

225X

Union Lobbies Against Md. Car Emission Bill

Tactic Using GM Jobs Irks Some Lawmakers

By Charles Babington
Washington Post Staff Writer

ANNAPOLIS, Feb. 26—Union lobbyists are using General Motors' announced intention to close nine more U.S. plants as a weapon against Maryland legislation that would strengthen car-emission standards, lawmakers said today.

United Auto Workers officials are telling state legislators that if they pass the bill, GM might close its assembly plant in Baltimore, which employs 3,500 people.

The message is being delivered by Henry Bert, the UAW's chief lobbyist in Maryland. Bert said GM management has not specifically threatened to close the Baltimore plant if the California-car bill passes.

However, he said he inferred the possibility from GM Chairman Robert C. Stempel's announcement this week about closing 12 plants and saying nine others will close but have not yet been selected.

"I just relayed to [state legislators] what Chairman Stempel said," Bert said today. The local regulatory climate is one of several factors that will "govern what plants stay in existence .... Naturally, state laws such as California emissions would put us at a disadvantage."

The UAW's tactic is infuriating some legislators. "We call it environmental blackmail," said Del. Leon Billings (D-Montgomery), a supporter of the bill to require new cars sold in Maryland to meet California's emission standards.

GM officials are fighting the California-car legislation in many state legislatures. Even though Maryland lawmakers tend to doubt GM would close the Baltimore plant, the nation's only facility making the Chevrolet Astro and GMC Safari minivans, they say the threat is hurting the emission bill's prospects in this state.

"It's really difficult for me to vote for a bill when there's a possibility that 3,000 workers could lose their jobs," said Del. Brian K. McHale (D-Baltimore), who voted for the California-car bill last year. He called the message from the Baltimore plant's union "a lightly veiled threat."

The emission legislation passed the House of Delegates but died in the Senate during the 1991 session.

William H. Noack, a GM spokesman, said he knew of no threat to close the Baltimore plant. Asked whether Bert's concerns were off-target, Noack replied, "I can only say I know of no such pending action." He said GM officials oppose the California-car legislation because they believe it is not a cost-effective way to curb air pollution.

In light of GM's dramatic job cuts nationwide, even the slightest threat of retribution is being taken seriously in the Maryland General Assembly, said some supporters of the emission bill.

"It's the worst kind of corporate terrorism," Billings said. "Everybody's scared," he said, referring both to legislators and workers at the Baltimore plant.

David Iannucci, who is lobbying for the bill in behalf of Gov. William Donald Schaefer, said the effect of the UAW's lobbying effort is not yet clear. "It's not GM talking; it's the union," he said.

But Del. Brian E. Frosh (D-Montgomery), a major backer of the bill, said, "I know a bunch of people in the Baltimore delegation who are worried."

Federal law requires the District and Maryland, Virginia and other states to submit pollution-fighting plans by 1994. Most East Coast states have said they will adopt the California emission standards as part of their efforts.

The Virginia General Assembly, however, recently rejected such legislation. And Maryland car dealers say they will be at a disadvantage if they have to sell cars that meet a tougher and costlier standard than those in neighboring states.

Neither the Maryland House nor the Senate has voted on the emission bill this year.

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WASHINGTON POST
March 12, 1992

Clean-Air Agreement Hits Snag

D.C. Questions Cost Of California Cars

By D'Vera Cohn
Washington Post Staff Writer

The plan to clean up the region's air by requiring that new cars sold here meet tough California emissions standards suffered another setback as District officials said yesterday they are having second thoughts about the idea.

The District joined states from Virginia to Maine last fall in signing an agreement that promised they would allow only the low-polluting cars to be sold, beginning as soon as possible, to combat the smoky haze blanketing the East Coast. But now District officials say that they fear the new cars could cost consumers too much and that the city may not be able to afford the expense of regulation.

"It's kind of a bombshell," said William Becker, executive director of a national association of state air pollution officials. "It's not going to help the cause. Others may question why they should go ahead if the District is not going to do it."

