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TO PROVIDE COMPLIANCE WITH THE
NATIONAL MAXIMUM SPEED LIMIT

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HEARING
BEFORE THE
COMMITTEE ON TRANSPORTATION
OF THE
COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

NINETY-SIXTH CONGRESS

SECOND SESSION

ON

S. 1337

A BILL TO AMEND TITLE 23 OF THE UNITED STATES CODE TO
PROVIDE GREATER COMPLIANCE WITH THE NATIONAL MAXIMUM
SPEED LIMIT

JUNE 3, 1980

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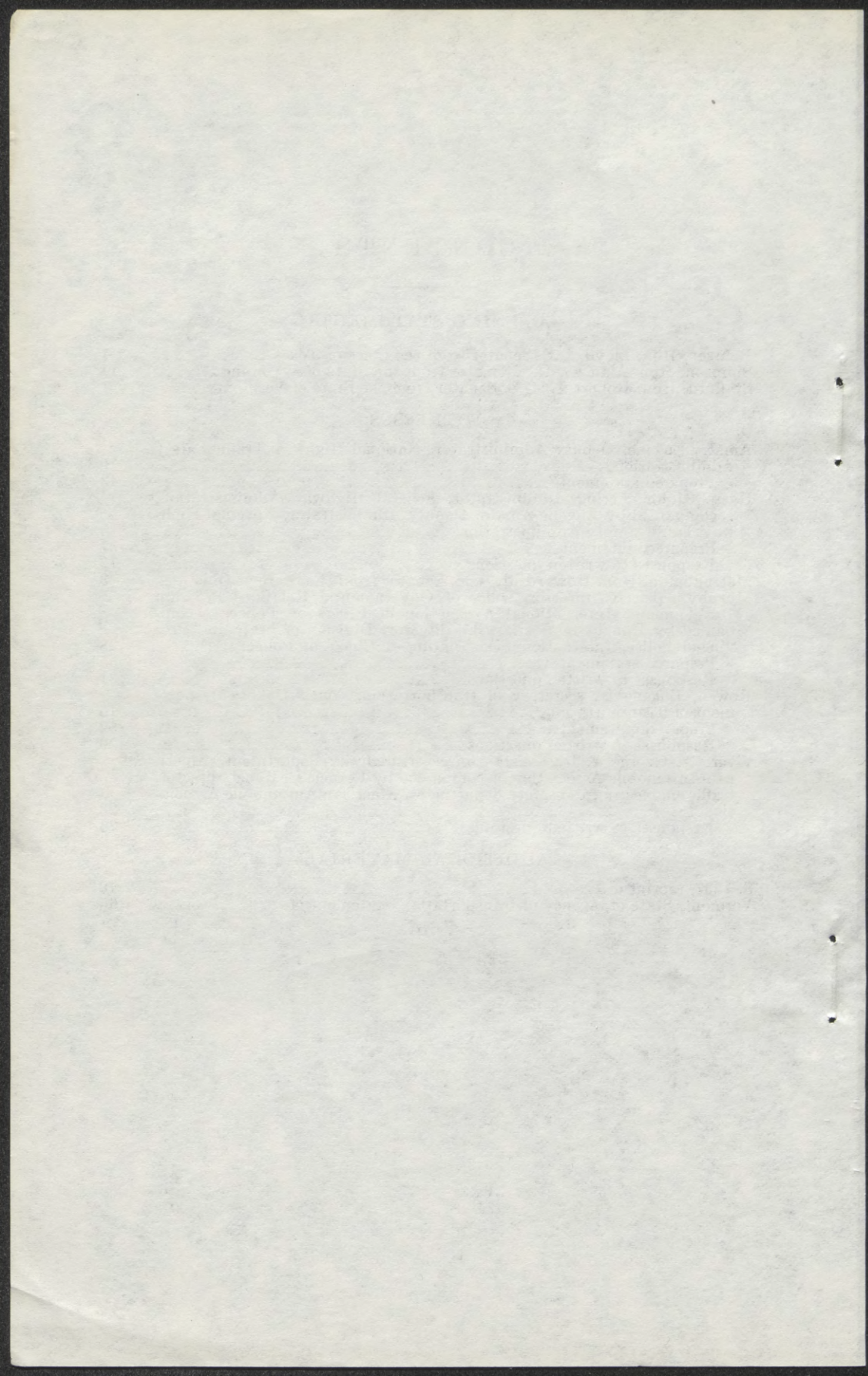
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TO PROVIDE COMPLIANCE WITH THE NATIONAL MAXIMUM SPEED LIMIT

TUESDAY, JUNE 3, 1980

**U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON TRANSPORTATION,
*Washington, D.C.***

The subcommittee met at 10:45 a.m., in room 4200, Dirksen Senate Office Building, Hon. Lloyd M. Bentsen (chairman) presiding.
Present: Senators Bentsen, Stafford, Simpson, and Pressler.

OPENING STATEMENT OF HON. LLOYD BENTSEN, U.S. SENATOR FROM THE STATE OF TEXAS

Senator BENTSEN. This hearing will now come to order.

This hearing today is concerned with S. 1337, a bill introduced by the Senator from Ohio, Mr. Metzenbaum, to amend title 23 of the United States Code to provide greater compliance for the national maximum speed limit. This bill would also provide for stiffer penalties for any of the States that do not meet the greater compliance percentage required.

Today, we are going to hear testimony from a number of witnesses on this bill and its potential effects. Our focus is not on the question of whether or not there ought to be a 55-mile-an-hour speed limit, it is on the changes in the law which this bill would make. Briefly, they are a change in the enforcement requirements that would require the States to ascertain and report a higher percentage of compliance with the 55-mile-an-hour speed limit by drivers in the States than the percentage compliance required under existing law, and a change in the penalties assessed against States that don't meet the new compliance levels.

In our consideration of those goals questions that we will address today are whether the goals sought by this legislation are attainable, whether there is a favorable ratio of benefits to cost, and what impact this legislation will have on the highway program.

OPENING STATEMENT OF HON. ROBERT T. STAFFORD, U.S. SENATOR FROM THE STATE OF VERMONT

Mr. STAFFORD. Mr. Chairman, I appreciate having the opportunity to make a few comments on the enforcement of the 55-mile-per-hour speed limit before we hear from our witnesses.

The Senator from Vermont has supported the 55 mph speed limit ever since it was temporarily established in 1974 as a conservation measure in response to the 1973 Arab oil embargo. Since that time many studies have been undertaken to substantiate or refute claims that the 55 mph speed limit was responsible for reducing traffic fatalities and fuel consumption. The results of those studies vary and undoubtedly there are several factors which have contributed to the saving of lives and fuel. However, this Senator is still convinced that the reduced speed limit is a very significant factor.

Enforcement of the 55 mph speed limit, however, has been a greater challenge than most of us envisioned when the law was first passed. Changing behavior patterns that have been ingrained over a long period of time is not easy and it does not happen quickly. One of the questions before us today is how quickly we can expect these changes in behavior to occur and what the most effective methods to bring about these changes are.

When the 55 mph speed limit was enacted, Congress gave little direction to the States with regard to what constituted adequate enforcement and how data collection and monitoring was to be carried out. The Surface Transportation Assistance Act of 1978 provided further guidance and as a result the procedures for the States' speed monitoring program have been revised. The States are still in the process of revising their procedures and acquiring the necessary equipment in order to meet these new monitoring requirements. Is it fair to accelerate compliance when States are adjusting to new requirements?

My own State of Vermont finds itself in a difficult position regarding certification of adequate enforcement of the 55 mph speed limit. In Vermont only the Interstate is posted at 55 mph. All other roads, because of their narrower, winding nature through the beautiful countryside, are posted at 50 mph. Therefore, most of the State's data comes from a freeway-type of road and these kinds of facilities have the highest speed profile of all the classes of highways. This Senator is aware that other States also have unique problems.

Congress has always believed the responsibility for imposing penalties for exceeding the 55 mph speed limit should remain with each individual State. As a result, the fines levied for violations of the speed limit vary considerably among the States. Is a more severe penalty an effective tool in achieving increased compliance?

Along with providing the States with a more specific compliance schedule, the Federal Government renewed its commitment to provide dedicated Federal funding to the States for the purpose of enforcing the 55-mph speed limit. This has not happened in the past, and it is doubtful that funds will be available in the near future. At the same time, Federal highway funds available to the States are generally being reduced. It is realistic to ask the States to increase their enforcement efforts when Federal funds for the highway program are being reduced or eliminated?

Finally, surveys show that a significant majority of the public favors the 55-mph speed limit. However, a majority of the public also believes it is observing the 55 mph speed limit by driving 60 mph. Can this

perception be changed or should the public be allowed a 5 mph tolerance range. What impact would such a tolerance range have on certifying adequate enforcement?

This Senator looks forward to hearing responses to these and other questions from the witnesses here with us today.

Senator BENTSEN. Our first witness is the distinguished Senator from Ohio, my good friend who is here to testify on his proposed piece of legislation.

**STATEMENT OF HON. HOWARD M. METZENBAUM, U.S. SENATOR
FROM THE STATE OF OHIO**

Senator METZENBAUM. Thank you very much, Mr. Chairman. I very much appreciate the committee finding time to hear S. 1337. I consider it to be important legislation.

I am very pleased to have the privilege of appearing before the committee this morning, and I would like to begin by saying I believe the numbers that are contained in S. 1337 perhaps are an optimum figure, but realistically speaking I recognize they are not immediately attainable and would probably cause great distension and great difficulty as well as dissension in the relationship between the Federal Government and State. And I will come back to that subject as I proceed.

Mr. Chairman, for the past several years the people of this country have heard many strong words from the Nation's leaders about the need to conserve. Under the Nixon and Ford administration we heard inspiring rhetoric about Project Independence. President Carter has said our energy situation is the "moral equivalent of war." Even the OPEC nations have told us we must conserve or they will have to raise prices again. And the major oil companies are doing a superb job of saturating the airwaves that fat and puffing Uncle Sam must go on an energy diet.

But the fact is, Mr. Chairman, with the notable exception of fleet standards for automobiles, we have done very little in this country. To the extent we have had a conservation policy it has been based on the demonstrably false assumption that ever higher prices will force the American people to conserve. It is true that some conservation has taken place in the United States. Last year motor fuel consumption was down from the 1978 level. This year it is down about 8 percent. It is true that these reductions in demand took place at a time when gasoline prices were in the process of nearly doubling in a single year, but it is also true that the savings were caused almost entirely by increasing fuel efficiency of our vehicle fleet and by a physical shortage of gasoline, not as a conservation response to higher prices. Many Americans switched to other autos—to foreign imports I regret to say—in order to attain more conservation.

But to see that the conservation response to higher prices is not always true or necessarily true we need only look to Western Europe where gasoline prices are far higher, and motor vehicles are far more efficient than in this country. In France, where the gasoline price is \$3.17 cents per gallon, it costs 45 cents a mile to operate a small Renault. But today there are 22 percent more cars on French roads than there were before the 1978 Arab embargo. Consumption has

risen in the same period by 21 percent. In 1973 the average Frenchman put 7,800 miles a year on his car. Today that figure has increased to 8,300. And I quote a French expert who told the Wall Street Journal in a rather interesting article recently on the front page:

We have concluded that price isn't effective in conservation, and then went on to say "A recent poll concluded that gasoline would have to reach as high as \$8.75 a gallon before most Frenchmen would change their driving habits."

That pattern is by no means confined to France. Both Britain and West Germany report similar experience.

According to the International Energy Agency, American drivers burn three to four times as much gasoline as European counterparts. With more fuel efficient cars coming on line that gap will narrow in the years ahead.

What does that have to do with the legislation pending before us this morning? It has to do with the fact that merely raising prices will not eliminate the need to conserve energy in this country, and we can't afford to wait to cut our dependence on foreign oil. Above all, we can't afford to postpone doing all easy things, the obvious things that will give us a substantial immediate payback with no changes in lifestyle.

That brings us to the 55-mile-per-hour speed limit. There isn't an American who drives on the interstate highways who isn't aware of the number of cars flying past him or her if he is traveling at 55 miles per hour. Therefore, I think we need to move to tighten up State enforcement of the 55-mile-per-hour speed limit. That is what I would hope to do by reason of S. 1337, or some modification of it.

Section 305 of the Surface Transportation Act of 1978 established levels of compliance with the national speed limit which States must achieve, and that section represented a significant step forward when it became law. As a matter of fact, for the first time since 1974, when the 55 mile speed limit was enacted, States became responsible for their diligence in enforcing the 55-mile-per-hour speed limit. But the enforcement legislation looked better than it really was, because if we take a look at what the law identified, it provided for a penalty if in the year ending September 1979 more than 70 percent of the driving public is exceeding the speed limit. That is represented by the blue line on the very left, which is the year 1979. The percentage decreases by 10 percent per year. In other words, the law implies that in 1979 it would have been acceptable if only 30 percent of the motorists in the State are obeying the law; 40 percent in 1980; 50 percent in 1981; 60 percent in 1982; and 70 percent in 1983.

My bill, which is cosponsored by Senators Randolph and Percy, by whose efforts you well know the 55-mile-an-hour speed limit came into being, and Senators Hatfield, Kennedy, Tsongas, Leahy, and Bradley, requires that more people drive at 55 and that stiffer penalties result if those levels of compliance are not met. The levels set by S. 1337 are represented by the red marks, indicating that there would be no more than 25 percent noncompliance in 1980; 20 percent in 1981; 15 percent in 1982; 10 percent in 1983.

Senator STAFFORD. Mr. Chairman, if the Senator would forebear, so we understand it, in his chart the blue figures indicate, do I understand a 70 percent noncompliance in 1979, 60 percent in 1980, and so on?

Senator METZENBAUM. Yes, that is the noncompliance figure presently permitted by law, and the thrust of my legislation is to do two things. One is bring down the permitted amount of noncompliance; the second would be to increase the penalty, because the penalty provides for only a five percent reduction in interstate highway funds.

As I indicated originally, I think that my figures in both instances are overly optimistic. It is a little harder to see on the chart, but in discussions with the administration they had talked about figures of 50 percent, 35 percent, 25 percent, and 15 percent as being more logical figures. And those again are not noncompliance figures.

Senator STAFFORD. So if we followed the current law we could expect a 50 percent noncompliance in 1981, a 40 percent noncompliance in 1982, and so on, but under your proposed statute we could anticipate a 20 percent noncompliance in 1981, a 15 percent noncompliance in 1982?

Senator METZENBAUM. I don't know if I would want to use the phrase "could anticipate." I think what we would say is it would be permissible as long as the State could bring down the number of cars not in compliance with those figures you just cited, that would not cause them to lose any Federal interstate highway benefits.

Senator STAFFORD. Just one more question for my education. The figures which appear on your graph, allowable percent speeding, don't discriminate between somebody who went 60 miles an hour and somebody who went 65, 75, or 80?

Senator METZENBAUM. They do not, and present law does not provide for that, although I believe we do know there is a certain percentage of cars that go in excess of 5 miles per hour over and above the 55-mile-an-hour speed limit. Now I am a realist enough to know that going 56 or 57 miles per hour is really not the thrust of concern. The thrust of concern is when you are driving at speeds up to 60, 65, 70, because you are burning up more gasoline. You also are causing greater threat of injury and death. It is a safety precaution as well. As a matter of fact, in the hearing we had held on this subject, the Epilepsy Foundation of America submitted the following: "It has been estimated that 20,000 new cases of epilepsy develop each year. Each year more than 1.7 million individuals are involved in motor vehicle accidents; 54,000 of these injuries are to the head." And they talk about the whole problem of epilepsy resulting from head injuries coming from automobile accidents.

Senator BENTSEN. I might also interrupt on that one, because I feel very strongly on the problem of head injuries and the related question of wearing helmets on motorcycles. We have talked at length with the Epilepsy Foundation on the need for head protection and the incredible number of head injuries that occur. They are concerned about people who suffer severe disabilities because of head injuries, they are concerned about seeing the Congress vote to not require the wearing of helmets.

Senator STAFFORD. Mr. Chairman, you may recall you and I were defeated on this by some of our distinguished colleagues.

Senator BENTSEN. I clearly remember. I can still hear those motorcycles running up and down the aisles as they overcame our efforts.

Senator STAFFORD. I still ride one, Mr. Chairman, but I always put a helmet on before I do.

Senator METZENBAUM. Well, Senator, I would like to get testimony from you on the safety of the motorcycle, because I want to buy one. I am having a little trouble with my wife.

Senator STAFFORD. Mr. Chairman, could I come back to this figure for one last question. I want to be sure. In the projected allowable percent speeding on that chart, is there anything in that figure which takes into consideration the fact that many States, frankly, allow a 5-percent tolerance or some States even a 10-percent tolerance in enforcing their laws on speeding?

Senator METZENBAUM. There is not in our legislation as such, but I am aware of the fact that we are talking about those who are exceeding it by an intolerable amount, not by two or three. I think the highway official or representatives from Joan Claybrook's office may be able to address themselves to that, because they do compile statistics on this subject.

I might say this legislation before you is not a new program. It doesn't create any new bureaucracy. It lays no heavy tax or fees on the driving public. It merely says 55 miles per hour is the law of the land and it is time we, as a nation, became more serious about obeying it.

Now, in all fairness there have been significant advantages that have resulted from the 55-mile-per-hour speed limit being in effect as of this point—even though there are considerable violations. They have become clear in the 6 years it has been in existence. The rewards come both in the form of lives saved and energy saved. The Department of Transportation has calculated that the national speed has saved 9,000 lives a year, and at that rate more than 60,000 Americans are living today who would not be had the Congress failed to act 6 years ago.

But the energy savings, which is one of the main thrusts of our proposal, are also large, amounting to 235,000 barrels of oil per day. Now that is well in excess of the most optimistic production projected to result from oil decontrol. These savings have occurred because some progress has been made. Motorists are driving now at lower speeds than before enactment of the 55-mile-per-hour speed limit.

However, reports from the Department of Transportation indicate highway speeds are creeping back up. In the second quarter of 1979 in nearly half the States at least 20 percent of the cars on the road were exceeding the speed limit by at least 5 miles per hour. And that addresses itself to Senator Stafford's inquiry, and that is, do you make any allowance for the 55 or tolerant amount? There is data collected which would indicate that more than 20 percent of the cars—and it is very difficult to say just how much more, but certainly more than 20 percent—are exceeding the speed limit at 60 miles per hour.

Senator BENTSEN. Senator, would you state that again?

Senator METZENBAUM. In the second quarter of 1979 in nearly half the States at least 20 percent of the cars on the road were going in excess of 60 miles an hour.

Senator BENTSEN. And where do those numbers come from, Senator?

Senator METZENBAUM. The quarterly data from the Department of Transportation. We will be glad to make that report available as a supplemental.

Senator BENTSEN. We have that. I just wanted to be sure of the source.

Senator METZENBAUM. To the savings in lives, which is obviously a significant factor, must be added energy savings. Strict enforcement of the 55-mile-per-hour speed limit could result in savings of 200,000 barrels of oil per day. That is a fantastic amount of oil. I sit on there on the Energy Committee where we talk about weatherization, an oil back out program, synthetic fuel program, and we talk about energy mobilization board programs and how we are going to save so many thousands of barrels of oil per day, but here is 200,000 in comparison to many of the programs that are being talked about, and this is an immediate savings. Almost all others we are talking about, almost with no exception, are "manana," 1985, 1990, whatever the case may be. These savings could be achieved literally overnight at a cost of less than \$1.60 per barrel. I need not remind the members of this committee \$1.60 per barrel is de minimis. We are talking about some modest addition of funding for stricter enforcement as well as this legislative tightening up. Because if the testimony of those who follow me concurs with what it was in the past, the National Association of State Highways and Transportation Officials, and if there is testimony from the American Automobile Association, I think you will find their support for the legislation—maybe not in these specific numbers—but for the concept of stricter enforcement.

But there is some concern whether the States have the wherewithal to do it. And unfortunately the administration has been cutting back on enforcement funds for States, and I think that, too, is a subject to which the committee might address itself, because we are talking about very modest amounts of dollars to get adequate enforcement. We are not talking about billions, but low-level millions.

Mr. Chairman, we have long since passed the time when we can just talk about what we are going to do some time in the future about conserving energy. In this legislation, I believe that we can change the law not as dramatically and not as drastically as S. 1337 would advocate, because I think that that is optimum, but I think it is somewhat unrealistic—I don't think you can snap your finger and expect the States to get that kind of compliance. I do believe by some tightening up by stricter enforcement, I think the States will come to realize the Federal Government is serious. I believe the American people will support it. I believe that it will cause no undue hardship. I think it will save many lives and I think it will save much energy. I would hope that this committee would see fit to move forward with this legislation.

As the chairman knows, both this committee and the Energy Committee have joint jurisdiction. I have not asked the Energy Committee for a markup until we were able to learn the thinking of this committee. I would like to work it out in a cooperative manner. I think we all ought to be moving in the same direction, and I am hopeful that this committee, the administration, the organizations concerned about the subject and the Energy Committee can have a coordinated effort, and that perhaps we can feel that we made a major step forward in attempting to conserve energy in this country and at the same time saving lives.

Senator BENTSEN. I thank the distinguished Senator for your comments and contribution. I have been asking questions as you proceeded.

Does the Senator from Vermont have any further questions?

Senator STAFFORD. Mr. Chairman, just one final question I think, because I have also been asking questions as we have gone along.

In addition to the differences in allowable percentage of speeding which are contained in your bill over existing law, the other basic difference is you would impose a much larger penalty in terms of lost highway funds than existing law. The existing law is a 5 percent loss and I think yours is a 20 percent loss.

Senator METZENBAUM. Mine goes over 4 years, 20, 25, 30, and 35. The present law provides 5, 5, 10 and then. I must confess I was disappointed when we had testimony that instead of the administration talking about some increase in the penalty provision, they actually suggested that in 1982 we go backwards, not to 10 percent but go down to 5 percent, and then in 1984 and 1985 they would jump up to 15 percent. My own feeling is again in that area there ought to be some compromise numbers worked out. And frankly, I must confess I am not concerned as much about the specific numbers as I am about the fact that I think we have to let the American people know that 55-mile-per-hour speed limit truly means something and we want it enforced. I think in the beginning, the compliance levels were; practical; maybe it was politically right then. But I think it permits too much nonenforcement, too many violations before there is any penalty. That, to me, is the major thrust of the bill. I think the 5, 10, 15, and 20 is importance. I think the percentage of allowable violation is probably more important.

Senator STAFFORD. Thank you.

Senator BENTSEN. Thank you very much, Senator, for your testimony.

Our next witness on this legislation will be the Acting Administrator of the Federal Highway Administration, Mr. John Hassell.

If you would proceed, Mr. Hassell.

STATEMENT OF JOHN HASSELL, ACTING ADMINISTRATOR, FEDERAL HIGHWAY ADMINISTRATION, ACCOMPANIED BY: EUGENE AMATO, DEPUTY ADMINISTRATOR, NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

Mr. HASSELL. Thank you, Mr. Chairman. With me today is Mr. Eugene Amato, the Deputy Administrator of the National Highway Traffic Safety Administration, from the Department of Transportation.

With your permission, I will briefly summarize my remarks and submit the formal statement for the record. (See p. 37.)

I thank you for this opportunity to discuss an important safety and energy-related program with you. A brief explanation of the role that the Federal Highway Administration and the National Highway Traffic Safety Administration each share with regard to the 55 mph program is perhaps desirable. The Federal Highway Administration has been gathering speed data as a part of highway planning efforts for many years prior to the enactment of national 55 mph legislation. For this reason, the Federal Highway Administration has been assigned the lead Federal role in the speed monitoring activity. This activity, with the cooperation of the States, involves the actual measurement of the public's compliance with the 55 mph limit. Since enforcement of the speed limit is in the nature of a safety standard and because of

the many other related program areas administered by the National Highway Traffic Safety Administration, they have the lead Federal role in enforcement. Because of the significant national benefits that have been and are continuing to be derived from the 55 mph program, both administrations share in promoting total compliance with the legislative mandate of this program.

S. 1337 would amend section 154 of title 23, USC, the national maximum speed limit program, in two ways. First, beginning with fiscal year 1980, S. 1337 would increase the compliance levels which must be attained by the States each year.

Second, the bill would increase the maximum penalty levels for a State's failure to comply in any given year. We project, based upon data now available to us, that the majority of States would be out of compliance with the S. 1337 requirements established for fiscal year 1980.

Under existing section 154, all States were in compliance with the national maximum speed limit requirements in fiscal year 1979. The next certification is due to be submitted on or before January 1, 1981, covering fiscal year 1980 which is also the first year covered by S. 1337.

Furthermore, as a result of the increased penalty provisions of S. 1337, noncomplying States would be faced with the possibility of having their Federal-aid primary, secondary, and urban system funds reduced by up to 20 percent. Such a reduction in funds would have a significant impact upon the highway program in those States. In the event the maximum penalty is assessed against a State, highway safety would also be adversely affected and the rate of fuel consumption on our roads in these States could be expected to increase.

The Department strongly supports the 55 mph national maximum speed limit, including the concept of graduated compliance requirements with an adequate penalty structure to achieve the goals of the program. The Department has had a long and good relationship with the States. We believe that we can build upon the close Federal-State relationships now existing through the Federal-aid highway program to assist the States in complying with increasingly rigorous standards.

The administration would support S. 1337 if amended to include more reasonable compliance standards. We are concerned, however, that if a large number of States fail to meet unduly stiff compliance requirements, support for the program in the legislatures of those States that have been penalized will wane. The argument for repeal of the 55 mph speed limit at the State level may gain some greater political acceptability if a stiff penalty has been assessed against a State for failing to meet an overly rigorous or ambitious compliance requirement.

We would also prefer to see S. 1337 amended to lessen the proposed penalty for noncompliance, especially in the early years. As I have stated, it is our intention to work with the States to reach full compliance. A severe reduction in Federal-aid funds available to these States is not in the interest of either highway safety or fuel efficiency.

The Department is also considering the criteria which should be weighed in assessing penalties against States that fail to meet the speed limit compliance requirements. The criteria might include items such as: Extent of noncompliance; the commitment of a State to enforce the speed limit as reflected in its laws and budget priorities;

evidence of enforcement such as number of arrests and citations, levels of penalties assessed, commitment of police to speed monitoring duties, et cetera; speed trends in the State; and the result of our meetings with the States.

This concludes my prepared statement. At this point I would like Mr. Amato from the National Highway Traffic Safety Administration to comment on their portion of the enforcement.

STATEMENT OF GENE AMATO

Mr. AMATO. Mr. Chairman and members of the subcommittee, I am pleased to appear before your subcommittee to discuss S. 1337, a bill to amend title 23 of the United States Code to provide greater compliance with the national maximum speed limit. This bill reflects the view that the national 55 mph speed limit—already in force—should be even more heavily relied upon in our national effort to reduce gasoline consumption.

Since Mr. Hassell, the Federal Highway Administrator designate, has addressed many of the possible consequences of S. 1337, I will confine my prepared remarks to the National Highway Traffic Safety Administration's role in the area of State enforcement of the 55 mph speed limit.

Congress enacted the national speed limit in 1975 as both a traffic safety and an energy conservation measure, recognizing that its success would be contingent upon, and I quote, "strict enforcement as well as public acceptance."

Mr. Chairman, I am pleased to report to you, as one of the original sponsors of the 55 mph law, that 55 does save lives and does save gasoline. Our studies show that at least 18,000 lives were saved by the the speed limit between 1974 and 1979.

Senator BENTSEN. Let me ask you something on that, when a flat statement like that is made. I don't question for a moment that 55 mph saves lives, and a lot of lives. But in the same period of time we were adding to our seatbelts and harnesses and doing other things to make cars safer. How do you discriminate, how do you decide how much came from the harnesses, how much came from things that we did to automobiles and how much came from 55 mph? I don't know how you pick between them. I hear flat statements made for one or the other and I must say I question the groundwork.

Mr. AMATO. Admittedly it is very difficult to get those figures, but that is the level which we along with many other experts in the field, have estimated.

Senator BENTSEN. But that is no answer. You just told me you have estimated, but that is really not an answer to my question.

Mr. AMATO. We have estimated at least half—

Senator BENTSEN. Any time you are in the Senate as long as I have been you get so many numbers thrown at you that finally you don't accept things at face value.

Mr. AMATO. Mr. Chairman, I can appreciate that. As I said, definite figures are very difficult to get.

Senator BENTSEN. It might be twice as many for all I know. I just don't know how you discriminate.

Mr. AMATO. It is an estimate. In 1973 there were approximately 50,000, a little over 50,000, deaths per year and in 1974 to 1976 it

dropped to about 45,000 deaths per year. We do attribute some of that to the introduction of seatbelts and highway design, improvements et cetera. But most experts feel at least half of that savings was attributable to the compressing of the speed limit or more uniform speeds on the highway, which most safety experts believe is a safer condition to have on the highway.

Senator BENTSEN. I don't question that for a moment. Just when you give me these round numbers for that sort of thing that I have a question. Go ahead.

Mr. AMATO. Changing the driving behavior of the American public is a difficult and long-term job, but we can report that the traffic speed pattern is still well below that of 1973 and the speed limit is making a substantial contribution to both safety and energy conservation.

We estimate that if today's volume of highway traffic were to revert to the 1973 speed pattern, the annual cost of that increase would exceed 5,000 additional lives lost and 100,000 injuries. In addition, even with today's improved automobile fuel economy, we estimate that reversion to the previous national speed limit speed patterns would increase petroleum consumption by at least 125,000 to 273,000 barrels a day.

Under the national speed limit statute, enforcement of the 55 mph speed limit, as with all other traffic law enforcement activities, has been a State responsibility. However, under the 1975 law, each State has the added duty of certifying annually to the Secretary of Transportation that it is enforcing the 55 mph speed limit. The Secretary is required to withhold approval of all Federal-aid highways projects in any State failing to make this enforcement certification.

The 55 mph speed limit has imposed new and greater speed enforcement responsibilities on State agencies—particularly since the passage of the 1978 amendments. The States can no longer satisfy the requirements of the 55 mph law by showing their efforts; they must produce results or else risk losing highway funds.

Since fiscal year 1978, the States, responding to the new requirements of the 55 mph law, have received Federal funds for this effort. The States spent \$30 million in Federal highway safety funds in fiscal year 1978 on 55 mph enforcement and \$42.4 million in fiscal year 1979. In fiscal year 1980 the States have obligated \$20 million in Section 402 safety funds and an additional \$20 million from a separate authorization for the 55 mph program.

Yet, the States have had problems enforcing the 55 mph law. Although all States met the fiscal year 1979 compliance level of 30 percent set by the 1978 amendments, some States barely made it. In order to meet the 40 percent compliance level this year—fiscal 1980—some States will have to apply increased resources. Because of the need for greater enforcement and the greater cost of such effort, we have requested for fiscal year 1981 \$50 million for the states for their 55 mph enforcement programs and \$7 million for incentive grants.

The national speed limit program is one of our responsibilities and our aim is to provide the State Governments with the information they need to make sound decisions about their own 55 mph activities. We are funding research efforts designed to develop new equipment, new enforcement tactics and improved training courses for police and

highway patrolmen. Some of our current activities in this area include: Cost effective ways of enforcing the 55 mph law; increasing the public's expectation of detection and apprehension; evaluating countermeasures for effectiveness during trial runs in a few States; disseminating results of successful projects; exploring the feasibility of automatic speed enforcement systems; developing performance standards for radar devices; developing a model training course for police operators of radar devices; identifying the costs solely attributable to 55 mph enforcement; arranging workshops and seminars for traffic enforcement agencies.

Opinion polls have continually shown the public's support for the 55 mph maximum speed limit, despite the fact that statistics show speeds are increasing. We have learned from a 1978 survey on public perceptions in highway safety, conducted for us under contract, that 70 percent of the drivers who report their usual driving speed on 55 mph roads as between 56 and 60 mph also support the law.

In regard to enforcement, the driving population appears to be willing to accept a somewhat stricter enforcement than is currently in practice: 65.2 percent feel the speed limit is enforced at 60 mph, but 77.7 percent think that the speed limit should be enforced at 60 mph. Only 19 percent feel that the speed limit should be strictly enforced at 55 mph. So while the driving public may appear to be willing to accept a more strict enforcement effort, there appears to be a tolerance factor to be considered in the public acceptance of the law. The tolerance factor for all speed limits has historically ranged between 5 and 7 mph regardless of the speed limit, be it 70, 60, or 55 mph.

NHTSA has been running an active public information and education program to convince the public that the 55 mph law is necessary and desirable, and that enforcement of the speed limit is getting tougher. NHTSA is using two approaches to promote compliance with 55 mph through public information.

First, at a national level, NHTSA is conducting campaigns with State police agencies, private CB organizations, a private industry group comprised of companies in the recreation equipment business, and major corporations in an effort to enlist the support of their marketing and advertising resources on behalf of the 55 mph law. To support these activities, the agency has developed a number of materials which are available for distribution. These include brochures, bumper stickers, posters, print ads, mail stuffers, and the like.

Second, at a State and local level, NHTSA is endeavoring to improve State and local public communications programs on the 55 mph law. For example, NHTSA has published the 55 mph model communications plan. This plan lists all the possible target populations for a 55 mph campaign, lists appropriate messages for reaching those audiences and suggests possible ways for delivering those messages. NHTSA also offers a course for State and local communications people on managing public information campaigns on highway safety. Finally, the agency offers technical assistance to any State which asks for help in designing its 55 mph public communications programs.

This completes my prepared statement. I would be pleased to answer any questions you may have.

Senator BENTSEN. Mr. Amato, that is an interesting and informative statement about what NHTSA is doing, but we asked you to come

up here and tell us whether you are for or against this piece of legislation. Do you support the efforts to legislate higher standards of compliance and stiffer penalties or does NHTSA prefer to work with the current law or some different modification?

Mr. AMATO. Mr. Chairman, as Joan Claybrook testified in September 1979, we do support an increased compliance level and we do support an increased penalties level. That increased level, in terms of compliance, in 1980 would be 40-percent compliance, which is the same as it is this year; 60 percent in 1981; 70 percent in 1982 and 80 percent in 1983. We would also support increased penalties of 5 percent for 1980, which is not an increase; but in 1981, 10 percent; 1982, 15 percent; and in 1983, 15 percent. We feel that this is the compliance level that we could support and in terms of funding the States would be able to support.

Senator BENTSEN. Mr. Hassell, do you think the goals of this legislation are attainable and is legislation an appropriate way to achieve such goals? First, do you think the goals are attainable as set forth in the piece of legislation we are considering, and do you think these are the appropriate means to achieve those goals?

Mr. HASSELL. Mr. Chairman, I believe the goals that we have suggested are attainable. Those that are contained in S. 1337, however, probably are not attainable in the near term. It requires time for the states to establish their enforcement procedures. They are doing better. The speed data we are collecting does show that the States are getting better compliance with the speed limit. However, to immediately jump in with the high levels of compliance suggested in S. 1337 would probably result in a very large group of States not being in compliance immediately, and we don't think that is appropriate to achieve the objectives that Congress set forth in the 55 mph program.

Senator BENTSEN. Would you compare for me the benefits that we could anticipate from this legislation along with the costs that we can expect to incur?

Mr. HASSELL. It is difficult to put precise figures on all of the benefits that are involved or all of the costs. As Mr. Amato just remarked, we are suggesting that the States be permitted to spend about \$50 million, I believe, during this coming fiscal year from Federal funds for 55 enforcement. That is an example of some of the costs in achieving it. There are other costs involved in our efforts, NHTSA's efforts and the States', in bringing about 55 compliance.

There are some very tangible benefits involved. The NHTSA studies, the safety experts have all pointed to the safety benefits of the law. There are some energy savings not to be discounted. When we are looking at the problem of our dependence upon foreign petroleum resources, the savings of the 55 mph program are significant contributors, upwards of 200,000 barrels a day. To put this in more perspective, this is roughly half what we were receiving from Iran before their revolution and the reduction of imports from that country which triggered the problems we had with gasoline supplies a little over a year ago now. So it is a significant contribution, and I think it allows the American public, through their conscious choices, to participate in the reduction of our imported energy, and permits some important technological changes in our entire highway transportation system which would not be possible without a 55 mph program.

Senator BENTSEN. Senator Pressler, do you have any questions?

Senator PRESSLER. I yield.

Senator BENTSEN. Senator Simpson.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. Mr. Chairman, thank you for this opportunity of expression on a matter of great interest to the legislatures and the citizens of every State in our Nation.

I was pleased to have had the honor and unique opportunity to serve as a member of the Wyoming Legislature for some 13 years, and during that time there was one recurring problem that plagued that body's deliberative process. That plague is better known as Federal intimidation, and it threatens the States ability to function as individual governmental units within our Nation. I guess it is like divorce, you can't live with them and you can't live without them.

One of the ever present threats to State's rights is the threat that Federal-aid highway funds will be reduced if the States do not enforce the national 55 mph speed limit with sufficient zeal. Those very capable members of the Wyoming legislature—all legislatures—have been threatened so frequently with the loss—or partial loss—of Federal-aid highway funds that it is now commonly assumed that a bitter squabble with the Federal Government looms on the horizon whenever State decisions are to be made concerning the enforcement of traffic laws or the setting of speed limits.

The limited data collected by my State during fiscal year 1979 seems to disclose that some 68 percent of the drivers on Wyoming's highways exceed the federally mandated 55 mph speed limit.

There are a number of justifiable reasons for the opposition to a federally mandated 55 mph speed limit in my State—its vastness and its extremely low density of population are but two. However, I shall confine my comments to a more central and basic issue—the right of each State to set, and enforce, whatever speed limit it deems proper, absent a true national emergency.

I do not advocate a raising of the Federal 55 mph speed limit, but I do strongly support the right of the individual States to set whatever limit their legislature may choose and I do strongly oppose the Federal Government's continuing threats to cut back Federal funding for highways in those States that do not—in its view—sufficiently enforce the federally mandated limit.

It has been suggested that since the Interstate System was designed for safe travel at higher speeds, the speed limit on these roads should be raised, perhaps to 65 mph, allowing the States the discretion to establish and enforce the speed limit on the Interstate System which would be but another way to recognize the rights of the individual States and each State's unique situation.

In the past, it was always the responsibility of each State to establish speed limits on its highways. Similarly, both the enforcement of the speed limit and the bearing of the cost of enforcement have traditionally been a State responsibility. The Federal-aid Highway Amendment of 1974 established a federally mandated 55 mph speed limit and required the States to adequately enforce it. At that time little or no information was given to the States as to what "adequate

enforcement" meant, but Federal sanctions were to be imposed if the States did not "adequately" enforce the 55 mph speed limit.

Since that time further guidance for enforcement criteria has been given to the States but data collecting technology is still in the development phase. Most importantly, the Federal Government has provided very little assistance to the States in bearing the cost of this federally-mandated regulation. In view of the current economic situation and the Government's ponderous efforts to balance the budget, it is highly unlikely that money will be available for this year or in future years. We may be finding that Federal funding for enforcement of the 55 mph speed limit is being eliminated at the same time the Government is requiring a greater enforcement effort.

Is it any little wonder why the State legislatures feel themselves in a continued state of conflict and competition with the Federal Government—rather than enjoying a state of cooperation and sense of common purpose?

Under present law, each State must lower to 60 percent the percentage of vehicles exceeding the 55 mph limit in fiscal year 1980, or face a 5 percent cutback in Federal-aid highway funds.