It was the second disappointment for the clean-car campaign in recent weeks. A Virginia Senate committee rejected Gov. L. Douglas Wilder's bill last month to require sale of California cars in Northern Virginia by the late 1990s; the panel sent the issue off for a year's study instead. A similar bill was debated in the Maryland legislature yesterday, and supporters said its chances of passage have been hurt by developments in the District and Virginia.

"What we merely want to do is take a pause at this time and take a look at what the low-emission vehicle program means to the city and its citizens," Ferial Bishop, head of the District's environmental regulation administration, said in an interview yesterday.

She said city officials are concerned about whether the cars' environmental benefits are worth the expense to consumers ($200 to $1,000 a car) and the cost to the city for administering the program. If Mayor Sharon Pratt Kelly later agrees to go ahead with the plan, the D.C. Council probably would consider a California car requirement after public hearings, she said.

As debate continued over cleaner cars, the Metropolitan Washington Council of Governments released a

See CARS, B3, Col. 1

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District Rethinking Pact to Require California Cars

POLLUTION PRODUCERS

In 1989, the approximately 2.8 million registered vehicles in the Washington area produced the following pollutants:

YEARLY AIR POLLUTION*

- 1,663 tons of carbon monoxide
- 900 tons of Freon, the chlorofluorocarbon used in air conditioners
- 369 tons of hydrocarbons
- 161 tons of nitrogen oxides

YEARLY WASTE FROM MAINTENANCE

- 8.9 million gallons of crankcase oil
- 7.7 million gallons of antifreeze, including leaked fluid
- 5.9 million oil filters
- 3.3 million tires
- 1 million lead-acid batteries
- 114,000 gallons of hydraulic fluid

YEARLY SCRAP

- The scrapping of vehicles produced 205,000 tons of scrap metal and 68,000 tons of other waste.

*1987 figures, per summer weekday, including emissions from vehicles passing through the area en route to other destinations.

SOURCE: Metropolitan Washington Council of Governments

BY PETER ALSBERG—THE WASHINGTON POST

CARS, From B1

study yesterday that is the first attempt to add up how much waste and pollution is produced by vehicles in the area each year.

The pollution inventory includes 1,663 tons of carbon monoxide; 900 tons of chlorofluorocarbons, the coolant in car air conditioners that destroys the earth's ozone layer; 3.3 million used tires; and 205,000 tons of scrap metal.

George L. Nichols, the senior environmental planner who wrote the study, said officials were surprised by the large quantity of potential pollution and hope to find ways to prevent much of it.

The study is the first step in a campaign to encourage auto maintenance shops and government vehicle fleets to reduce pollution through such steps as using less toxic cleansers or recycling auto air conditioner gases, he said.

Although officials of Maryland, Virginia and other states say the California cars are needed to meet new federal clean-air requirements, the auto and oil industries have mounted a strong lobbying effort to argue that the cars are too expensive for too little environmental gain.

Neighboring states learned of the District's second thoughts at a meeting of East Coast air pollution officials in Annapolis on Tuesday when Bishop, representing the city, declined to sign a follow-up agreement on the car program.

Last month, District representatives abstained from a Council of Governments vote endorsing California cars after questions about their cost were raised by aides to the new city administrator, Robert L. Mallett, who took office two months after the car pact was signed.

Bishop said she hopes the District will stick by the agreement, "but it would be presumptuous to say that when there are so many other people involved."

The president of the association representing the 200 auto dealers in the District and its suburbs, Gerard Murphy, said because there are only eight dealers in the city, "I can't imagine the District wouldn't come to the party" if surrounding states mandate California cars.

"I don't think they're going to pull out of it," said Maryland's secretary of the environment, Robert Perciasepe. "It's a matter of us getting with them and briefing them."