Under the provisions of S. 1337, the violation rate must be lowered to 25 percent to avoid a funding cut of 20 percent. Under this proposed legislation the percentage of vehicles must not exceed 10 percent in fiscal year 1983 or thereafter, or the penalty to the States will be a 35 percent funding cut. That is unrealistic and it is unfair.

I understand Senator Metzenbaum has proposed a compromise set of figures that fall between computations of current law and S. 1337. However, requiring that the percentage of vehicles exceeding 55 mph be reduced to 50 percent during fiscal year 1980 is still most unrealistic, and unwarranted. During fiscal year 1979, 26 States reported monitoring data disclosing that over 50 percent of all vehicles were exceeding 55 mph.

Wyoming has 6,010 miles of road which are posted at the speed limit of 55 mph. The population of Wyoming is approximately 450,000. Massachusetts, for example, has 789 miles of road posted at the speed of 55 mph, and that State has a population of approximately 5,800,000.

This is an example of the unequal and unfair effects such laws have on individual States. It illustrates that large States with small populations are at a distinct disadvantage. It is substantially more difficult for a State such as Wyoming to bring about the same effective level of enforcement as a geographically small, but highly populated State.

In conclusion, Mr. Chairman, I am very much opposed to any acceleration of the "penalty schedule" currently in effect. The sanctions contained in S. 1337 are unfair to Wyoming and to many States. The people of our Nation do not need another "Big Brother" act. It is not yet 1984.

Senator BENTSEN. Senator Pressler.

Senator PRESSLER. I think that makes very good sense. Let me say I am looking forward to hearing the next witness who is from South Dakota, and I have to leave in about 5 minutes.

Senator BENTSEN. Let me see if I can pin this down. In the previous testimony before the Energy and Natural Resources Committee it is my understanding that the administration would support compliance limitations that would call for 60 percent in fiscal year 1981; 70 percent

in 1982; and 80 percent in 1983. Is that still the position of the administration?

Mr. AMATO. Yes, that is correct, Mr. Chairman.

Senator BENTSEN. Thank you, gentlemen, very much for your testimony.

Our next witness will be Mr. Eugene L. Rowen, Secretary of Transportation, South Dakota Department of Transportation, on behalf of the American Association of State Highway and Transportation Officials and the State of South Dakota.

Mr. Rowen, if you would proceed, please.

STATEMENT OF EUGENE L. ROWEN, SECRETARY OF TRANSPORTATION, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

Mr. ROWEN. Thank you, Mr. Chairman. It is indeed a pleasure for me to be here today. My name is Eugene Rowen. I am Secretary of the Department of Transportation for the State of South Dakota.

I appear before you today to oppose S. 1337 and the unrealistic compliance levels and penalties set forth in the proposed bill.

South Dakota does support the national 55 mph speed limit. In fact, we passed legislation in 1974 and have since turned down several attempts to change that speed limit.

In order that some of you may better understand and appreciate South Dakota's position on S. 1337, I would like to begin with a short description of South Dakota and its highway systems.

South Dakota is predominantly a rural agricultural State. We have a statewide population of less than 700,000 persons with only 13 municipalities having a population of 5,000 or more. Our population density is approximately 8.6 persons per square mile.

South Dakota's State trunk highway system consists of 8,713 miles having a posted speed of 55 mph. Included within this total are 599 miles of rural interstate, 7,963 miles of rural two-lane highways, 131 miles of multilane divided highways and 20 miles of urban interstate. In addition to the 8,713 miles of highway on the State trunk system, there are 68,816 miles of rural township and country roads.

Speed studies conducted in 1979 by the South Dakota Department of Transportation indicate that the average speed on South Dakota highways was 56.4 miles per hour. This compares to average speeds of 57.6 mph in 1976, 57.2 mph in 1977, and 56.6 mph in 1978, which indicates that South Dakota has made progress in decreasing the average speed over the last 4 years. A State like South Dakota does not have the dense urban corridors that many of the more populous States have. Due to this, our overall average speeds are not as directly affected by traffic flow as some of the other States, and as a result we experience a higher overall average speed on many of our highways. This is not only characteristic of our State, but of many of the other Central, Midwestern, and Western States as well.

It should be noted that the "average speed" represents the speed monitored on straight, level, and unrestricted stretches of road with weather conditions near perfect. If speed data were collected on all sections of the State trunk system posted at 55 mph, including curves, hills, intersections, restricted sight distance and adverse weather conditions, the data collected would represent a true "average speed."

The 1979 study shows that, in general, vehicle speed on the rural interstate and other multilane divided highways was found to be the

highest with an average speed of 57.5 mph. Vehicle speed on the two-lane rural highways averaged 55.7 mph or nearly 2 mph slower than on those higher capacity facilities.

Senator PRESSLER. Excuse me, Gene, I want to interrupt. I wanted to say that I have to leave, but I want to commend you on your fine testimony. I am proud of your testimony. Thank you for your testimony.

Mr. ROWEN. Thank you, Larry.

While fear of apprehension does play a significant role in reducing excessive speeds, it would appear that the single most important factor affecting the driver's rate of speed on South Dakota highways is the driver's judgment of what is really a safe speed.

I do not wish to minimize the sincere effort that the majority of our motorists are making to conserve energy. They are conserving energy in South Dakota. The numbers exceeding 60 are lower than they have been in the past. Since the speed studies began in 1976, South Dakota has recorded a yearly reduction in the percent of motorists exceeding the 55 mph limit. We have not, however, approached a level of compliance which would indicate the proposed compliance levels in S. 1337 could be reached.

South Dakota does not stand alone in its inability to meet the proposed compliance levels. It is noted that in the 1979 Fact Book distributed by the U.S. Department of Transportation that for the years of 1977 and 1978, only 10 jurisdictions reported a compliance level of 50 percent or greater, and no jurisdiction showed a compliance level of 75 percent. Based on this, we submit that the new proposed standards are inappropriate and unworkable. The enforcement levels existing in the current law are much more reasonable and set forth goals which a large percentage of the States might hope to achieve.

The revised compliance levels proposed in S. 1337 are set so high that they may in turn endanger the whole concept of a national speed limit. This could become clearly evident when the assessment of penalties is instituted against a noncomplying State or States.

I realize it is not the intention of the Senators sponsoring this bill to penalize a State for its rural characteristics; nevertheless, this bill would have that effect. Rural States would be required to invest tremendous fiscal resources without any assurance that the compliance levels could be reached. In addition, if South Dakota could maintain a visible police force on our State trunk system, we would still have nearly 70,000 miles of rural township and county roads without adequate enforcement.

In order to meet the proposed enforcement standards, we would have to implement an unreasonable and strict enforcement of the 55 mph speed limit. We do not believe that there is any justifiable way of setting a policy of strict enforcement and compliance whereby citations would be issued to all vehicles traveling at 56 mph, which is what your average speed is. I think it is impossible to have a system where you issue citations for 56 mph. First of all, any enforcement action has to be reasonable or the traveling public will not accept it. Second, most speedometers presently are not calibrated and certified for accuracy, and therefore, the operator is not knowledgeable of his exact speed. Under the present criteria and under the proposed standards, a vehicle is going to be counted as a portion of the percentage exceeding 55 mph whether it is traveling 56 mph or 80 mph. We think that is not correct in the monitoring system used. A strict, unbending enforcement policy

of 55 mph will possibly hinder rather than encourage compliance with the law. Such a policy may divert traffic to roads with lower design standards which could have an adverse effect on the rate and severity of traffic accidents, and it certainly would in a rural State like South Dakota.

An additional aspect of the proposed bill which makes the compliance level unachievable is the establishment of a new compliance level for the 12-month period ending September 30, 1980. The Surface Transportation Act of 1978 set a compliance level of at least 40 percent and if the percentage of motor vehicles exceeding 55 mph is greater than 60 percent, the Secretary shall reduce the State's apportionment by up to 5 percent. Senate bill 1337 directs the States to meet a 75 percent compliance level or lose 20 percent of its Federal-aid funds, totally disregarding the fact that nearly three-quarters of the year has passed.

This is perhaps an academic question since no state can honestly meet the proposed compliance levels. Nor can any State afford to lose 25 to 35 percent of its apportionment of Federal-aid highway funds.

The sponsors of this bill have decided to hold the highways of this Nation hostage until the motoring public gives greater attention to the 55 mph speed limit. However, should 26 percent of the citizens of South Dakota fail to comply with the 55 mph speed limit, the remaining 74 percent of the law-abiding citizens will be penalized for the irresponsible actions of the minority. This is one important reason why South Dakota strongly opposes Senate bill 1337.

Our final point that we would like to make is that in the past we did not feel that the monitoring systems and procedures used by the various States were consistent and uniform. There have been various changes made in this area over the years. However, it appears that in some instances the monitoring information as a comparison for all States and the application of it to the enforcement standard to determine compliance may have been unfair to some jurisdictions. As mentioned earlier, some of the Western States have higher average speeds and less highway traffic congestion, all of which can affect the statistics. This is especially true when comparing various areas of the country where there are extremes in traffic density in one way or the other. High traffic volume areas could, due to congestion, have lower average speeds on their highways, whereas rural, open areas in the Western States which experience lower traffic volumes are conducive to higher average speeds. We feel that some considerations should be given to such variances. This would be especially true in those instances where compliance criteria are being applied to an area with the intention of implementing penalties for noncompliance. The point I want to emphasize is that one set, hard and fast standard cannot be uniformly applied to all sectors of the country.

In a rural State, such as South Dakota, where traffic density is extremely light, it becomes somewhat a matter of conscience as to what speed to drive. I am not implying that South Dakota condones the violation of the 55 mph law or that our enforcement personnel are lax in the enforcement of State laws; neither is a statement of fact. Our enforcement people have done a commendable job in the enforcement of the 55 mph speed limit. We just do not have the manpower or

the fiscal resources to ensure a speed compliance near the levels proposed in S. 1337.

It would appear to us that a more positive approach would be to emphasize incentives rather than penalties. Punishing State highway programs for speed violations is an extremely harsh measure. It is also irrational. A severe reduction in Federal-aid will serve to foster those conditions that compliance to the 55 mph speed limit hopes to overcome. Loss of highway funds would only hasten the deterioration of our highways creating safety hazards and wasting energy, which is not the intent of the 55 mph speed limit.

Mr. Chairman, it is for these reasons that our State opposes the passage of this Senate bill 1337.

Now I would like to represent the AASHTO statement, and I will not go through their statement, I will just give you the highlights of their statement.

Senator BENTSEN. Mr. Rowen, I will have to ask you to summarize it very shortly because we are going far beyond our time.

Mr. ROWEN. The States collectively support the national speed limit. However, the expressed opposition in the past to the use of the penalties to ensure enforcement. Therefore, they cannot support this bill.

As a collective group of States, they do feel that it is having an effect on the safety and the traveling public. They also indicate that the highway agency should not be penalized for something that they have no control over, because the enforcement function is not in the highway agency in a lot of the States.

They also feel that reducing and applying penalties would only cause the opposite effect. We all know the experience of dodging potholes. Surely streets and highways that need repair work do not make for a smooth and efficient flow of traffic, thereby consuming more gasoline rather than saving it.

They are opposed to strict penalties. They also support an incentive type program which would be much more effective and give States some money if they can enforce, and those other rural States who have a problem would have to choose their own program if they want to.

Senator BENTSEN. Thank you. AASHTO's statement will be in the record. (See p. 52.)

Mr. ROWEN. I would be glad to answer any questions there might be.

Senator BENTSEN. I will submit some questions in writing because of the limitation of time and ask for your answer to them for the record.

Mr. ROWEN. Thank you very much.

[Responses to written questions follow:]

SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

Response to questionnaire submitted to Eugene Rowen by the Committee on Environment and Public Works, June 9, 1980.

1. The Federal Highway Administration and the National Highway Traffic Safety Administration are in the process of revising the "Procedural Guide for Speed Monitoring". What impact will the new procedures have on the ability of the states to certify compliance?

Response:

First, it is reasonable to assume that it is proper to obtain speed data based upon a sample procedure. At the present time there is underway a sampling plan called the "Highway Performance Monitoring System" (HPMA) which has already been established that are to represent the states highway systems both physically and in travel character. This is described in Chapter II-6 under "Travel Estimates".

It seems unwise to prepare additional sites to monitor over and above those established. We are already burdened with the requirement of an annual update of traffic volume counting at these locations. It appears we may have to obtain volume and speed data simultaneously to conserve manpower, energy and funds. We therefore suggest the sample sites be the same for both HPMA and speed monitoring.

Second, 24 hour data collection sessions will require additional manhours and unusual working hours thus putting a strain on the present personnel, budgets and schedules.

Third, if mechanical equipment is required for data observation rather than radar, then the cost of installing detector loops in the roadway (especially at the permanent or control sites) will add to the program cost. The time involved will also increase.

Fourth, the requirements for physical location is too rigid. Time spent in locating the required observation points plus a straight and level open stretch of road is not a true sample of South Dakota roads thus creating an unrepresentative sample.

Fifth, all the states will be required to do the identical program in the same manner, time and collection method if this plan is enacted. All states are not the same and rural states with low population densities and no congestion will be penalized.

2. Congress has authorized federal funds both for 55 mph enforcement and for incentive grants to states who are enforcing the speed limit to a greater degree than required. If only one category of funds were available, would you prefer incentive grants or enforcement funds?

Response:

Although an incentive grant program may be desirable such a program is premature for South Dakota. The problem we will soon be facing is not how much better than the basic compliance to the law can we establish, but rather, if we are able to meet the compliance goals at all. Therefore, if only one category of funds were available we would favor enforcement funds. However, we favor providing incentive grants in addition to enforcement grants.

3. What factors - including such things as public information programs, penalties for exceeding the speed limit, number and visibility of law enforcement officials - do you believe, are most significant in achieving compliance with the 55 mph speed limit?

Response:

We feel the number and visibility of enforcement personnel is the most important factor to be considered in carrying out the 55 mph speed limit enforcement program. The South Dakota Highway Patrol has initiated a high visibility program with the results showing a greater compliance to the 55 mph speed limit.

However, we also feel public information programs promoting the positive feature of compliance, i.e. incentive grants to the individual state, is a necessary vehicle for fostering further compliance as we do not have the manpower or fiscal resources to insure compliance by punitive measures alone.

4. Is a tolerance range allowed by most highway patrols in enforcing the 55 mph speed limit? Do you believe a 5 mph tolerance range should be allowed?

Response:

An enforcement tolerance is allowed by most highway patrol agencies. South Dakota allows a tolerance at this time. We feel that it is a necessity due to the fact most speedometers not being calibrated and certified for accuracy. Based on this, most drivers are not aware of their exact speed, and a tolerance becomes necessary.

Secondly, enforcement actions have to be reasonable in order for the public to accept them. An allowance or tolerance factor being applied to the 55 mph speed limit is felt to be reasonable. We feel that allowing a tolerance of 5 mph is reasonable and should be allowed. For the preceding reasons, we feel the penalties for non compliance should be based on a tolerance level. Penalties should become progressively severe for speeds over 60 mph (55 plus a tolerance).

5. Although federal funds have been authorized for assisting the states with enforcing the 55 mph speed limit, very little money has actually been appropriated.
 - (a) How much Federal assistance is necessary, do you believe, in order for all the states to comply with the schedule the law currently requires? With the compliance schedule in S. 1337?
 - (b) What will the impact on the states' ability to enforce the 55 mph speed limit be if no federal funds are made available?

Response:

- (a) South Dakota is now in compliance with the present law without federal funds being expended for enforcement. However, without increased enforcement and increased expenditures it is doubtful if we will be able to achieve compliance with the present law a year from now.

In order to attempt to meet the compliance levels in S. 1337, we estimate that we would need to triple our present resources. Even with a tripling of our present resources we could not guarantee the mandated compliance levels would be achieved.

- (b) In the event no federal funds were made available for 55 mph enforcement, we would probably carry on at approximately the same level of enforcement and compliance that we now experience. Our ability to apply stricter enforcement will rest basically with more manpower being made available to concentrate on this area of enforcement. Due to the decline in our authorized strength presently being experienced, we will be hard pressed to continue the level of enforcement we have currently achieved. Stepped up enforcement will be very dependent on increased manpower, and with the present economic conditions being what they are, little relief is expected in this area.
6. Before there was a national maximum speed limit, how much did it cost the states to enforce their highway speed limits? What does it cost the states now to enforce the NMSL? How much of this additional cost can be attributed to inflation? What costs would be incurred in conforming with S. 1337?

Response:

No breakdown on enforcement costs for specific traffic violations have ever been kept in the past nor are they being kept now by the highway patrol. It should be noted that our present manpower is not sufficient, even at this time, to provide the ideal coverage of all the highway in this state. This is especially true when it comes to enforcement of the 55 mph speed limit. With our ever increasing cost of operation, it appears quite evident that there will be very little relief in the area of added manpower. Our rural state is not unique from other central, mid-western states where low volume highways will make enforcement expensive, if not prohibitive. We estimate that for every 5% increase in the compliance requirement, South Dakota would need to spend one million dollars additional in the Enforcement effort.

7. Please explain the criteria used for how "Average Speed" is to be monitored by the states. and where is that criteria defined?

Response:

As part of the original "Procedural Guide For Speed Monitoring", FHWA, Office of Planning, Washington, D.C., September 1975 (OMB 04 - 575036), the "Average Speed" was one of the six (6) selected statistics required by the manual. The "average speed" is a mathematical derivative from the total number of speed observations divided by the total observed based upon the sample size required to give statistically valid sessions by highway system. In other words, it was determined that there should be so many observations for a select time frame within each highway system.

Our concern is that high traffic volume areas would, due to congestions, have lower average speeds on their highways. Rural areas in the western states with wide open spaces; low traffic volumes and no congestion are conducive to higher average speeds. We feel that some considerations should be given to such variances. This would be especially true in those instances where compliance criteria is being applied to an areas with the intention of implementing penalties for noncompliance. One set of hard and fast standards cannot be uniformly applied to all sectors of the country.

Senator BENTSEN. Our next witness will be Mr. George Viverette, Assistant Director of the Highway Department of the American Automobile Association.

STATEMENT OF GEORGE A. VIVERETTE, JR., ASSISTANT DIRECTOR, HIGHWAY DEPARTMENT, AMERICAN AUTOMOBILE ASSOCIATION, ACCOMPANIED BY: FRANCIS C. KENEL, DIRECTOR, TRAFFIC ENGINEERING AND SAFETY DEPARTMENT, AMERICAN AUTOMOBILE ASSOCIATION

Mr. VIVERETTE. Thank you, sir. I am George Viverette, assistant director of the Highway Department of the American Automobile Association. I am accompanied by Dr. Francis C. Kenel, who is director of AAA's Traffic Engineering and Safety Department.

We appreciate the opportunity to appear before this subcommittee to comment on S. 1337, a bill that would amend title 23 of the United States Code to provide greater compliance with the national maximum speed limit of 55 mph. The bill would lower substantially tolerance levels States are allowed when certifying 55 mph enforcement and, at the same time, increase sanctions for failure to comply.

We strongly support the 55 mph speed limit and have continually urged our 21 million members and the general public to comply with it. Club membership polls consistently find AAA members voting for retention of the national speed limit and its continued enforcement. We have also urged the Department of Transportation and the General Accounting Office to monitor the effects of the limit, particularly the costs and benefits associated with enforcement of it.

Mr. Chairman, we believe the approach embodied in S. 1337 is premature. Under existing law, 1979 was the first year financial sanctions were to be imposed if States did not comply with Federal guidelines for enforcing the 55 mph speed limit. More time is needed to determine the effectiveness of the current certification process before it is changed. As already mandated speed limit compliance ratios increase each year through 1983, we believe more and more States will voluntarily step up their enforcement efforts.