The Maryland House of Delegates turned back three attempts yesterday to water down or kill the California car bill, which passed the House last year only to die in the Senate. A final vote could come today on the measure that would require sale of the cars beginning in 1995.

Staff writer Dan Beyers contributed to this report.

228X

WASHINGTON POST
February 11, 1992

Va. Senate Panel Kills Wilder Bill On Car Emissions

By John F. Harris
and John Ward Anderson
Washington Post Staff Writers

RICHMOND, Feb. 10—Gov. L. Douglas Wilder's plan to reduce air pollution in Northern Virginia by requiring that, beginning in 1997, all new cars sold meet California's tough emission standards was killed today in a Senate committee.

In the biggest setback to Wilder so far this legislative session, the Senate Transportation Committee voted 8 to 6 to kill the clean-car bill. The administration said the measure was needed to meet federal environmental requirements, but lobbyists for oil companies and car dealerships complained it would be too expensive.

Several lawmakers said they want to see the results of a planned legislative study and consider the issue again next year. But Elizabeth H. Haskell, Wilder's secretary of natural resources, said the new emission standards offered the best chance of improving air quality without imposing broad new regulations on all businesses.

Virginia is now in danger of missing federal deadlines for curbing pollution, she said. "It isn't a problem that is going to go away," Haskell said.

Meanwhile in Annapolis, supporters of the tougher emission standards urged Maryland lawmakers today to adopt their own version of the legislation, despite the vote in Richmond. The Virginia vote "is all the more reason for Maryland to move ahead," said Robert Perciasepe, state secretary of the environment.

Perciasepe and others held a news conference to underscore Gov. William Donald Schaefer's support for the emissions legislation, the subject of a House committee hearing Tuesday. Del. Brian E. Frosh (D-Montgomery), a co-sponsor of the Maryland bill, said he believes the legislation will be approved by the House, but prospects are uncertain in the Senate.

SEN. EDWARD M. HOLLAND
... sponsored clean-car bill

The federal Clean Air Act requires Virginia and Maryland to submit plans by 1994 showing how pollutants can be reduced. The Virginia rules applied only to Northern Virginia, which has the state's most polluted air.

A powerful array of interests lined up against the bill, sponsored by Sen. Edward M. Holland (D-Arlington). Perhaps the most important was Fairfax-based Mobil Corp., which fears that mandating California-style cars would lead to a mandate for California-style fuel, which is specially formulated to burn more cleanly.

Susan Sonnenberg, an environmental affairs official for Mobil, said producing the special fuel in California required oil companies there to invest more than $6 billion and resulted in an average increase in gasoline prices of 17 cents a gallon. "Obviously, we're pleased," Sonnenberg said.

Russell Hinz, director of the Northern Virginia chapter of the

See CARS, B7, Col. 1

229X

Senate Hands Wilder Defeat on Emissions

CARS, From B1

American Lung Association, which lobbied extensively for the bill, complained that the committee decision was "a classic example of big business scoring a victory against health and clean air."

After the vote, Wilder Chief of Staff J.T. Shropshire angrily confronted a Democratic defector, Sen. Jackson E. Reasor Jr. (Bluefield), to demand an explanation.

"I have never been convinced that it absolutely must be passed" to meet federal deadlines, Reasor said.

In a separate action late tonight, a bill prohibiting antiabortion demonstrators from blocking access to health clinics was narrowly approved on a preliminary vote in the House. The bill, by Del. Leslie L. Byrne (D-Fairfax), would provide a maximum penalty of 12 months in jail for a first offense and five years in prison for subsequent convictions.

230x

The measure is believed to be one of the first of its kind in the country.

The House will take a final vote on the bill Tuesday. If approved it would go to the Senate.

In other action, the House approved and sent to the Senate bills that would:

■ Allow private companies to build and operate prisons in Virginia. State Democratic Chairman Paul Goldman is among the lobbyists for the companies.

■ Permit so-called slant drilling—drilling that begins on land and slants out beneath water—in the Tidewater area of the state. But because of concern about pollution of the Chesapeake Bay, the bill sets tighter regulations for Tidewater than for elsewhere in the state.

■ Require people 15 and older to buy an annual $7.50 license for recreational saltwater fishing. Anglers fishing from their own land or off a licensed recreational boat would not need the license.

With Tuesday's deadline for final action on bills looming, the House also gave preliminary approval to dozens of measures, including legislation that would:

■ End the winner-take-all provisions of the Electoral College. Votes would be distributed proportionally, with the winner of the popular vote getting two votes plus one for each congressional district carried. Others candidates would get one Electoral College vote for each district carried.

■ Strengthen a dying patient's ability to direct the providing, withholding or withdrawal of medical treatment. However, the measure stops short of allowing physician-assisted suicide.

■ Make it a crime to "stalk" another person, causing the victim emotional distress through fear of death or serious injury.

Also today, Wilder described a bill passed unanimously by the House Saturday, toughening penalties for firing or possessing a gun on or near school grounds, as a placebo. The bill was rushed through after the fatal shooting of two teenagers in a Norfolk schoolyard last week. At the same time, the House defeated proposals to impose a three-day waiting period on gun purchases and to limit gun purchases to one a month.

The governor said he will sign the school gun bill, but he added: "Punishment is no deterrent .... What kind of message does that send, that you can buy as many guns as you want, you just can't use them? I really believe we're not going to stop what's taking place until we attack the root causes."

Del. W. Tayloe Murphy Jr. (D-Northern Neck) checks the vote on his bill on saltwater fishing licenses.

Staff writers Donald P. Baker and Charles Babington contributed to this report.

ASSOCIATED PETROLEUM INDUSTRIES
OF PENNSYLVANIA - HARRISBURG

The Philadelphia Inquirer **Commentary** Wednesday, March 11, 1992

Pennsylvania doesn't need California's air-emission standards

By **JONATHAN H. ADLER**

The costs for new standards could be enormous, and they would do little to improve air quality.

Many trends have their start in California. From hemlines to music styles, the West Coast has long been influential in determining Northeastern tastes. This is true in politics, no less than in fashion. The tax revolts and the Reagan revolution had their origins in California, and for good or ill they transformed the nation.

California's latest export to the East Coast is a new series of regulations aimed at improving urban air quality. Not content with the standards outlined in the 1990 federal Clean Air Act amendments, California struck out on its own to design even more stringent regulations aimed at cleaning the air above Los Angeles, the dirtiest in the nation. Now several Eastern states, including Pennsylvania, are contemplating adopting these low-emission vehicle (LEV) regulations as their own. Gov. Casey announced his intention to adopt these regulations as part of his effort to clean Pennsylvania's air.

The assumption behind this action is that the California standards represent an efficient and cost-effective means of attaining federal air quality standards. Given that federal law inhibits the ability of individual states to act autonomously in designing air quality regulations, many states see the California standards as the only conceivable option, and Casey fears that federal sanctions will be enacted unless significant action is taken. However, the California LEV standards are *not* a cost-effective air pollution control strategy. What is more, enacting these standards is hardly Pennsylvania's only option.

Consider a few salient facts about the source of urban air pollution. As much as 50 percent of automobile pollution is caused by only 10 percent of the vehicles on the road. This means that out of every 10 automobiles, one emits as much air pollution as the other nine. These vehicles are predominantly older vehicles, vehicles that are out-of-tune, or cars that have been deliberately tampered with so as to improve performance. To maximize air quality benefits, environmental initiatives should seek to target these vehicles for emission reductions.

Unfortunately, the California low-emission vehicles standards promoted by Casey do no such thing. Instead these regulations propose a broad "drift net" approach that forces automakers to produce vehicles with dramatically reduced emissions. Yet today's new cars are already more than 95 percent cleaner than those of 20 years ago. What is more, the benefits of mandating additional reductions in the emissions of new cars only accrue in the long term as older cars are gradually replaced with newer counterparts. In short, the clean-air benefits from reducing emissions of new cars are negligible, at best.