National Highway Traffic Safety Administration statistics indicate that all States were in compliance with the certification process for 1979. Not a single State lost highway funds as a penalty for non-compliance with the national speed limit. This demonstrates that the American driver is complying with the intent and spirit of the national speed limit.

The national average speed for 1979 was 58.3 mph, down slightly from 1978's 58.8 mph. This slight reduction is encouraging when we examine earlier figures compiled by the Department of Transportation.

According to DOT, in 1974, the first year drivers were required to limit their speeds to 55 mph, the national average speed was 57.6, down from the previous year's average of 65 mph. Since then, speeds had risen slowly, to 58.8 mph in 1978.

Figures for 1980 are even more enlightening. Although States are no longer required to submit average speeds, 38 did and the average was 55.6 mph.

There also has been a drop in the percent of vehicles exceeding 55 mph. The fiscal year 1979 average was 54.3; the average for the first quarter of fiscal year 1980 is 51.8.

These figures hold up even when the States are examined on an individual basis. Some 37 States registered a decrease in average speeds over the previous year, while four registered no change and nine States showed an increase. Even among this latter group, the maximum increase was less than 1 mph.

Because the motoring public is becoming aware of the fuel savings and safety benefits of the 55 mph speed limit, and is painfully aware of the high cost of fuel, we feel the speed limit figures for 1980 will be even lower.

As an example, AAA's latest survey of travel for 1979 reveals that auto trip travel plummeted almost 13 percent compared to the same period in 1978. While this survey does not address speeds, it clearly demonstrates that Americans are acutely aware of possible energy supply interruptions and will adjust their driving habits accordingly. In fact, both highway travel and fuel use are continuing to decline in 1980 as they did in 1979. Information from the Highway Users Federation discloses that for the first quarter of 1980 the total vehicle miles of travel in the United States were down 2.9 percent from the same period in 1979. At the same time, gasoline demand shows an 8.5 percent decline for the first 4 months of 1980 over 1979. AAA's first quarter 1980 travel survey indicates that requests for travel routings are down 3.9 percent from the same period in 1979.

We firmly believe that most motorists prefer voluntary conservation of fuel to rationing or punitive taxes imposed by the Federal Government. Driving at 55 mph is helping to meet national conservation goals.

In addition, AAA believes noncompliance sanctions imposed against States that do not certify their enforcement efforts to the satisfaction of the Federal Government may be counterproductive, in that they encourage concentration of enforcement personnel on the Interstate System to the detriment of enforcement on roads which are less safe and less conspicuous.

To increase penalties for noncompliance, as suggested by S. 1337, not only will further reduce a State's capacity to meet the goals of compliance with the 55 mph national speed limit, but also will endanger other highway programs important to safety and fuel conservation.

State compliance with 55 mph certification should be monitored carefully during coming years. Stepped up public education programs demonstrating the life- and fuel-saving benefits of 55 should be undertaken by both the Federal Government and private industry. As in the past, to this end, AAA volunteers its resources and assistance in such efforts.

Because States are clearly attempting to meet current compliance levels, they should be given the chance to continue to meet stiffer compliance levels in the years to come under current law, rather than be punished prematurely under S. 1337.

Thank you.

Senator BENTSEN. Let me understand some of your numbers here. Talking about AAA's latest survey of travel for 1979 reveals auto trip travel plummeted almost 13 percent compared to the same period in 1979, and you are telling me that information from the Highway Users Federation shows for the first quarter of 1980 total vehicle

miles traveled was down 2.9 percent. Are we still comparing apples to apples?

Mr. VIVERETTE. We are sort of comparing apples and oranges. Our surveys are based on routings, long-distance travel.

Senator BENTSEN. That first part is for long-distance travel?

Mr. VIVERETTE. Yes.

Mr. KENEL. To a degree. However, it may not always be long-distance travel. It can be a one-tank type of vacation trip.

Senator BENTSEN. Well, it is a long enough trip to call up and have the routing requested.

Mr. KENEL. That is correct.

Senator BENTSEN. So it is the position of your association then you would support the present law; is that correct?

Mr. VIVERETTE. That is correct.

Senator BENTSEN. What do you mean by the 85th percentile used in determining speed limit?

Mr. KENEL. We believe that one of the reasons we have some of the discrepancies with conformity to the 55 mph speed limit arises out of a concept of how traditionally speed limits were established prior to 1974. Highway speed limits were established at what 85 percent of the traffic was traveling, what drivers perceive, as one of the preceding witnesses indicated, was a safe and rational speed for a given stretch of road. When speed limits are established and enforcement is held to that which the people have perceived is safe, you can pretty much establish that people will obey a speed limit that is acceptable to the population at large.

Senator BENTSEN. When people are going out through West Texas on an interstate and they see 55 mph, they might not think it is appropriate.

Mr. KENEL. They would not think it is a rational speed limit for that terrain.

Senator BENTSEN. That I have come to understand.

Gentlemen, I am going to submit some further questions to you in writing and ask you to respond to them, again because of our time limitations. Thank you very much.

Mr. VIVERETTE. Thank you.

[Responses to written questions follow:]

Responses to Questions Supplementing Testimony of the American Automobile Association before the Transportation Subcommittee, Senate Committee on Environment and Public Works, June 3, 1980

Question #1 - You stated in your testimony that polls show AAA members support the 55 mph speed limit and its enforcement, and this is generally true for other surveys which have been taken. Yet some States are finding it difficult to meet the current compliance schedule. How do you explain this apparent discrepancy?

Answer: A survey undertaken for the U.S. Department of Transportation three years ago found the same anomaly. DOT's interpretation at that time was:

"It would appear that this is one area where rhetorical agreement is one thing and actual behavior is another. Yet we do not believe these responses should be entirely disregarded. There is a clear feeling that the 55 mph speed limit is a good thing, even if there is dissent from an appreciable minority of heavy highway users. And there is at least a desire on the part of individuals to say that they do obey the limit. These are positive attitudes which can be built upon to increase support of, enforcement of, and adherence to the 55 mph limit."

We concur with this interpretation and also believe that the majority of the motorists think they are complying with the intent of the law when they are driving within 5-7 mph "tolerance" of the actual speed limit. A check of speeds in 25 mph zones will usually indicate average speeds of 30 to 32 mph.

Question #2 - Do you believe there is a significant difference in observation of the speed limit among drivers of different classes of vehicles? For example, between cars, trucks and buses?

Answer: Many of our members do complain about speeding trucks, although we have no statistical studies or data to support their complaints. Last summer, NHTSA did report in their July-August 1979 Newsletter that, "Truck and car speed seems to be the same, on the average. Perhaps motorists perceive that trucks pass them more than do cars because of their size and noise, or perhaps motorists were used to the slower truck speeds of the past (before 1974) when 27 states posted lower speed limits for trucks than for cars. Intercity bus speeds (with one exception, 1975) have always been higher than either cars or trucks and they continue to be higher today. Of particular concern is the indication that truck speeds are increasing faster than car speeds. All past data have shown trucks traveling slower than cars."

Question #3 - Penalties levied by States for exceeding the 55 mph speed limit vary considerably. Do you believe a severe penalty is an effective deterrent to exceeding the speed limit?

Answer: Yes, although this is not the place for a "sky is the limit" attitude. The AAA has for years urged the establishment of fair and equitable penalties for traffic law violations.

We are not convinced that a severe penalty is necessary. A more effective deterrent would be a high probability of apprehension with appropriate penal-

ties -- such as the assessment of points.

A heavy monetary penalty would be grossly unfair to the majority of the American motorists who are decent and law-abiding by nature and who regard the nation's traffic law enforcement agencies and courts with respect.

Question #4 - What factors - including such things as public information programs, penalties for exceeding the speed limit, number and visibility of law enforcement officials - do you believe, are most significant in achieving compliance with the 55 mph speed limit?

Answer: A combination of the factors mentioned in the question and the increasing cost to the motorist of motor fuel will lead to compliance with the 55 mph speed limit. The current compliance rate in the State of Maryland is a good example of how important this combination of factors can be.

Senator BENTSEN. Our next witness will be Mr. Glen Murphy, the director of the Office of Government Relations and Program Development, International Association of Chiefs of Police, and Mr. Ronald Sostkowski, director of IACP Division of State and Provincial Police.

STATEMENT OF GLEN R. MURPHY, DIRECTOR, OFFICE OF GOVERNMENTAL RELATIONS PROGRAM DEVELOPMENT, INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE, ACCOMPANIED BY: RONALD H. SOSTKOWSKI, DIRECTOR, DIVISION OF STATE AND PROVINCIAL POLICE, INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE

Mr. MURPHY. Thank you, Mr. Chairman. I will just summarize our testimony that we have submitted to you and submit ourselves to questions from the chair. (See p. 55.)

Senator BENTSEN. Fine.

Mr. MURPHY. The Division of State and Provincial Police, which is a division of the International Association of Chiefs of Police, represents all of the State police administrators in the United States. Col. Robert Landon is the chief of the Washington State Patrol and general chairman of this division, and he would be here today but he has a small problem with a big mountain, or vice versa, so he could not be here and he sends his apologies.

We would like to take this opportunity for the division to express its concern about the possible imposition of more stringent compliance criteria and sanctions for the national maximum speed limit. Although we were requested to talk about the compliance rates, I think it is important that we mention IACP and its Division of State and Provincial Police, since its inception, has supported the 55 mph speed limit and has supported the compliance criteria and sanctions to be imposed for noncompliance. The IACP supported the legislation before this committee and through Congress as being realistic and necessary in the face of oil embargoes and their resultant fuel shortages. In supporting the national maximum speed limit, the State law enforcement agencies, in effect, pledged their manpower and resources toward active enforcement programs to ensure the success of the legislation. The spirit in which this support was given was under the administration's assurance of active participation in the program and financial assistance to the States in order to ensure its success. For example, \$100 million was promised for national maximum speed limit enforcement, as well as a national media campaign for public education.

In a democracy, as the prior speaker said, if there is not a high ratio of compliance, the amount of enforcement you need goes up directly proportional to the lack of public support. As this speed limit has gone on, there has been a lessening in public support.

Because of the seeming lack of interest in the national maximum speed limit by the administration, the Division of State and Provincial Police is rescinding its support of compliance criteria and sactions, and now opposes any increases in either. In fact, at the May 1980 meeting of the Mountain-Pacific region of the Division of State and Provincial Police, a resolution was passed urging the removal of compliance criteria and sanctions from the legislation. It is with this background that the Division of State and Provincial Police states

its firm opposition to S. 1337, and urges this committee to oppose its passage.

Since its inception, the State law enforcement agencies have been vested with the primary enforcement responsibility for the 55 national maximum speed limit, in all probability because of their special mission of patrolling the federally constructed interstate roadway system. The States have received little Federal support, however, in terms of media or public information/education campaigns in support of the speed limit, for a program which is Federal by definition.

First, it is a federally mandated law. In January 1975, the Federal-Aid Highway Amendments of 1974 made the 55 national maximum speed limit permanent. Second, it is enforced federally through compliance criteria with the imposition of sanctions against the several States' Federal-aid highway funds for noncompliance.

The State law enforcement agencies have demonstrated, as evidenced by Mr. Amato's comments, their support for the national maximum speed limit by increasing speeding arrests from 5.7 million in 1973 to 8.4 million in 1978. This was done with virtually no increases in total manpower or available resources. In addition, unconventional vehicles, aircraft, saturation patrols, special squads, and multistate combined efforts are but a few of the many innovative techniques employed by the State law enforcement agencies in their effort to enforce the 55 national maximum speed limit.

I think it is important to note State law enforcement efforts have been hampered in several instances by the States themselves, because in some States there are only token fines for speeding and points are not assessed against violators toward the suspension of their license for exceeding the 55 national maximum speed limit, which, in our opinion, is a more significant factor to the motoring public. Again, several States will not adjudicate speeding cases unless the speed is at least 10 miles over the limit, or, in several cases, in excess of the previously posted limit. In other States, the police are not permitted by State statute to utilize electronic speed measuring devices, unconventional vehicles, aircraft, or other various enforcement strategies, making the enforcement of the speed limit at currently required compliance rates, extremely difficult to meet, if not impossible.

The Division of State and Provincial Police suggests that the committee review the possibility of imposing sanctions against States for hampering enforcement efforts. These sanctions may be more in line and assist enforcement efforts to a greater degree than those currently proposed in this amendment.

As Senator Metzenbaum has mentioned, the budgetary considerations at the State level are \$1.72 million. Being reduced in State revenues as well as the proposed cuts in the highway safety funds that will go to State law enforcement agencies, if not complete abolition of it leaves little room for decision among the State law enforcement administrators. They must increase NSML enforcement programs to the exclusion of other services in order to receive much needed funding. So it is making a decision of where their resources go, how they allocate their manpower.

Senator BENTSEN. Let me ask you what percentage of the total Nation was committed to speed limit enforcement prior to the 55 mph speed limit and what percentage of the Nation was committed to enforcement after?

Mr. MURPHY. I will ask Mr. Sostkowski, who is a State policeman, to reply. But I also must say in response to that that the 70 mph speed limit, as mentioned by the prior speaker, has a higher voluntary compliance ratio. So the degree of compliance goes up when you reduce the speed limit.

Senator BENTSEN. You mean increase?

Mr. MURPHY. As you decrease the speed limit, you must increase enforcement of public awareness.

Senator BENTSEN. I understand what you are saying.

Mr. SOSTKOWSKI. Senator, we don't have an answer for the question you asked. We are trying to make some determination of percentage and cost, and hopefully we will have an answer within 2 months, but that data doesn't exist right at the moment.

Senator BENTSEN. Well, let me put it another way then. When you talk about additional funds, give us some idea of how those funds would be used to help enforce the 55 mph limit as opposed to if you didn't have a federally imposed 55 mph maximum limit?

Mr. MURPHY. If you did not have a maximum speed limit, the allocation of your manpower based on your traffic accident ratio and enforcement index, then you would put the number of people in the highway system directly proportionate to your problem. That is what I am talking about. When you decrease the speed limit, then you have to put more people on the Interstate System. There has not been an increase in State Law enforcement agencies across the country. They have had to do it through other sorts of systems.

Senator BENTSEN. All right. Please continue.

Mr. MURPHY. Because the State law enforcement agencies retain almost exclusive NMSAL enforcement responsibilities—with limited resources, limited State support in the way of fines, case adjudication, et cetera, and limited Federal support—of this unpopular law, it is their concerted opinion that any legislation further impacting on the NMSL would make their near-impossible enforcement mission impossible. The Division of State and Provincial Police is, therefore, strongly opposed to any increases in the NMSL compliance criteria established in the Surface Transportation Assistance Act and emphatically urges rejection of the proposed legislation on the basis that the compliance criteria proposed are totally unrealistic and unattainable, both in and of themselves, in light of the administration's seeming lack of interest, and in light of resources currently available for NMSL programs. Thank you.

Senator BENTSEN. Gentlemen, thank you very much. We will also submit written questions to you which we request that you answer for the record. We appreciate the contribution you have made.

[Responses to additional questions follow.]



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July 15, 1980

Paul Chimes
Committee on Environment &
Public Works
4204 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Mr. Chimes:

In response to a recent request from Senators Bentsen and Pressler, I am pleased to reply to several questions submitted in connection with the June 3, 1980 hearing concerning S. 1337, a bill to provide greater compliance with the National Maximum Speed Limit (NMSL).

By way of introduction, I wish to point out that in some instances, data in several state agencies is available to verify answers to the questions presented. In other cases, data is not available, and research is currently being undertaken to collect data in a particular fashion so that more detailed information can be obtained in regard to 55 MPH NMSL violations. This is especially true for questions 1 and 8, below. A copy of the questions is enclosed for your information.

1. There is general agreement among the state police that trucks tend to be the fastest vehicles on the road. Several state agencies are currently gathering data to validate their belief that trucks violate the 55 MPH speed limit out of proportion to the total number of trucks registered. Similarly, at the request of the U. S. Department of Transportation, several state agencies are attempting to determine the percentage of bus violations of the 55 MPH speed limit to determine if they are disproportionate to total bus registrations.
2. The dramatic increase in the use of CB radios by the motoring public has greatly impacted on law enforcement's efforts to enforce the 55 NMSL. As you know, this device allows the motorist to drive at any speed, slowing to 55 MPH only where in the immediate vicinity of a law enforcement officer. A second device severely hampering 55 NMSL violation enforcement efforts has been radar detectors, the most well known being the "Fuzz-Buster."

These devices, which alert drivers to the presence of radar units, are becoming increasingly popular among motorists since it allows them to drive at high speeds, slowing only in the presence of police radar. Like CBs, the radar detectors have hampered 55 NMSL enforcement efforts.

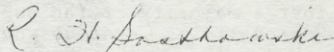
3. Penalties levied by states for violating the 55 NMSL vary considerably. While we do not believe that a severe penalty would be a more effective deterrent to exceeding the speed limit, we do believe that penalties should be more consistent in and of themselves, and they should be consistently applied against all classes of violators.
4. The 55 NMSL is an "unpopular law" in that while the motoring public agrees with it in concept and is aware of its benefits as an energy conserving and life saving measure, drivers want everyone else to comply with the law while they themselves exceed the limit. The unpopularity of this law is evidenced in the compliance rates among the several states. The states are hard pressed to meet current compliance criteria due to the number of violators. Were this a "popular" law, there should be little difficulty in meeting compliance criteria. Again, the increase in the use of CBs and radar detectors seems to point to the unpopularity of the law, since these devices are utilized to avoid detection and apprehension for speeding.
5. There is general agreement among law enforcement administrators that the most effective measures in achieving compliance with the 55 NMSL include the visibility of troopers on the interstate highways and an effective public information/education campaign.
6. A tolerance range is generally allowed by the state law enforcement agencies in enforcing the 55 NMSL. Normally, speeders are arrested for exceeding 60 MPH. This 5 MPH tolerance allows for the possibility of speedometer error. In fact, because of the possibility of speedometer error and in light of the universality of a 5 MPH tolerance, state law enforcement administrators have recently prepared a resolution to be submitted to the U.S. Department of Transportation, requesting their official approval of a 5 MPH tolerance by agreeing that those driving under 60 MPH should be considered in compliance with the 55 MPH NMSL. A copy of this resolution is attached for your information.
7. Although federal funds have been authorized for NMSL enforcement, very little funding has actually been appropriated. It is currently estimated that \$200 million of federal assistance would be required to meet the compliance criteria proposed in S. 1337. If no federal funding is made available to the states to assist in their enforcement efforts, there would be little, if any, emphasis placed on NMSL enforcement.
8. Prior to the implementation of the 55 MPH NMSL, there was no specific breakdown in the cost for speed enforcement, per se. At that time, only 15 percent of the drivers violated the posted speed limits, and state law

enforcement officers normally directed their enforcement activities and budgets toward the accident causing traffic violators. The NMSL made "energy cops" out of the state law enforcement agencies, however, and placed additional enforcement and budgetary burdens on each agency.

The International Association of Chiefs of Police is currently undertaking a study for the U. S. Department of Transportation to examine the feasibility of determining the cost of enforcing the 55 MPH NMSL utilizing records currently available at the various agencies. Until this study is completed, there is little data available concerning actual costs involved for NMSL enforcement.

I trust this information is sufficient in answer to the questions posed. I appreciate the opportunity to clarify and expand our testimony regarding S. 1337, and would be pleased to answer any additional questions or provide greater detail should you so require.

Sincerely,



R. H. Sostkowski
Director
Division of State and
Provincial Police

Enclosures

cc: Senator Lloyd Bentsen
Senator Larry Pressler

Questions for Ms. Sostkowski and Mr. Murphy
International Association of Chiefs of Police

1. Is there a significant difference in observation of the speed limit among different classes of vehicles? For example, between cars, trucks and buses?
2. Has the use of CB radios impacted your ability to enforce the 55 mph speed limit?
3. Penalties levied by States for exceeding the 55 mph speed limit vary considerably. Do you believe a severe penalty is an effective deterrent to exceeding the speed limit?
4. In your testimony you stated that the 55 mph speed limit is an "unpopular law" and yet many surveys which have been done show that a majority of the public favors retention of the 55 mph speed limit. What do you mean when you say "unpopular law"?
5. What factors - including such things as public information programs, penalties for exceeding the speed limit, number and visibility of law enforcement officials - do you believe, are most significant in achieving compliance with the 55 mph speed limit?
6. Is a tolerance range allowed by most highway patrols in enforcing the 55 mph speed limit? Do you believe a 5 mph tolerance range should be allowed?
7. Although Federal funds have been authorized for assisting the States with enforcing the 55 mph speed limit, very little money has actually been appropriated.
 - (a) How much Federal assistance is necessary, do you believe, in order for all the States to comply with the schedule the law currently requires? With the compliance schedule in S. 1337?
 - (b) What will the impact on the States' ability to enforce the 55 mph speed limit be if no Federal funds are made available?
8. Before there was a national maximum speed limit, how much did it cost the States to enforce their highway speed limits? What does it cost the States now to enforce the NMSL? How much of this additional cost can be attributed to inflation? What costs would be incurred in conforming with S. 1337?

RESOLUTION

COMPLIANCE CRITERIA AND 55 MPH NMSL

WHEREAS, The various states have diligently enforced the 55 MPH National Maximum Speed Limit; and

WHEREAS, The state enforcement agencies are attempting to comply with the federally imposed compliance criteria; and

WHEREAS, Compliance levels are determined by monitoring the speeds of traffic upon the highways; and

WHEREAS, It is well known that vehicle speedometers provide an approximate indication of speed and do not reflect precise speeds of motor vehicles and are subject to errors of 3 - 5 MPH; now, therefore, be it

RESOLVED, That the members of the North Atlantic and Southern regions of the Division of State and Provincial Police of the International Association of Chiefs of Police do hereby request that the Secretary of the U. S. Department of Transportation require that under federal rules all vehicles traveling under 60 MPH shall be considered to be in compliance with the 55 MPH National Maximum Speed Limit.

Senator BENTSEN. This will conclude today's hearing.

[Whereupon, at 12:15 p.m., the subcommittee recessed, to reconvene subject to call of the chair.]

[Statements supplied for the record, the bill, S. 1337, and responses from Mr. Hassell to additional questions follow:]

STATEMENT OF JOHN S. HASSELL, JR., DEPUTY ADMINISTRATOR, FEDERAL HIGHWAY ADMINISTRATION, DEPARTMENT OF TRANSPORTATION, BEFORE THE SUBCOMMITTEE ON TRANSPORTATION, SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, CONCERNING S. 1337, A BILL TO PROVIDE GREATER COMPLIANCE WITH THE NATIONAL MAXIMUM SPEED LIMIT, JUNE 3, 1980

Good morning. With me today is Mr. Eugene Amato, Deputy Administrator of the National Highway Traffic Safety Administration, Department of Transportation.

I thank you for this opportunity to discuss an important safety and energy-related program with you. A brief explanation of the role that the Federal Highway Administration and the National Highway Traffic Safety Administration each share with regard to the 55 m.p.h. program is perhaps desirable. The Federal Highway Administration has been gathering speed data as a part of highway planning efforts for many years prior to the enactment of national 55 m.p.h. legislation. For this reason, the Federal Highway Administration has been assigned the lead Federal role in the speed monitoring activity. This activity involves the actual measurement of the public's compliance with the 55 m.p.h. limit. Since enforcement of the speed limit is in the nature of a safety standard and because of the many other related program areas administered by the National Highway Traffic Safety Administration, they have the lead Federal role in enforcement. Because of the significant national benefits that have been and are continuing to be derived from the 55 m.p.h. program, both Administrations share in promoting total compliance with the legislative mandate of this program.

S. 1337 would amend section 154 of title 23, U.S.C., the national maximum speed limit program, in two ways. First, beginning with FY 1980, S. 1337 would increase the compliance levels which must be attained by the States each year. Secondly, the bill would increase the maximum penalty levels for a State's failure to comply in any given year.* These changes would significantly affect the Federal-aid highway program. We project, based upon data now available to us, that the majority of States would be out of compliance with the S. 1337 requirements established for FY 1980.

Under existing section 154, all States were in compliance with the national maximum speed limit requirements in FY 1979. The next certification is due to be submitted on or before January 1, 1981, covering FY 1980 which is also the first year covered by S. 1337.

Furthermore, as a result of the increased penalty provisions of S. 1337 noncomplying States would be faced with the possibility of having their Federal-aid primary, secondary, and urban system funds reduced by up to 20 percent. Such a reduction in funds would have a significant impact upon the highway program in those States. In the event the maximum penalty is assessed against a State, highway safety would also be adversely affected and the rate of fuel consumption on our roads in these States could be expected to increase.

*See Attachment A.

The Department strongly supports the 55 m.p.h. national maximum speed limit, including the concept of graduated compliance requirements with an adequate penalty structure to achieve the goals of the program. We have already initiated contacts with those States who may have compliance difficulties with the present requirements. It is our intention to meet with these States to explain the requirements of the law, express our concerns, and offer every available means to assist these States in reaching full compliance. The Department has had a long and good relationship with the States. We believe that we can build upon the close Federal-State relationships now existing through the Federal-aid highway program to assist the States in complying with increasingly rigorous standards to reach our final goal of high compliance with the national maximum speed limit with its attendant savings of lives and fuel.

The Department is also about to issue new regulations governing the monitoring techniques used to determine the percent of vehicles exceeding the 55 m.p.h. speed limit. These regulations are premised on a revised State surveillance effort utilizing sophisticated equipment. It is our belief that once these regulations are issued and State implementation begins, a more accurate assessment of compliance can be made.

The Administration would support S. 1337 if amended to include more reasonable compliance requirements. If legislation is passed which would place all the States out of compliance, it would damage our credibility with the States and the public, thereby jeopardizing the entire 55 m.p.h. program. Further, if all 50 States were to be actually out of compliance in the first year affected by any amendments to current law, our ability to work cooperatively and constructively with the States

to achieve our goal would be handicapped. We are concerned that if a large number of States fail to meet unduly stiff compliance requirements, support for the program in the legislatures of those States that have been penalized will wane. The argument for repeal of the 55 m.p.h. speed limit at the State level may gain some greater political acceptability if a stiff penalty has been assessed against a State for failing to meet an overly rigorous or ambitious compliance requirement.

We would also prefer to see S. 1337 amended to lessen the proposed penalty for noncompliance, especially in the early years. As I have stated, it is our intention to work with the States to reach full compliance. A severe reduction in Federal-aid funds available to these States is not in the interest of either highway safety or fuel efficiency.

The Department is also considering the criteria which should be weighed in assessing penalties against States that fail to meet the speed limit compliance requirements. The criteria might include items such as: extent of noncompliance; the commitment of a State to enforce the speed limit as reflected in its laws and budget priorities; evidence of enforcement such as number of arrests and citations, levels of penalties assessed, commitment of police to speed monitoring duties, etc.; speed trends in the State; and the results of our meetings with the States. The essential purpose of whatever criteria we adopt for assessing penalties must be to provide us with the flexibility to use the imposition of penalties constructively to achieve greater future compliance with the speed limit.

This concludes my prepared statement. At this point I would like to give Mr. Amato an opportunity to make a statement on this important subject. At the conclusion of his statement I will be glad to answer any questions you may have.

ATTACHMENT A

Comparison Chart
 Compliance Requirements and Penalty Provisions

23 U.S.C. 154

<u>FISCAL YEAR</u>	<u>COMPLIANCE REQUIRED</u>	<u>PENALTY PROVISION</u>
1979	30%	5% in FY 81
1980	40%	5% in FY 82
1981	50%	5% in FY 83
1982	60%	10% in FY 84
1983 & after	70%	10% in FY 85 & after

S. 1337

<u>FISCAL YEAR</u>	<u>COMPLIANCE REQUIRED</u>	<u>PENALTY PROVISION</u>
1979	30%	5% in FY 81
1980	75%	20% in FY 82
1981	80%	25% in FY 83
1982	85%	30% in FY 84
1983 & after	90%	35% in FY 85 & after

ATTACHMENT B

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION			
1979* NATIONAL MAXIMUM SPEED LIMIT ENFORCEMENT CERTIFICATION SPEED AND CITATION STATISTICS			
STATE	PERCENT OF ALL VEHICLES EXCEEDING 55 MPH ON HIGHWAYS WITH A 55 MPH SPEED LIMIT		
ALABAMA	48.6	OHIO	51.6
ALASKA	36.8	OKLAHOMA	55.0
ARIZONA	65.9 ✓	OREGON	33.6
ARKANSAS	46.4	PENNSYLVANIA	41.0
CALIFORNIA	66.7 ^L	RHODE ISLAND	63.6
COLORADO	41.4	SOUTH CAROLINA	46.8
CONNECTICUT	48.7	SOUTH DAKOTA	54.0
DELAWARE	60.9 ✓	TENNESSEE	41.5
FLORIDA	56.7	TEXAS #	69.7
GEORGIA	38.2	UTAH	65.8
HAWAII	44.4	VERMONT	63.9
IDAH0	42.4	VIRGINIA	39.2
ILLINOIS	55.5	WASHINGTON	50.0
INDIANA	59.7	WEST VIRGINIA	49.3
IOWA	51.0	WISCONSIN	54.3
KANSAS	63.1 ^L	WYOMING	67.8
KENTUCKY	43.9	DIST. OF COL.	-
LOUISIANA	35.3	PUERTO RICO	28.1
MAINE	48.7	TOTAL	
MARYLAND	45.2		
MASSACHUSETTS	45.1		
MICHIGAN	50.0		
MINNESOTA	56.1		
MISSISSIPPI	55.2		
MISSOURI	57.6		
MONTANA	58.0		
NEBRASKA	56.3		
NEVADA	61.6 ^L		
NEW HAMPSHIRE	42.3		
NEW JERSEY	41.1		
NEW MEXICO	62.2 ^L		
NEW YORK	46.7		
NORTH CAROLINA	53.6		
NORTH DAKOTA	56.4		

FOOTNOTES

* The 12 month period ending September 30, 1979.

We intend to have a conference with Texas because of the closeness of their figure with the FY '79 compliance requirement of 70%.

DATE 2/13/80 COMPILED BY T. Kilmek HFO-33 CHECKED BY

TABLE BY STATE

GPO 582-254

STATEMENT OF GENE AMATO, DEPUTY ADMINISTRATOR, NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION, DEPARTMENT OF TRANSPORTATION, BEFORE THE SUBCOMMITTEE ON TRANSPORTATION, SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, CONCERNING S. 1337, A BILL TO PROVIDE GREATER COMPLIANCE WITH THE NATIONAL MAXIMUM SPEED LIMIT, JUNE 3, 1980.

Mr. Chairman and Members of the Subcommittee:

I am pleased to appear before your Subcommittee to discuss S. 1337, a bill to amend Title 23 of the United States Code to provide greater compliance with the national maximum speed limit. This bill reflects the view that the national 55 mph speed limit -- already in force -- should be even more heavily relied upon in our national effort to reduce gasoline consumption.

Since Mr. Hassell, the Federal Highway Administrator, has addressed many of the possible consequences of S. 1337, I will confine my prepared remarks to the National Highway Traffic Safety Administration's (NHTSA) role in the area of State enforcement of the 55 mph speed limit.

SUMMARY OF CURRENT IMPACT OF SPEED LIMIT ON SAFETY AND CONSERVATION

Congress enacted the national speed limit in 1975 as both a traffic safety and an energy conservation measure, recognizing that its success would be contingent upon "strict enforcement as well as public acceptance."

Mr. Chairman, I am pleased to report to you, as one of the original sponsors of the 55 mph law, that 55 does save lives and does save gasoline. Our studies show that at least 18,000 lives were saved by the speed limit between 1974 and 1979.

Changing the driving behavior of the American public is a difficult and long term job, but we can report that the traffic speed pattern is still well below that of 1973 and the speed limit is making a substantial contribution to both safety and energy conservation.

We estimate that if today's volume of highway traffic were to revert to the 1973 speed pattern, the annual cost of that increase would exceed 5,000 additional lives lost and 100,000 injuries. In addition, even with today's improved automobile fuel economy, we estimate that reversion to the pre-national speed limit speed patterns would increase petroleum consumption by at least 125,000 to 273,000 barrels a day.

STATE ENFORCEMENT OF THE SPEED LIMIT

Under the national speed limit statute, enforcement of the 55 mph speed limit, as with all other traffic law enforcement activities, has been a State responsibility. However, under the 1975 law, each State has the added duty of certifying annually to the Secretary of Transportation that it is enforcing the 55 mph speed limit. The Secretary is required to withhold approval of all Federal-aid highways projects in any State failing to make this enforcement certification.

When it became apparent that it was difficult to measure objectively whether a State was "enforcing" the law

in a satisfactory manner, the Administration, in 1978, sought an amendment to make the degree of compliance by motorists with the 55 mph speed limit the principal measure of the success of a State's program. The Congress responded with the enactment of section 205 of the Surface Transportation Assistance Act of 1978 that set a schedule of progressively higher levels of compliance, beginning with 30 percent compliance in 1979 and increasing to 70 percent in 1983. To enforce the schedule, a flexible penalty was provided: up to 5 percent of a State's apportionments for the primary, secondary, and urban systems through fiscal year 1983 and up to 10 percent thereafter. In addition, the Congress included in the 1978 amendments a provision for the award of incentive grants to States for good 55 enforcement that is contingent on attaining at least 10 percent greater compliance than required for a given year.

The 55 mph speed limit has imposed new and greater speed enforcement responsibilities on State agencies -- particularly since the passage of the 1978 amendments. The States can no longer satisfy the requirements of the 55 mph law by showing their efforts; they must produce results or else risk losing highway funds.

The States have responded to these new demands. State law enforcement agencies increased speeding arrests from 5.7 million in 1973 to more than 8 million in 1978, although no new Federal funds were provided to assist the police in enforcing the speed limit until fiscal year 1978.

Most State police agencies are conducting greatly expanded -- and in many cases -- innovative speed enforcement programs. In May 1977, for example, five western States (Arizona, California, Oregon, Washington, and Nevada) conducted a highly successful 55 mph enforcement and public information project. In July 1977, Michigan and Indiana joined together for the Independence Day weekend in a program they called "Operation CARE" -- Combined Accident Reduction Effort. The program was so successful that it was expanded to include all 48 contiguous States for the 1978 Memorial Day Weekend and was continued for the summer holiday weekends during 1979.

Individual law enforcement agencies continue to engage in innovative and aggressive enforcement programs. Several States use aircraft effectively in speed limit enforcement.

Since fiscal year 1978, the States, responding to the new requirements of the 55 mph law, have received Federal funds for this effort. The States spent \$30.0 million in Federal Highway Safety (Section 402) funds in fiscal year 1978 on 55 mph enforcement and \$42.4 million in FY 1979. In FY 1980 the States have obligated \$20 million in Section 402 safety funds and an additional \$20 million from a separate authorization for the 55 mph program.

Yet, the States have had problems enforcing the 55 mph law. Despite the 55 mph speed limit's proven fuel conservation and safety effectiveness, the States have to work very hard to enforce that speed limit. Although all States met the FY 1979 compliance level of 30% set by the 1978 Amendments, some States barely made it. In order to meet the 40% compliance level this year, FY 1980, some States will have to work harder. Because of the need for greater enforcement and the greater cost of such effort, we have requested for FY 1981 \$50 million for the States for their 55 mph enforcement programs and \$7 million for incentive grants.

NHTSA'S 55 MPH ACTIVITIES

The national speed limit program is one of our responsibilities and our aim is to provide the State governments with the information they need to make sound decisions about their own 55 mph activities. We are funding research efforts designed to develop new equipment, new enforcement tactics and improved training courses for police and highway patrolmen.

Some of our current activities in this area include:

1. Cost Effective Ways of Enforcing the 55 mph law. The law enforcement community wants to know the most cost effective means of enforcing the 55 MPH National Maximum Speed Limit. The precise relationship between various levels of enforcement and varying degrees of compliance has yet to be established. To remedy this situation, NHTSA is funding projects with the Connecticut State Police and the Utah Highway Patrol in a study of traffic speed patterns on selected sections of 55 mph highways under varying degrees of patrol enforcement.
2. Increasing the Public's Expectation of Detection and Apprehension. The objective of this project is to identify new or modified police enforcement procedures and related public information programs which can increase the public's expectation of detection and apprehension for 55 mph violations (an approach typically referred to as "general deterrence").
3. Evaluating Countermeasures for Effectiveness During Trial-Runs in a Few States.
4. Disseminating Results of Successful Projects. The results of successful projects, research, new information and new technology will be published for use by all the States. NHTSA will also respond to individual requests for technical assistance in appropriate areas to aid in implementing and evaluating programs.

5. Exploring the Feasibility of Automatic Speed Enforcement Systems. Enforcement of the 55 mph speed limit places a heavy burden on scarce manpower resources in the law enforcement community. One promising means of increasing speed compliance without increasing enforcement manpower is the use of Automated Speed Enforcement (ASE) devices. These devices have the capability to record a vehicle's speed and simultaneously take a picture of the rear of the vehicle in both day and night setting. These devices and the associated legal and public acceptance issues, including privacy issues, are currently under examination.
6. Developing Performance Standards for Radar Devices. Complaints have been made about the accuracy of some commercially available radar units. Moreover, police purchasing agents acquiring new radar with Federal funds are confronted with conflicting vendor claims regarding accuracy and reliability. More effective devices would reduce court challenges and assist enforcement. The objective of this project is to develop performance standards for devices that are used to measure vehicle speeds for law enforcement purposes with the ultimate purpose of ensuring that the speed measuring devices in use are accurate and reliable.
7. Developing a Model Training Course for Police Operators of Radar Devices.
8. Identifying the Costs Solely Attributable to 55 MPH Enforcement. This would be a study to evaluate the magnitude of the cost burden that the 55 mph program has placed on the States. NHTSA is working with the International Association of Chief of Police (IACP) to determine whether it is feasible to develop a reasonably accurate methodology for estimating costs.
9. Arranging Workshops and Seminars for Traffic Enforcement Agencies. NHTSA has recently funded or will fund part of the costs of regional or national meetings of police officials that address NHTSA programs and the 55 mph program in particular. NHTSA has funded seminars arranged by the National Sheriff's Association in October 1979 and January 1980, four regional seminars arranged each year by the International Association of Chiefs of Police (IACP) for State Police and Highway Patrol Administration, and a national workshop sponsored by IACP for State Police and Highway Patrol Planning Officers set for July 1980.

PUBLIC SUPPORT OF THE 55 MPH AND NHTSA PUBLIC INFORMATION ACTIVITIES

Opinion polls have continually shown the public's support for the 55 mph maximum speed limit, despite the fact that statistics show speeds are increasing. It is difficult, however, to pinpoint the reasons why motorists who support the 55 mph speed limit fail to abide by it.

We have learned from a 1978 survey on "Public Perceptions on Highway Safety," conducted for us under contract, that 70 percent of the drivers who report their usual driving speed on 55 mph roads as between 56 and 60 mph also support the law.

In regard to enforcement, the driving population appears to be willing to accept a somewhat stricter enforcement than is currently in practice: 65.2 percent feel the speed limit is enforced at 60 mph, but 77.7 percent think that the speed limit should be enforced at 60 mph. Only 19 percent feel that the speed limit should be strictly enforced at 55 mph. So, while the driving public may appear to be willing to accept a more strict enforcement effort, there appears to be a "tolerance factor" to be considered in the public acceptance of the law. The "tolerance factor" for all speed limits has historically ranged between 5 and 7 mph regardless of the speed limit, be it 70, 60, or 55 mph.