While the California standards will do little to improve Pennsylvania air quality, the costs of these standards could be enormous. These regulations could add as much as $1,000 to the price of new automobiles. If anything, these standards actually discourage the replacement of older, heavily polluting vehicles with cleaner, new cars. It must also be remembered that the costs of the LEV regulations are in addition to the tremendous economic burden being imposed by the 1990 Clean Air Act revisions. It is estimated that annual U.S. expenditures will exceed $25 billion even without these requirements. Can Pennsylvania truly afford such an expensive and ineffective program?

Of course, many still insist that the severity of Pennsylvania's, and particularly Philadelphia's, air pollution problem justifies the most severe measures. After all, according to the 1990 data, 33 of Pennsylvania's 67 countries were classified as zone (smog) non-attainment areas, and Philadelphia's ozone non-attainment status was classified as severe.

Yet what was true then is no longer the case. As noted in a just released report by the Cato Institute, preliminary 1991 data from the Environmental Protection Agency indicates that only the Philadelphia and Pittsburgh areas are still in non-attainment — Philadelphia has improved its status to "moderate" and Pittsburgh is only classified as a "marginal" non-attainment area. This is because most regions of Pennsylvania have not exceeded the federal standards in the last three years — the time period used for determining non-attainment status.

In short, not only is the regulatory approach preferred by Casey not cost-effective, but also the steps necessary for Pennsylvania to attain the federal standards are less severe than many believe. Gov. Casey has claimed that in the fight for clean air, "What's at stake is the very economic health of our commonwealth." Given the cost of those regulations that have been enacted or proposed, Casey is more accurate than he realizes.

Earlier this month, the Virginia legislature averted economic catastrophe by killing Gov. L. Douglas Wilder's clean-car bill that would have imposed the California standards on Virginia motorists. Instead, Virginia joins Connecticut in investigating more cost-effective means of improving regional air quality that are specifically targeted at the sources of pollution. Pennsylvania would be far better off learning from this example than following the lead of California.

Jonathan H. Adler is an environmental policy analyst at the Competitive Enterprise Institute in Washington.

NEW JERSEY
HIGHWAY USERS CONFERENCE
150 West State St., Trenton, N.J. 08608

APR 3

April 10, 1992

The Honorable Maureen Ogden
266 Essex Street
Millburn, NJ 07041

Dear Assemblywoman Ogden:

The enclosed New Jersey Highway Users Conference policy statement outlines our deep concern with regard to several regulatory proposals which could result in the adoption of the proposed California LEV standards.

The carte blanche acceptance of the proposed California LEV standards allows a California agency, unaccountable to the Legislature and citizens of New Jersey, to establish and set standards for the Garden State, thereby placing the people of our state at an extreme disadvantage.

For these reasons and reasons contained in our policy statement, we would ask for your continuing review of the Departments actions, as they relate to adoption of emissions standards.

Sincerely,

George Hagemeister

George Hagemeister,
Chairman
NJ Highway Users Conference

GH/gmd

NEW JERSEY
HIGHWAY USERS CONFERENCE
150 West State St., Trenton, N.J. 08608

TESTIMONY BY
GEORGE HAGEMEISTER, CHAIRMAN, NEW JERSEY HIGHWAY USERS CONFERENCE
April 9, 1992
Before the Joint Senate & Assembly Environment Committee

The New Jersey Highway Users Conference is composed of organizations in the private sector interested in highway transportation matters. We are especially concerned about the continued affordability of highway transportation to consumers and the increasing cost to businesses which use motor vehicles.

The average price for an automobile is now around $16,000.00. Motor fuel taxes are equivalent to a sales tax of 26%. The information we have indicates that the proposed California standards for automobiles alone could add another $472 - $1,000 to this price. In addition, the special fuel required could cost as much as 20 cents to 24 cents per gallon more.