NHTSA has been running an active public information and education program to convince the public that the 55 mph law is necessary and desirable, and that enforcement of the speed limit is getting tougher. NHTSA is using two approaches to

promote compliance with 55 through public information.

First, at a national level, NHTSA is conducting campaigns with State police agencies, private CB organizations, a private industry group comprised of companies in the recreation equipment business and major corporations in an effort to enlist the the support of their marketing and advertising resources on behalf of the 55 mph law. To support these activities, the agency has developed a number of materials which are available for distribution. These include: brochures, bumper stickers, posters, print ads, mail stuffers and the like.

Second, at a State and local level, NHTSA is endeavoring to improve State and local public communications programs on the 55 mph law. For example, NHTSA has published the "55 MPH Model Communications Plan. " This plan lists all the possible target populations for a 55 mph campaign, lists appropriate messages for reaching those audiences and suggests possible ways for delivering those messages. NHTSA also offers a course for State and local communication people on managing public information campaigns on highway safety. Finally, the agency offers technical assistance to any State which asks for help in designing its 55 mph public communications programs.

This completes my prepared statement. I would be pleased to answer any questions you may have.

ATTACHMENT AComparison Chart
Compliance Requirements and Penalty Provisions23 U.S.C. 154

<u>FISCAL YEAR</u>	<u>COMPLIANCE REQUIRED</u>	<u>PENALTY PROVISION</u>
1979	30%	5% in FY 81
1980	40%	5% in FY 82
1981	50%	5% in FY 83
1982	60%	10% in FY 84
1983 & after	70%	10% in FY 85 & after

S. 1337

<u>FISCAL YEAR</u>	<u>COMPLIANCE REQUIRED</u>	<u>PENALTY PROVISION</u>
1979	30%	5% in FY 81
1980	75%	20% in FY 82
1981	80%	25% in FY 83
1982	85%	30% in FY 84
1983 & after	90%	35% in FY 85 & after

ADMINISTRATION PROPOSAL

<u>FISCAL YEAR</u>	<u>COMPLIANCE REQUIREMENT</u>	<u>PENALTY PROVISION</u>
1979	30%	5% in FY 81
1980	40%	5% in FY 82
1981	60%	10% in FY 83
1982	70%	15% in FY 84
1983 & after	80%	15% in FY 85 & after

AASHTO STATEMENT ON S. 1337
BEFORE SENATE SUBCOMMITTEE ON TRANSPORTATION
OF THE SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
JUNE 3, 1980

Mr. Chairman, AASHTO is pleased to be able to respond to your invitation to appear before your Committee today in regards to S. 1337, a bill to provide greater compliance with the national maximum speed limit.

Let me first identify myself and to say that AASHTO (American Association of State Highway and Transportation Officials) represents the Departments of Transportation and/or Highways, from the fifty states, the District of Columbia and Puerto Rico. The Association has been in existence since 1914.

As an association of Highway and Transportation Officials, we are keenly interested in any legislation that would impact on our ability to perform our various responsibilities. Therefore, we welcome this opportunity to express our concern regarding the proposed bill, S. 1337.

The States, collectively, support the national maximum speed limit as it was enacted back in 1974 and further enlarged upon in the Surface Transportation Assistance Act of 1978. However, during the consideration of S.T.A. Act of 1978, we expressed our opposition to the use of penalties to ensure enforcement of the 55 mph speed limit! We still feel that this is bad policy.

Therefore, we cannot support S. 1337.

We feel that the 55 mph speed limit is having an effect on the traveling public. Reports indicate that the average speed is coming down and that there has been a reduction in the vehicle death rate.

We also indicated that we did not feel that the Highway Agencies should be penalized for something that they have no control over. That is, enforcement of the speed limit. In the majority of our states, our members do not have any responsibilities over the various enforcement agencies. In most cases they are a separate agency within the state.

We also recognize that there is a continuing need to inform and convince the driving public of the benefits of the 55 mph speed limit. We feel that success in compliance, by the motorist, will come when there is a greater degree of self enforcement. There always seems to be a better attitude when the individual accepts his role rather than having somebody over him with a club.

I would also call your attention to the possibility that, even though S. 1337 is presented as saving energy, it may do just the opposite. By that I refer to a state losing highway funds due to failure to meet the percentage of compliance rate and therefore having to cut back on the up keep of the highways. We all know the experience of dodging pot holes. Surely, streets and highways that need repair work do not make for a smooth and efficient flow of traffic, thereby, consuming more gasoline, rather than saving it.

I would like to call your attention to the fact that the statute calls for a scale of minimum standards to be met, before a penalty is imposed, that is lower than that which was originally reported out by the House Committee last year. On the House floor, during debate on H.R. 11733, Congressman Harsha offered an amendment which reduced the original scale to what currently is on the books. The Congressman, at one point said, and I quote him,

"I fear that the strict compliance schedule in the bill, and the penalties associated with it, will imperil the national speed limit because of the opposition which is sure to develop when the penalties are assessed, as they are sure to be."

The scale that is presented in S. 1337 is higher than that originally reported out by the House Committee last year.

It is noted too that in the S.T.A. Act of 1978, there was a provision authorizing \$50 million to assist the states in enforcement of the 55 mph speed limit. Unfortunately, the Administration has not requested funding for this provision in their budget request. They instead suggested that the funds for enforcement come from the 402 Safety Program. In so doing, states then would have less money for much needed highway safety improvements.

Our only suggestion, to ensure greater compliance, would be to offer some type of incentives to the states for various levels of performance.

Mr. Chairman, we would respectfully suggest that the 55 mph speed limit provision, in the Surface Transportation Assistance Act of 1978, be given a chance. It just doesn't seem to be the right time to amend an Act of Congress before it has even had a chance to be evaluated.

STATEMENT OF

RONALD H. SOSTKOWSKI, Director
Division of State and Provin-
cial Police
International Association of
Chiefs of Police

GLEN R. MURPHY, Director
Office of Governmental Rela-
tions Program Development
International Association of
Chiefs of Police

Submitted to

Subcommittee on Transportation
of the
Senate Committee on Environment and Public Works

Regarding
S. 1337

May 29, 1980

Dear Chairman Bentsen:

The Division of State and Provincial Police of the International Association of Chiefs of Police (IACP) appreciates the opportunity to submit a statement to the Senate Subcommittee on Transportation regarding S. 1337, a bill to provide greater compliance with the National Maximum Speed Limit (NMSL). Colonel Robert W. Landon, Chief of the Washington State Patrol and General Chairman of the Division of State and Provincial Police, is unable to be present at the hearings due to the emergency situation in his home state created by the Mt. St. Helen's volcanic activity. At the request of Colonel Landon, we are pleased to have the opportunity to represent the Division on his behalf.

The IACP is a professional membership organization comprised of more than 11,000 members. Its Division of State and Provincial Police represents every state law enforcement administrator in the United States. The Division is an integral part of the IACP, established to meet the special needs and problems of the state law enforcement agencies within the framework of the IACP in accordance with its objectives and Constitution. The Division is currently concerned with the possible imposition of more stringent compliance criteria and sanctions for the NMSL. The Division membership has repeatedly expressed pessimism of full 55 NMSL enforcement in the face of budget restrictions, losses of manpower, etc., as well as the unpopularity of the speed limit itself. With these issues being raised about

current compliance criteria and sanctions, the Division has been particularly distressed over the possible impact of the proposed legislative changes. Because the state law enforcement agencies have been delegated primary NMSL enforcement responsibilities, all members of the Division and their respective agencies will be affected by this legislation.

Since the inception of the 55 NMSL, the IACP and its Division of State and Provincial Police have supported the national speed limit, the compliance criteria, and the sanctions to be imposed for non-compliance. The IACP supported the legislation before this Committee and throughout Congress, as being realistic and necessary in the face of oil embargos and their resultant fuel shortages. Attached to this testimony are copies of resolutions passed in support of the 55 NMSL. In supporting the NMSL, the state law enforcement agencies, in effect, pledged their manpower and resources toward active NMSL enforcement programs to ensure the success of the legislation. The spirit in which this support was given was under the Administration's assurance of active participation in the program and financial assistance to the states in order to ensure its success. For example, ^{State of Texas} \$100 million was promised for NMSL enforcement, as well as a national media campaign for public education. These promises have not been forthcoming to any great extent.

Because of the seeming lack of interest in the NMSL by the Administration, the Division of State and Provincial Police is rescinding its support ~~of compliance criteria and~~ sanctions, and now opposes any increases ~~in either~~. In fact, at the May 1980 meeting of the Mountain-Pacific region of the Division of State and Provincial Police, a resolution was passed urging the removal of ~~compliance criteria and~~ sanctions from the legislation. It is with this background that the Division of State and Provincial Police states its firm opposition to S. 1337, and urges this Committee to oppose its passage.

As you know, the purpose of S. 1337 is to increase the compliance criteria for the 55 NMSL as established in the Surface Transportation Act (P.L. 95-599, §154 of title 23, U.S. Code), while at the same time increasing sanctions against those states not meeting the proposed per centum of compliance. The Division of State and Provincial Police is of the opinion that any increases in compliance criteria or sanctions should not be considered as viable measures in providing greater compliance with the NMSL by the motoring public.

Since its inception, the state law enforcement agencies have been vested with the primary enforcement responsibility for the 55 NMSL, in all probability because of their special mission of patrolling the federally-constructed interstate roadway system. The states have received little federal support,

however, in terms of media or public information/education campaigns in support of the speed limit, for a program which is federal by definition:

- It is a federally mandated law (in January 1975, the Federal Aid Highway Amendments of 1974 (PL 93-643) made the 55 NMSL permanent.)
- It is enforced federally through compliance criteria with the imposition of sanctions against the several states' Federal-Aid Highway funds for non-compliance (P.L. 95-599 established 55 NMSL compliance criteria and authorized sanctions, beginning in FY 81, for those states failing to meet the criteria.)

The state law enforcement agencies have demonstrated their support of the NMSL by increasing speeding arrests from 5.7 million in 1973 (pre-P.L. 93-239) to 8.4 million in 1978. This was done with virtually no increases in total manpower or available resources. In addition, unconventional vehicles, aircraft, saturation patrols, special squads, and multi-state combined efforts are but a few of the many innovative techniques employed by the state law enforcement agencies in their effort to enforce the 55 NMSL.

State law enforcement efforts have been hampered in several instances, by the states themselves, because in some states

there are only token fines for speeding and points are not assessed against violators toward the suspension of their license for exceeding the 55 NMSL, which in our opinion is a more significant factor to the motoring public. Again, several states ^{Courts} will not adjudicate speeding cases unless the speed is at least ten miles over the limit, or in several cases, in excess of the perviously posted limit. In other states, the police are not permitted, by state statute, to utilize electronic speed measuring devices, unconventional vehicles, aircraft, or other various enforcement strategies, making the enforcement of the speed limit, at currently required compliance rates, extremely difficult to meet.

The Division of State and Provincial Police suggests that the Committee review the possibility of imposing sanctions against states for hampering enforcement efforts. These sanctions may be more in line, and assist enforcement efforts to a greater degree than those currently proposed.

The state law enforcement agencies have been hard pressed to meet current compliance criteria while at the same time meeting other demands for police service. Just as all segments of society have been affected by the economic situation, so, too, have the state police felt the inflationary pinch. Budget reductions have resulted in either losses of manpower or, at least, no plans for manpower increases, with the net result of operating with insufficient resources to effectively respond to

the total law enforcement mission. In the recent past, the emphasis of the NMSL has caused agencies to increase NMSL enforcement efforts to the exclusion of other routine police services. If they do not do so, the states face the very real possibility of losing Federal-Aid Highway funds. If the proposed legislation passes into law, a greater percentage of routine police services face elimination in order that state police can actively enforce the NMSL under the threat of loss of federal funding assistance. The state police are not to be considered unfeeling as to their concern for protecting their citizens--quite the contrary, they are very much concerned with the welfare of their citizenry. However, budgetary restrictions and the threat of sanctions leave little room for decision among the state law enforcement administrators. They must increase NMSL enforcement programs to the exclusion of other services in order to receive much needed funding.

Because the state law enforcement agencies retain almost exclusive NMSL enforcement responsibilities - with limited resources, limited state support in the way of fines, case adjudication, etc., and limited federal support - of this unpopular law, it is their concerted opinion that any legislation further impacting on the NMSL would make their near-impossible enforcement mission impossible. The Division of State and Provincial Police is, therefore, strongly opposed to any increases in the NMSL compliance criteria established in the Surface Transportation Assistance Act (P.L. 95-599, §154 of title 23, U.S. Code), and emphatically urges rejection of the proposed legislation on the basis that the compliance criteria proposed are totally unrealistic and unattainable, both in and of themselves, in light of the Administration's seeming lack of interest, and in light of resources currently available for NMSL programs.

ATTACHMENTS

IACP RESOLUTIONS REGARDING 55 NMSL

CERTIFICATION REQUIREMENTS—55 M. P. H.
NATIONAL MAXIMUM SPEED LIMIT

1976

WHEREAS, The International Association of Chiefs of Police, in conference assembled in Denver, Colorado, on September 18, 1975, did indicate through policy resolution A-62 duly adopted, opposition to certain requirements of federal rule as to the states' enforcement of the 55 M. P. H. National Maximum Speed Limit as being unwarranted intervention into state affairs; and

WHEREAS, The International Association of Chiefs of Police requested the United States Department of Transportation to cease efforts toward the implementation of said rule and in lieu thereof accept certification of the governor of each state as to the law enforcement effort directed toward the 55 M. P. H. National Maximum Speed Limit and the level of compliance based upon existing systems within each state; and

WHEREAS, The U.S. Department of Transportation implemented and continues to revise such certification requirements in a manner which is not in accord with the spirit of such resolution; now, therefore, be it

RESOLVED, That the International Association of Chiefs of Police assembled at its 83rd Annual Conference in Miami Beach, Florida, in September, 1976 does hereby reaffirm the spirit and intent of the previously adopted policy (A-62); and be it

RESOLVED, That the International Association of Chiefs of Police encourage and support congressional legislation amending the Federal-Aid Highway Amendments of 1974 Pub. L. 93-643 relating to the establishment of a 55 M. P. H. National Maximum Speed Limit which would reflect the intent of Policy A-62; and be it

FURTHER RESOLVED, That a copy of this Resolution and the 1975 Policy A-62 be forwarded to the Secretary of Transportation; the Administrator of the National Highway Traffic Safety Administration and to the appropriate members of the Congress of the United States.

SUPPORT NATIONAL MAXIMUM 55 SPEED LIMIT
1976

WHEREAS, The national maximum 55 MPH speed limit program was originally concerned as a fuel saving measure; and

WHEREAS, Implementation of this program has not only realized the desired fuel economy, but also, a dramatic reduction in highway fatalities; and

WHEREAS, Diligent enforcement effort is necessary in order to effectively sustain this program; now, therefore, be it

RESOLVED, That the International Association of Chiefs of Police encourage administrators to support and effectively implement the national maximum 55 MPH speed limit but without jeopardizing other effective selective enforcement programs.

PUBLIC INFORMATION PROGRAM - 55 M.P.H.
1976

WHEREAS, The motoring public has not totally accepted the efforts of law enforcement personnel in reducing the speed limit to the mandated 55 M.P.H.; and

WHEREAS, The public has failed to accept the 55 M.P.H. national maximum speed limit either on the basis of energy conservation or highway safety; and

WHEREAS, The state law enforcement administrators believe that the existing public information program designed to sell the national maximum speed limit is not effective; and

WHEREAS, The required resources for a comprehensive public information program are not available at the state level; therefore be it

RESOLVED, That the members of the International Association of Chiefs of Police recommend to the National Highway Traffic Safety Administration that efforts be increased and improved in the development and implementation of a comprehensive information program utilizing sophisticated marketing concepts.



STATE OF VERMONT
OFFICE OF THE SECRETARY
133 State Street, Montpelier, Vermont 05602

JUN 2 1980



May 27, 1980

The Honorable Jennings Randolph, Senator
Chairman of the Committee on the Environment
and Public Works
United States Senate Suite 4202
Washington, D. C. 20505

Attention: Mr. Richard Harris

Dear Senator Randolph:

The attached statement represents Vermont's concern for the Federal monitoring of the 55 mph compliance. Over a period of the last few years, I have personally driven on many other states' interstate and toll road systems and observed that the average speed is far in excess of what is evident on Vermont's roads. In spite of this, we are considered one of the largest violators of the 55 mph limit by our own data.

The fault lies in the fact that we do not permit 55 mph on the large volume of non-interstate type highways in the state and thus are sampling only rural, relatively uncongested interstate quality highways. Were we to include the bulk of our primary and secondary systems, we would be probably measured as one of the lowest speed states in the country.

This abnormality in data collection should not be used to penalize a state which is doing its very best to observe the national and its own State laws.

Sincerely,

Ron Crisman
Ronald E. W. Crisman
Secretary

STATE OF VERMONT
AGENCY OF TRANSPORTATION

- The 55 Miles Per Hour Speed Limit -

The 55 Miles Per Hour (MPH) National Speed Limit is fully supported by officials in the State of Vermont, including the Governor, the Commissioner of Public Safety, the Secretary of Transportation, the Commissioner of Motor Vehicles and all of its safety and energy conservation minded citizens. An indication of this support was that at the enactment of the National Law, Vermont always concerned, permitted speeds of up to 55 MPH only on its Interstate System and limited mileage of its other advanced 4-lane divided highways.

Vermont has a total of 13,660 miles of public roads, 2620 miles of which are State Highways. Of these, 334 miles are posted for the maximum speed of 55 MPH. Thus only 12.7 percent of State Highway mileage is posted for speeds in excess of 50 MPH.

Vermont, geographically located in one of the Country's significant Mountain Range, the Green Mountains, was carved millions of years ago by glacial action and has experienced the evolution of its transportation system along footpaths and Indian Trails. Transportation systems, principally highways, have developed along the traditional trade routes over mountains and winding river valleys. Thus the old highway systems were not designed for high speeds.

A review of National Statistics relative to speed monitoring reveals that Vermont ranks highly in violation of the 55 MPH ethic. An examination of these findings, however, is warranted, necessary and just.

Since Vermont has banned speeds in excess of 50 MPH on all but the cited facilities (Interstate and other 4-lane divided highways) a bias appears when its statistics are used to compare the 55 MPH compliance with that of other states which encourage speeds in excess of 50 MPH on 2-lane highways. Speeds on two-lane highways are invariably lower than travel speeds on four-lane facilities due to constraints imposed by the friction of other traffic such as car-following, inability to pass due to oncoming traffic and abutting land use.

Unless these factors are accepted and taken into account when ranking speed statistics, and consequently invocation of penalties of funding, there is a tendency to force the State to raise its speed limit on its two-lane highways. Vermont, justly, resists this decision. To post 2-lane roads at 55 MPH where 50 MPH speed limits presently exist is detrimental to the cause of:

- 1) Highway Safety
- 2) Energy Conservation

which serve as the very foundation of the National 55 MPH law. In addition, it raises the risk of claims associated with speed limit regulatory signing.

The unjust raising of speed limits on 2-lane highways presently posted at 50 MPH, and its monitoring, would also require additional resources which are not available.

A review of the statistics, as published by the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA) relative to speed studies performed in the various states indicates that Vermont is no worse or better in terms of percentages exceeding 55 MPH than other States when comparable data base is used.

We believe it is improper and that NHTSA exceeds its authority to, in effect, to cause a state to raise its speed limits on its two-lane highways in order that measurements may be taken to lower its monitored readings.

Ron Gromion
Sec. of Trans.
State of VT.

96TH CONGRESS
1ST SESSION

S. 1337

To amend title 23 of the United States Code to provide greater compliance with the national maximum speed limit.

IN THE SENATE OF THE UNITED STATES

JUNE 13 (legislative day, MAY 21), 1979

Mr. METZENBAUM (for himself, Mr. RANDOLPH, Mr. HATFIELD, Mr. KENNEDY, Mr. WEICKER, Mr. TSONGAS, Mr. LEAHY, and Mr. BRADLEY) introduced the following bill; which was read twice and referred jointly, by unanimous consent, to the Committees on Environment and Public Works and Energy and Natural Resources

A BILL

To amend title 23 of the United States Code to provide greater compliance with the national maximum speed limit.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That (a) subsection (f) of section 154 of title 23, United
4 States Code, is amended—

5 (1) in paragraph (2), by striking out “60 per
6 centum” and inserting in lieu thereof “25 per centum”
7 and by striking out “5 per centum” and inserting in
8 lieu thereof “20 per centum”;

1 (2) in paragraph (3), by striking out "50 per
2 centum" and inserting in lieu thereof "20 per centum"
3 and by striking out "5 per centum" and inserting in
4 lieu thereof "25 per centum";

5 (3) in paragraph (4), by striking out "40 per
6 centum" and inserting in lieu thereof "15 per centum"
7 and by striking out "10 per centum" and inserting in
8 lieu thereof "30 per centum"; and

9 (4) in paragraph (5), by striking out "30 per
10 centum" and inserting in lieu thereof "10 per centum"
11 and by striking out "10 per centum" and inserting in
12 lieu thereof "35 per centum".

13 (b) Subsection (i) of section 154 of title 23, United
14 States Code, is amended—

15 (1) in paragraph (2), by striking out "50 per
16 centum" and inserting in lieu thereof "20 per centum";

17 (2) in paragraph (3), by striking out "40 per
18 centum" and inserting in lieu thereof "15 per centum";

19 (3) in paragraph (4), by striking out "30 per
20 centum" and inserting in lieu thereof "10 per centum";
21 and

22 (4) in paragraph (5), by striking out "20 per
23 centum" and inserting in lieu thereof "5 per centum".



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
WASHINGTON, D.C. 20590

OFFICE OF THE ADMINISTRATOR

JUL 1 1 1980

IN REPLY REFER TO:

HCC-10

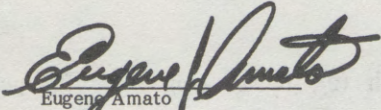
The Honorable Lloyd Bentsen
Chairman, Subcommittee on Environment
and Public Works
United States Senate
Washington, D.C. 20510

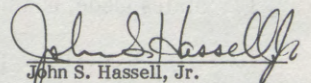
Dear Senator Bentsen:

Enclosed per your request are answers to the questions posed by you in connection with our appearance at the June 3, 1980, hearing concerning S. 1337, a bill to provide greater compliance with the National Maximum Speed Limit.

We thank you for the opportunity to express our views on S. 1337 and remain available should you have further questions.

Sincerely yours,


Eugene Amato
Deputy Administrator, National
Highway Traffic Safety Administration


John S. Hassell, Jr.
Deputy Administrator, Federal
Highway Administration

Enclosures

1. Q. Please describe the Department of Transportation's current public information program on 55 MPH enforcement. Are there ways to make it more effective?

A. The objectives of the Department's public information and education programs on behalf of 55 are: to create an environment necessary for vigorous enforcement of the speed limit, i.e., to convince the people that there is a problem and that something needs to be done about it; to support and augment the effectiveness of actual enforcement efforts; and, to increase voluntary compliance with the speed limit.

The Office of Public Affairs in the Office of the Secretary of Transportation handles the broadcast media portion of the 55 mph public communications effort. Currently, that office is developing a 55 television spot, radio spots, and print materials through an existing contract with a minority business firm in Boston.

Under consideration is a contract with another firm involving the development of a five-part news series on 55 to be used on TV news programs. This contract will probably be let later this summer or done in-house.

Also, later this year, the Office of Public Affairs is planning to let another contract for a new public information campaign which, although small, will produce a full range of communications products -- TV, radio, and print. This will be the same contract as the news feature if a contract is awarded.

NHTSA supplements the mass media program of the Office of Public Affairs with its own program of research, specially targeted campaigns, and technical assistance to the States.

NHTSA's research findings indicate that 77 percent of the public favors retention of the 55 mph speed limit. The public also thinks that greater enforcement of the speed limit is the most effective method of increasing compliance. In last year's survey, 75 percent of those interviewed recalled hearing some messages about the 55 mph speed limit within the past month, up from 57 percent in 1978.

NHTSA has underway several public information efforts for 55 aimed at very important target audiences. The agency is heavily involved in the Voluntary Truck and Bus Fuel Economy Program. This program combines the voluntary efforts of the private sector and the Federal Government to reduce fuel consumption in the trucking industry. The 55 mph speed limit is an important part of this fuel conservation effort. NHTSA has done extensive research (the Double Nickle Challenge, Phases I and II) which proves the fuel and money saving benefits of 55 for trucks. Now the agency is disseminating this information to the industry with films and printed materials at truck stops and trucking conventions around the country.

NHTSA is also conducting a corporate outreach program for 55. Under this program, the agency is contacting the major corporations in America and asking them to support the 55 mph speed limit to their own employees and to the general public through

their advertising and marketing resources. As part of the effort, NHTSA is providing these corporations with the negatives for 18 different print ads and mail stuffers which describe the virtues of the 55 mph speed limit in the context of an overall fuel conservation program.

Finally, NHTSA is providing material support for Operation C.A.R.E., the state-sponsored, special law enforcement effort over the summer holidays -- bumper stickers, posters, motorist handouts, and radio spots. Operation C.A.R.E. emphasizes enforcement of 55 as one of the most important ways to insure the safety of summer travellers.

NHTSA is **also** working with the States to assist them in establishing their own full-scale public communications programs to promote compliance with 55. Because of differences in driver attitudes, enforcement policies, support of public officials, geography, and regional attitudes, there will be differences in campaign strategies and objectives for each State. Therefore, the agency feels that each State should have its own 55 mph public information program.

Contractors and NHTSA staff are continually made available to the States to help in the design of public communications projects. In their contact with the States, these professionals emphasize the need to identify important target audiences, develop strategies and messages which will be effective in reaching those audiences, selecting appropriate channels for delivering those

messages, and having a plan for evaluating the effectiveness for the whole project.

The agency also puts state tags and logos on nationally produced public service announcements. The States personally distribute these spots to local television stations, thus assuring the maximum amount of airplay.

What can be done to improve the 55 mph public communications program? All evidence to date has shown that public information in and of itself (particularly when conducted through public service channels) will have difficulty in producing appreciable increases in voluntary compliance with the speed limit. Public information can, however, create a climate which allows strict enforcement of the speed limit and which enhances the effectiveness of such enforcement. The agency will soon be conducting research to determine the most effective combination of public information and enforcement.

2. Please explain the changes that have been made to the Procedural Guide for Speed Monitoring since the 1978 Highway Act. How will these changes affect the States' ability to certify compliance with the 55 mph speed limit?

The changes referred to here are still being developed pursuant to the rulemaking process. Section 205 of the Surface Transportation Assistance Act of 1978 amended 23 U.S.C. 154, the National Maximum Speed Limit, by, among other things, requiring a significant change in the speed monitoring procedures which were used through fiscal year 1978. This legislation required that States report the number of vehicles exceeding 55 mph based upon the measurement of the speeds of all vehicles, or a relative sample of all vehicles. This requirement is in contrast to the "free flow" concept which had been the basis of the speed monitoring program until then. This change was to take effect with FY 79.

Implementation of this legislation requires substantial modification of the existing regulations. Because of the short time in which to begin implementation, the FHWA issued an Emergency Regulation on December 20, 1978 (copy attached) to be applied to FY 79's certifications. This was later extended to apply to the FY 80 certifications as well (copy attached). This emergency rule used a formula to convert "free flow" figures to "all traffic" figures. A notice of proposed rulemaking was issued on November 5, 1978 (see copy attached). The comments received in response to that NPRM are now being analyzed and a final rule is being prepared to implement all the changes of the '78 Act. This NPRM proposes to use "all traffic" figures as required by the '78 Act without using a formula for conversion as done under the emergency rule.

It is our belief that the "all traffic" speed monitoring procedures will produce data that is more truly representative of the vehicles traversing the 55 mph highways in each State. The number and location of speed survey stations under the "all traffic" system will be determined according to the vehicle miles traveled (VMT) and, therefore, the data will be obtained where the traffic is, which represents a significant improvement over previous methods where in the speed survey stations were assigned equally to all classes of highways according to the mileage of 55 mph highways in each class.

Attached for your information is a chart which graphically compares the existing speed monitoring procedures with those now proposed to take their place.

59464

RULES AND REGULATIONS

[4910-22-M]

Title 23—Highways

CHAPTER I—FEDERAL HIGHWAY ADMINISTRATION, DEPARTMENT OF TRANSPORTATION

SUBCHAPTER G—ENGINEERING AND TRAFFIC OPERATIONS

[FHWA Docket No. 78-41]

PART 658—NATIONAL MAXIMUM SPEED LIMIT; MAXIMUM VEHICLE SIZE AND WEIGHT

Certification of Speed Limit Enforcement; Amendment

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Final rule.

SUMMARY: This emergency regulation implements procedures required under Section 205 of the Surface Transportation Assistance Act of 1978 amending 23 U.S.C. 154 which establishes criteria for judging each State's level of compliance with the fifty-five mile-per-hour national maximum speed limit.

DATES: This emergency regulation is effective December 20, 1978. Comments must be received on or before March 20, 1979.

ADDRESS: Anyone wishing to submit written comments may do so, preferably in triplicate, to FHWA Docket No. 78-41, Federal Highway Administration, Room 4205, HCC-10, 400 Seventh Street, SW., Washington, D.C. 20590. All comments and suggestions received will be available for examination at the above address between 7:45 a.m. and 4:15 p.m. ET, Monday through Friday.

FOR FURTHER INFORMATION CONTACT:

Dave Baldwin, Office of Traffic Operations, 202-426-1993; or David C. Oliver, Office of the Chief Counsel, 202-426-0825, Federal Highway Administration, 400 Seventh Street, SW., Washington, D.C. 20590.

SUPPLEMENTARY INFORMATION:

On November 6, 1978, the President signed into law the Surface Transportation Assistance Act of 1978, Pub. L. 95-599, 92 Stat. 2689. Section 205 of the Act amends Section 154 of Title 23, U.S.C., establishing criteria against which to judge each State's level of compliance with the fifty-five mile-per-hour National Maximum Speed Limit. Whether a State is to be subject of a sanction, or made eligible for an incentive award, will depend on the value it reports for the percent of motor vehicles exceeding 55 miles per hour on its public highways posted at 55 miles per hour. It is a significant change from the speed monitoring procedures used through FY 78, the legislation now requires that beginning with the 12-month period ending September 30, 1979, the "percent exceeding 55" figure, reported with each State's annual certification of speed limit enforcement, shall be based on

the speeds of all vehicles, or a representative sample of all vehicles. This requirement is in contrast to the "free-flow vehicle" concept which has been the basis of the speed monitoring program to date.

Implementation of the new legislation will require substantial modifications to 23 CFR 658.7. These modifications will be processed as a significant regulation in accordance with existing DOT procedures governing regulation revision, where there will be full opportunity for input and comment interested parties.

Of critical importance at the present time is that the new compliance and data collection criteria are by law to apply to the data currently being collected. In order to provide the States with modified speed monitoring procedures as quickly as possible, the following revision to 23 CFR 658.7 is being issued as an Emergency Regulation. This revision, which will be effective on issuance, will apply only to the speed monitoring program to be used by the States during the 12 months ending September 30, 1979. Concurrent with the publication of this regulation revision, FHWA field offices will be provided copies of the document "Interim Speed Monitoring Procedures," which explains in further detail the concepts and procedures discussed in the revision.

In consideration of the foregoing, 23 CFR 658.7(d) is revised to read as follows:

§ 658.7 Certification of speed limit enforcement

(d) The percentage of motor vehicles exceeding fifty-five miles per hour, based on the speeds of all vehicles or a representative sample of all vehicles. The figure for each State shall be determined in the following manner.

(1) The basic data from which the required value is developed, will continue to be collected using the "free-flow" vehicle concept that has been in effect since September 1975.

(2) The percent of vehicles exceeding 55 miles per hour determined from the "free-flow" data shall be adjusted by a conversion factor developed through supplemental data collection in order to generate a figure representative of all traffic. The conversion factor shall be developed using supplemental speed data collected via one of the following three methods:

(i) Use of automatic speed recording or speed classifying machines. Using this method, data should be collected at a minimum of two locations on each of the four or five highway types during the third and fourth quarter of Fiscal Year 1979. As a minimum, data should be collected for the same period and cover the same traffic as that from which the "free-flow" data are collected.

(ii) Supplemental radar data. This method would require the commit-

ment of additional personnel and equipment in order to monitor all vehicles during the same time period that "free-flow" data are being collected. This effort would be required at a minimum of two locations per highway type during the third and fourth quarters of Fiscal Year 1979.

(iii) Supplemental radar data—sampling the traffic stream. Where traffic volumes are large enough to make radar monitoring of all vehicles impractical, a sampling of the traffic stream may be monitored. This method would involve monitoring every n^{th} vehicle in the traffic stream ("n" to be determined by site geometrics, i.e., number of lanes, traffic volumes and data recording capability). If volumes warrant, data may be collected by lane, by 15-minute time periods, for the duration of "free-flow" collection period. As a minimum, this method would be used at two locations per highway type during the third and fourth quarters of Fiscal Year 1979.

(3)(i) The conversion factor for each highway type will be developed by relating the figures for "percent exceeding 55" derived from the dual monitoring conducted at the stations of the specified highway type for each quarter with supplemental monitoring.

A_i = % exceeding 55, free flow, on road type "i"

P_i = % exceeding 55, all vehicles on road type "i"

i = road types, 1 through 5

Calculate P_i and A_i for each of the dual data collection sessions in a quarter, and average the values to obtain a quarterly value for each road type. For each quarter calculate the conversion factor for each highway type " F_i " as follows: $F_i = P_i / A_i$.

(ii) For each highway type, the FY 1979 value for P_i will be obtained by averaging the quarterly values. The annual value for "free-flow" percent exceeding 55 will be multiplied by the final P_i value for each highway type to determine the "all traffic" figure.

(4) To obtain the final statewide figure for "percent exceeding 55," the values determined in paragraph (d)(3) of this section for each highway type will be weighted by the proportionate amount of statewide vehicle-mile of travel (VMT) for that highway type, then added.

(23 U.S.C. 154; § 205 of the Surface Transportation Assistance Act of 1978, Pub. L. 95-599, 92 Stat. 2689; 49 CFR 1.48(b))

NOTE.—The Federal Highway Administration has determined that this document contains a significant proposal according to the criteria established by the Department of Transportation pursuant to E.O. 12044. An analysis of the potential costs, benefits and impacts of this document is contained in the public docket and is available for inspection.

Issued on: December 12, 1978.

KARL S. BOWERS,
Federal Highway
Administrator.

[FR Doc. 78-35480 Filed 12-19-78; 8:45 am]

federal register

Monday
November 5, 1979

Part III

**Department of
Transportation**

**Federal Highway Administration
National Highway Traffic Safety
Administration**

**National Maximum Speed Limit; Speed
Limit Certification and Monitoring
Requirements; Proposed Rulemaking;
Republication of Amendment and
Extension of Emergency Final Rule and
Extension of Comment Period**

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

National Highway Traffic Safety
Administration

23 CFR Part 658

[FHWA Docket No. 78-41, Notice 2]

National Maximum Speed Limit;
Certification and Monitoring
Requirements

AGENCY: Federal Highway Administration (FHWA), and National Highway Traffic Safety Administration (NHTSA), Department of Transportation.

ACTION: Extension of comment due date and republication of amendment and extension to emergency final rule.

SUMMARY: On September 27, the Federal Highway Administration (FHWA) and the National Highway Traffic Safety Administration (NHTSA) published an amendment to its emergency final rules concerning certification and monitoring requirements for the National maximum speed limit. Comments were originally due on November 26, 1979. This document extends the comment due date through January 4, 1980. The FHWA and NHTSA is republishing this amendment in its entirety for the convenience of the reader. (See FR Doc. 79-33771 in the Separate Part of the Federal Register.)

DATES: This amendment and extension becomes effective on October 1, 1979. Comments must be received on or before January 4, 1980.

ADDRESS: Anyone wishing to submit written comments may do so, preferably in triplicate, to FHWA Docket No. 78-41, Notices 2, Federal Highway Administration, Room 4205, HCC-10, 400 Seventh Street, SW., Washington, D.C. 20590. All comments and suggestions received will be available for examination at the above address between 7:45 a.m. and 4:15 p.m. ET, Monday through Friday.

FOR FURTHER INFORMATION CONTACT: William F. Bauch, Office of Traffic Operations, 202/428-1993; or David C. Oliver, Office of the Chief Counsel, 202/426-0625.

SUPPLEMENTARY INFORMATION: Section 205 of the Surface Transportation Assistance Act of 1978, Pub. L. 95-599, 92 Stat. 2889, amended 23 U.S.C. 154 to include criteria against which to judge each State's level of compliance with the 55 mile-per-hour national maximum speed limit. The Act also legislated a significant change in the speed monitoring data collection procedures.

Title 23 U.S.C. 154 now requires that the "percent exceeding 55 miles per hour" figure, reported with each State's annual certification of speed limit enforcement, be based on the speeds of all vehicles, or a representative sample of all vehicles. This requirement is in contrast to the "free-flow" vehicle concept which had been the basis of the speed monitoring programs in effect previously.

The new legislation, which the President signed into law on November 6, 1978, made these new program features effective immediately and thus applicable to the certification period ending September 30, 1979. Recognizing that the legislation would require substantial modification of the governing regulation, and that these modifications would require a considerable lead time to finalize, the FHWA issued an emergency regulation (43 FR 59464) on December 20, 1978, to provide interim program guidance for the certification period ending September 30, 1979. The intent was to have a "final" regulation, which took into account all of the new requirements in place and effective October 1, 1979. A notice of proposed rulemaking is being issued and therefore a final regulation may not be issued for several months. Accordingly we are extending the effective period of the existing speed monitoring certification requirements in 23 CFR 658.7 for one additional certification period, i.e., through the 12 months ending September 30, 1980. *74-0*

We are aware of the fact that a number of States already have taken delivery, or at least have placed orders for various types of automatic vehicle speed monitoring equipment. These actions are being taken in anticipation of probable future speed monitoring requirements. Since the majority of States have not reached this stage in equipment purchase, we feel that it is only reasonable to permit these States to follow current procedures for another year. However for the States that do attain automatic speed monitoring capability during the year, elimination of all "free-flow" monitoring and complete adoption of automatic monitoring may be implemented at the beginning of a calendar quarter. Analysis procedures should be altered to reflect the change in data collection, with "free-flow" conversion factors being used only for the period up to the equipment changeover.

Fifteen comments were received in the public docket on the December 20, 1978 emergency regulation. The consensus of the comments stressed two points. First, as an interim measure the

regulation would be acceptable, with no specific comments received on the methodology itself; and second, the regulation should not be retained on a permanent basis. The substance of these comments was that some type of machine monitoring of all traffic at logically determined, representative sites should constitute the basis of a final regulation. The notice of proposed rulemaking which is being issued addresses this subject in detail.

Accordingly, the only revisions to 23 CFR 658.7(d) in extending its effective period will be:

1. To require that the supplemental data collection of paragraph (2) be accomplished during each quarter of the twelve month period ending September 30, 1980, that "free-flow" speed monitoring would be scheduled. The current wording requires that the supplemental data collection be accomplished during the third and fourth quarters of the twelve month period ending September 30, 1979; and
2. Allow changeover to automatic machine based all traffic speed monitoring during the speed monitoring year.