These are extremely high costs to impose on New Jersey taxpayers without extremely solid evidence that the benefits would justify this sacrifice. At the present time, our information shows this not to be the case. We believe this huge expenditure of funds would result in a reduction of ozone in the region of less than 2% above the emission reduction brought by the federal standards contained in 1990 Clean Air Act over the next few years.

The executive officer of the California Air Resources Board, in a 1991 statement, said that California standards had been developed specifically to address the problems in his state. He cautioned other states not to blindly adopt them without making sure they would work in their state. Moreover, with the projected reductions so limited, we question whether or not it could even be measured by current technological methods.

With such large economic factors at stake, we believe caution is the prudent course. The average automobile is approximately 8 years old. The added costs of the proposed California Program will stifle sales of new energy-efficient and pollution-efficient motor vehicles. This would be tragic because, over 57% of vehicle emissions reductions can be achieved by fleet turnover alone.

The NJ Highway Users Conference strongly endorses the objectives of providing a healty environment. The schedules for achieving these objectives should be well within the financial and technological capacities of NJ and the nation to attain. They should not cause severe impacts in any major segment of economic activity.

We urge the NJ Legislature to provide for a fixed-term study by a broad-based group to more accurately assess the cost/benefits of the California program along with other alternatives.

George Hagemeister, Chairman, Gannett Outdoor
Walter Ellis, Jr., Vice-Chairman, N.J. Farm Bureau
James F. Hughes, Vice-Chairman, N.J. State Safety Council
James E. Benton, Secretary/Treasurer, N.J. Petroleum Council
Arthur D. McTighe, Esq., Conference Counsel

New Jersey Automobile Dealers Association

Headquarters • 856 River Road • P.O. Box 7510 • Trenton, New Jersey 08628 • (609) 883-5056

JOHN ZANGER, JR.
Chairman

CHARLES E. WALTON
President

APR 3 1992

April 10, 1992

Hon. Henry P. McNamara
801 Franklin Avenue
P.O. Box 663
Franklin Lakes, NJ 07417

Hon. Maureen B. Ogden
266 Essex Street
Millburn, NJ 07041

Dear Chairman McNamara and Chairwoman Ogden:

At the conclusion of my testimony before your Committee yesterday, you asked me to supply you with the Association's ideas on marketplace and consumer incentives. In our view, economic incentives will be necessary to sell ULEVs and ZEVs.

Consumer incentives can be handled in a variety of ways:

* Elimination (or reduction) of sales tax for the purchase of LEVs, ULEVs, and ZEVs. DEPE could decide to incentivize by different levels of sales tax reductions depending on whether the vehicle was electric, CNG, propane, or gasoline.

* A combination approach of partial sales tax reductions and/or State income tax credits for purchases of ULEVs and ZEVs.

* Pay bounties for older cars that are scrapped, enhancing the Bush Administration's proposal. With over 30% of the fleet ten model years or older, tons of pollution can quickly be eliminated using this economic incentive.

NJADA has made DEPE aware of our concerns on the inventory risks we face if customers balk at purchasing ULEVs and ZEVs. To eliminate that risk, we must see some long-term marketplace incentives put in place. These programs should remain stable and not change each time there is a new Commissioner or other new manager brought in to the process.

While the public is becoming more and more environmentally concerned, we believe that this awareness is secondary to the very real pocketbook issues confronting consumers. In today's world, it will be difficult for us to sell one electric car for every ten conventional ones sold.

Once again, I want to reiterate our belief that New Jersey must also move in lockstep with all the other states that border us. Otherwise a lot of business will flee to those jurisdictions and many New Jersey auto dealers will fail. We shouldn't be the ones left holding the bag!

Thanks for your interest. Kind personal regards.

Sincerely,

Charlie

Charles E. Walton
President

cc: Hon. Scott Weiner

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NORTHEAST OZONE TRANSPORT COMMISSION

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