In consideration of the foregoing 23 CFR 658.7(d) is amended as follows effective October 1, 1979:

§ 658.7 Certification of speed limit enforcement.

(d) * * *

(2) * * *

(i) Use of automatic speed recording or speed classifying machines. Using this method, data should be collected at a minimum of two locations on each highway type monitored by a State, during each quarter of the speed monitoring year. As a minimum, data should be collected during the same time period and cover the same traffic as that from which the "free-flow" data are collected.

(ii) Supplemental radar data. This method would require the commitment of additional personnel and equipment in order to monitor all vehicles during the same time period that "free-flow" data are being collected. This effort would be required at a minimum of two locations per highway type monitored by a State, during each quarter of the speed monitoring year.

(iii) Supplemental radar data—sampling the traffic stream. Where traffic volumes are large enough to make radar monitoring of all vehicles impractical, a sampling of the traffic stream may be monitored. This method would involve monitoring every nth vehicle in the traffic stream ("n" to be determined by site geometrics, i.e.,

number of lanes, traffic volumes, and data recording capability). If volumes warrant, data may be collected by lane, by 15-minute time periods, for the duration of "free-flow" collection period. As a minimum this method would be used at two locations per highway type monitored by a State during each quarter of the speed monitoring year.

* * *

(5) If a State attains automatic "all traffic" speed monitoring capability during the 12 months ending September 30, 1980, the State may commence use of this capability with the quarter following FHWA Division Administrator approval of this changeover. Procedures for calculating the annual statewide percentage exceeding 55 miles per hour should reflect the use of the two data collection methods during the year.

* * *

[23 U.S.C. 141, 154; section 205 of the Surface Transportation Assistance Act of 1978, Pub. L. 95-599, 92 Stat. 2889; 49 CFR 1.48(b)]

Note.—The Federal Highway Administrator and the National Highway Traffic Safety Administrator have determined that this document relates to a significant regulatory action according to the criteria established by the Department of Transportation pursuant to E.O. 12044. A regulatory evaluation is available for inspection in the public docket and may be obtained by contacting Mr. William F. Bauch of the program office at the address specified above.

Issued on: September 26, 1979.

Joan Claybrook,
*National Highway Traffic Safety
Administrator.*

R. D. Morgan,
Acting Federal Highway Administrator.

[FR Doc. 79-33772 Filed 11-2-79; 8:45 am]

BILLING CODE 4910-22-M

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

National Highway Traffic Safety Administration

23 CFR Part 659

[FHWA Docket No. 78-41, Notice 3]

National Maximum Speed Limit; Speed Limit Certification and Monitoring Requirements

AGENCIES: Federal Highway Administration (FHWA) and National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

ACTION: Notice of proposed rulemaking.

SUMMARY: This document sets forth the proposed requirements for a 55 mile-per-hour national maximum speed limit and the monitoring of speeds to meet the criteria for compliance with the speed limit, including procedures for determining noncompliance and the consequences of such a determination.

DATES: Comments must be received on or before January 4, 1980. The first certification to which the final rule would apply will be submitted on or before January 1, 1982, covering the period October 1, 1980, to September 30, 1981.

ADDRESS: Anyone wishing to submit written comments may do so, preferably in triplicate, to FHWA Docket No. 78-41, Notice 3, Federal Highway Administration, Room 4205, HCC-10, 400 Seventh Street, SW., Washington, D.C. 20590. All comments and suggestions received will be available for examination at the above address between 7:45 and 4:15 p.m. ET, Monday through Friday. Those desiring notification of receipt of comments must include a self-addressed stamped postcard.

FOR FURTHER INFORMATION CONTACT: William F. Bauch, Office of Traffic Operations, 202/426-1993; or David C. Oliver, Office of the Chief Counsel, 202/426-0825; Federal Highway Administration, 400 Seventh Street, SW., Washington, D.C. 20590.

SUPPLEMENTARY INFORMATION: The annual certification of speed limit enforcement by the States became a mandatory requirement upon passage of the Federal-Aid Highway Amendments of 1974, Pub. L. 93-643, 88 Stat. 2281, which added a new section 141 to title 23 of the United States Code (23 U.S.C.). Implementing regulations were published in the Federal Register on

September 9, 1975, and codified in 23 CFR 658.7.

The regulations specified the information that had to be submitted by each State as a part of its certification. Included was certain information relating to motorist observance of the speed limit on the State highway system. This data was to be reported as summary statistics derived from a statewide program of speed monitoring.

The requirement that mandated a speed monitoring program affected the States in differing ways. In the pre-'55 era, approximately 35 States were conducting speed surveys as part of their highway planning survey activities. The scope of these programs ranged from one or two survey stations in a few of the States to rather extensive programs in other States wherein many locations were surveyed on various classes of highways.

In addition to mandating a speed monitoring program in every State, program changes were required in those States with existing speed monitoring activities. The new requirements were set forth in a publication titled "Procedural Guide for Speed Monitoring," September 1975, Office of Highway Planning, Federal Highway Administration (FHWA).

The speed monitoring program in each State was developed within the guidelines set forth in the Procedural Guide. Among other things, the Procedural Guide established the boundaries of statistical accuracy of the speed data and prescribed the manner in which the speed data was to be obtained, i.e., in accordance with the classical traffic engineering techniques of measuring the speeds of an adequate sample of "free flowing" vehicles. Free flow is defined as being those vehicles that are unimpeded by other vehicles in the traffic stream so that the only constraint on the driver of a free flow vehicle is the driver's own choice of speed and the constraint of the 55 mile-per-hour speed limit. Some salient points are listed below.

1. Speed monitoring was to be conducted only on roads on the State highway system with a 55 mile-per-hour speed limit.
2. The highway sections subject to speed monitoring were to be divided into five categories: Interstate urban; Interstate rural; multilane divided; multilane undivided; and two-lane rural.
3. The number of monitoring locations on each class of highway was to be determined statistically in order to produce annual statewide results for average speeds by highway type accurately within plus or minus 2 miles per hour.

4. Reporting requirements for each highway category were to include the average speed, the median speed, the 85th percentile speed, and the percent of motorists exceeding 55, 60, and 65 miles per hour for the 12-month period ending on September 30 before the date by which certification is required.

5. The data from the five systems was to be summarized by weighting the respective averages. The States were given the option to choose a method of weighting by the number of vehicles (in each class) whose speed was measured, the number of miles of highway in each class, or the vehicle miles traveled (VMT) by all traffic on each class of highway.

The adoption of the Procedural Guide by each State established a basis for uniformity in the monitoring program. There are, however, differences in State laws or the applications of the provisions of the Procedural Guide that sometimes make it difficult to compare one State's summary data with another's.

A few examples of the effects of various State laws are discussed below. In some States the application of the speed limit law has created a situation where all two-lane roads have a speed limit lower than 55 miles per hour. In those cases the summary data is derived from field observations made only on freeway type facilities, and since these facilities have the highest speed profile of the five classes of highway, the weighted average speeds are relatively high. The other end of the spectrum evolves where State law provides that unless posted otherwise, the basic 55 mile-per-hour speed limit applies. States with this type of basic law have very large mileages of two-lane rural roads with a 55 mile-per-hour speed limit and since these facilities have the lowest speed profile of the five classes of highway, the weighted average speeds are relatively low. Also, it should be noted that if the number of miles of highway were chosen as the method of weighting in the States with large mileages of two-lane rural roads, the final weighted averages would probably be lower than would be the case if the number of vehicles or VMT were used as the basis for weighting.

While the above explanation illustrates why valid comparisons of summary data between States cannot be made, it should be emphasized that the methods chosen in each State, consistently applied each year, have produced data that can be compared on a year-to-year basis for each State as certifications have been received.

Section 205 of the Surface Transportation Assistance Act of 1978

(STAA), Pub. L. 95-599, 92 Stat. 2889, amended 23 U.S.C. 154 to set standards against which to judge each State's compliance with the 55 mile-per-hour national maximum speed limit. A graduated system of standards to measure the effectiveness of State speed limit programs, based on the percentage of motor vehicles exceeding 55 mile per hour, is now included in 23 U.S.C. 154. This compliance standard starts at 70 percent for the 12-month period ending September 30, 1979, requiring that no more than 70 percent of vehicles shall be exceeding 55 miles per hour, and is reduced by 10 percent each succeeding 12-month period until a standard of 30 percent applies for the 12 months ending September 30, 1983, and for each 12-month period thereafter. Additionally, 23 U.S.C. 154 now specifies that the annual certification of speed limit enforcement required by 23 U.S.C. 141 will include:

... data on the percentage of motor vehicles exceeding fifty-five miles per hour on public highways with speed limits posted at fifty-five miles per hour in accordance with criteria to be established by the Secretary, including criteria which takes into account the variability of speedometer readings and criteria based upon the speeds of all vehicles or a representative sample of all vehicles.

The "all vehicles" requirement is in contrast to the "freelane vehicle" concept which has been the basis of the speed monitoring program since 1975. That, plus the establishment of the percent of vehicles exceeding 55 miles per hour as the criterion for determining compliance in any State, necessitated a change in the supporting speed data which each State is required to submit as a part of its annual certification of speed limit enforcement under 23 U.S.C. 141.

The new legislation, which the President signed into law on November 6, 1978, made these new program features effective immediately and thus applicable to the certification period ending September 30, 1979. Recognizing that the legislation would require substantial modification of the governing regulation, and that these modifications would require a considerable lead time to finalize, the FHWA published an emergency regulation (43 FR 59464) on December 20, 1978, to provide interim program guidance for the certification period ending September 30, 1979.

Fifteen comments were received on the December 20, 1978 emergency regulation as follows: 11 State transportation agencies, 1 private citizen, 1 county safety commission, 1 State public safety agency, and 1 highway organization. The consensus of

the comments stressed two points. First, as an interim measure the regulation would be acceptable, with no specific comments received on the methodology itself. Second, the regulation should not be retained on a permanent basis; the final regulation should require some type of machine monitoring of all traffic at logically determined, representative sites.

The New York Governor's Traffic Safety Committee suggested that guidelines be formulated for estimating VMT. Such guidelines have been developed for other FHWA programs (e.g., Mileage Facilities Reporting System, Highway Performance Monitoring System, TA-1 tables) and are considered adequate for use in the 55 m.p.h. speed monitoring program. Most other comments of a technical nature have been accommodated in this Notice of Proposed Rulemaking. The Nevada Department of Highways suggested that sufficient Federal funds be made available for the expanded monitoring program. Limited Federal funding is currently available under 23 U.S.C. 307. The availability of additional Federal funding is not treated in this Notice but is under review.

The emergency regulation has been extended for one additional certification period (October 1, 1979-September 30, 1980). This extension was published on an emergency basis on September 27, 1979, (44 FR 55592) in order to assure that procedures would be in effect at the start of the new certification period on October 1. Minor amendments governing the use of automatic speed monitoring equipment were also made at that time. Due to delays in the development of the extension and this notice of proposed rulemaking, it was not possible to publish the extension for prior notice and comment or to provide a 30-day delay in effective date and still meet the September 30 deadline. However, comments received on the original emergency regulation were considered, and comments on the extension and amendment have been invited and can be submitted to FHWA Docket No. 78-41, Notice 2, until January 4, 1980. A copy of the extension and amendment as originally published on September 27 is being republished in this same special part of today's Federal Register for ease of reference.

To assist the States in meeting the new requirements necessitated by the STAA, a new "Speed Monitoring Program Procedural Guide" has been prepared by the Office of Highway Planning, FHWA, and is being issued as an appendix to this proposed rule. Implementation of the "all vehicles"

concept requires a significant change in the method for selecting speed survey locations and additional statistical treatments have to be employed. A few of the more salient points contained in the new Procedural Guide are worthy of emphasis.

1. The target sampling accuracy of the annual statewide value for percent of vehicles exceeding 55 miles per hour is plus or minus 2.5 percent, at a 95 percent confidence level.

2. Speed surveys of minimum 24 hour duration are required.

3. The speed monitoring program, as outlined, lends itself strongly toward automated data collection.

4. The term "posted" has been defined to exclude roads functionally defined as local and any unpaved roads.

5. The five classes of highway which formed the basis for the speed monitoring program to date have been superseded by six categories of highway based on functional classifications.

6. The coverage concept is designed to allocate sessions based on the amount of travel (VMT) subject to the 55 m.p.h. speed limit, compensating for the additional variations due to larger volumes or mileages in some States. A sampling session is a single period of speed monitoring at a particular place (sampling location).

Uniformity in the collection and summarization of speed data has been given new importance with the passage of the STAA because of the system of penalties and incentives contained therein for either failure to meet the legally established criteria, or for exceeding the compliance criteria by stated amounts. Accordingly, the revised Procedural Guide specifies that all averages shall be weighted by factors which reflect the vehicle miles traveled on the various classes of highways. The universal use of VMT as the weighting factor will tend to emphasize the data obtained on the high volume roads and minimize the effect of large mileages of two-lane, low volume, highways. Comparisons of data between States should become more realistic than heretofore, and judgments relative to compliance with the stated criteria will be made from a relatively uniform data base.

Section 659.7 of the new regulation will require each State to develop a speed sampling and analysis plan following the guidelines set forth in the Procedural Guide. As proposed, the plan would be required to discuss the following subjects:

1. Functional grouping of highways;

2. Miles of highway with a 55 m.p.h. speed limit, by functional group;

3. Distribution of travel on highways with a 55 m.p.h. speed limit;

4. Sources of speed data used in calculating sample size;

5. Number of sampling locations and sessions and their distribution by system and geographic area;

6. Type and capabilities of speed measuring equipment to be used;

7. Data collection techniques;

8. Any deviation from analysis methods described in the regulation.

Section 659.9 would require the State to submit its initial plan to the FHWA for approval. Annual reviews and updates would also be required. The use of procedures for attaining statistical goals, other than the recommended procedure set forth in the Procedural Guide, would be approved in advance by FHWA.

Section 659.13 sets forth the required elements of the annual State certification and is not substantially different from current requirements.

Section 659.17 sets forth the statutory penalties for failure to certify or meet the compliance standards. Failure to enact or maintain or certify to a 55 m.p.h. speed limit, or failure to enforce that limit will result in a loss of project approval. Failure to meet the specified compliance levels will result in a loss of a portion of non-Interstate apportioned funds. Section 659.17(c) provides for a one-year delay in reduction of a State's Federal-aid highway apportionment where a bona fide claim is submitted by the State regarding hardship which would result from anticipated delays in Federal-aid highway projects.

The procedures for determining nonconformity, notifying the States of any proposed determination, and providing for a hearing on or informal resolution of such determinations have been completely revised. The proposed process, as set forth in § 659.19 of the regulation, consists of a proposed determination, notification to the State, provision for a hearing or informal resolution, and final determination. This procedure would apply to any proposed enforcement determination. However, since the compliance levels are established by law, once the monitoring requirements set forth in this part are effective, no hearing is necessary in those instances where the State fails to meet the specified level. Because the penalty may fall within a range of 1 to 5 (or 10) per centum, the State would be given an opportunity to meet with the U.S. Department of Transportation in order to discuss the ultimate amount to be withheld or any hardship claim made by the State.

Note.—The Federal Highway Administrator and the National Highway Traffic Safety Administrator have determined that this document contains a significant proposal in accordance with the criteria established by the Department of Transportation pursuant to E.O. 12044. A draft regulatory evaluation is available for inspection in the public docket and may be obtained by contacting Mr. William F. Bauch of the program office at the address specified above.

Issued on: October 26, 1979.

Karl S. Bowers,

Federal Highway Administrator.

Joan Claybrook,

National Highway Traffic Safety Administrator.

In consideration of the foregoing, the FHWA and the NHTSA hereby propose to amend Chapter I, Subchapter G, of Title 23, Code of Federal Regulations, by adding a new Part 659 as follows:

PART 659—CERTIFICATION OF SPEED LIMIT ENFORCEMENT

Sec.

659.1 Purpose and objective.

659.3 Definitions.

659.5 Adoption of a national maximum speed limit.

659.7 Formulation of a plan for monitoring speeds.

659.9 Guidelines and evaluations of operations.

659.11 Certification requirement.

659.13 Certification content.

659.15 Certification submittal.

659.17 Effect of failure to certify or to meet compliance standards.

659.19 Procedure for the reduction of funds.

Appendix—Speed monitoring program procedural guide for national maximum speed limit.

Authority: 23 U.S.C. 141, 154, 315, 205 of the Surface Transportation Assistance Act of 1978, Pub. L. 95-599, 92 Stat. 2689, 49 CFR 1.48(b) and 1.50.

§ 659.1 Purpose and objective.

(a) **Purpose.** The purpose of this regulation is to prescribe requirements for administering a program for monitoring speed on public highways in order to provide reliable data to be included in a State's annual certification.

(b) **Objective.** The objective of the program is to establish a valid statistical method of measuring a sample of vehicle speeds on a sample of highways in order to estimate the percentage of vehicles exceeding 55 miles per hour with sufficient accuracy to support a determination of compliance. A secondary objective is to quantify the overall statewide distribution of speeds by compiling other characteristics which may indicate the level of enforcement or public compliance, such as, average speed, median speed, 85th

percentile speed, and percentages of vehicles exceeding 60 and 65 miles per hour.

§ 659.3 Definitions.

(a) "State" means any one of the fifty States, the District of Columbia and Puerto Rico.

(b) "Highway" means all streets, roads or parkways under the jurisdiction of a State, including its political subdivisions, and open for use by the general public, and includes toll facilities.

(c) "Motor Vehicle" means any vehicle driven or drawn by mechanical power manufactured primarily for use on public highways, except any vehicle operated exclusively on a rail or rails.

(d) "Posted" means those roads with a legal speed limit of 55 m.p.h., excluding those roads functionally classified as "local" and any unposted roads. This includes both State maintained and non-State maintained roads, including toll roads.

§ 659.5 Adoption of a national maximum speed limit.

The Secretary shall not approve any Federal-aid projects under 23 U.S.C. 106, in a State which fails to adopt or maintain maximum speed limits as follows:

(a) The maximum speed limit on any highway in the State shall be 55 m.p.h. or less, except that emergency and police motor vehicles may be authorized to operate at higher speeds when necessary to protect health or safety.

(b) Except as provided in paragraphs (c) and (d) of this section, the speed limit on any portion of a highway shall be uniformly applicable to all types of motor vehicles using such portion of highway, if on November 1, 1973, such portion of highway had a speed limit which was uniformly applicable to all types of vehicles using it.

(c) Notwithstanding the provisions of paragraph (b) of this section, a State may establish a lower speed limit for a motor vehicle operating under a special permit because of any weight or dimension of such vehicle, including any load thereon.

(d) Notwithstanding the provisions of paragraph (b) of this section, a State may specify nonuniform speed limits on any portion of a highway when the condition of the highway, weather, an accident, or other condition creates a temporary hazard to the safety of traffic on such portion of a highway.

§ 659.7 Formulation of a plan for monitoring speeds.

(a) Each State shall develop a speed sampling and analysis plan on an

annual basis following the guidelines set forth in the *Speed Monitoring Program Procedural Guide*¹ (SMPPG). As a result of many unknown factors, the guidelines set forth in the SMPPG rely on many assumptions. After a complete year's data are available, and thereafter on an annual basis, an evaluation must be made to determine the actual accuracy level obtained. Changes should be made to the sampling plan to increase its overall efficiency. Annual evaluations shall also include an examination of the travel figures (vehicles miles traveled (VMT) or daily vehicle miles traveled (DVMT)) in order to ascertain their validity and to make updates as needed.

(b) The plan shall discuss the following subjects at a minimum:

(1) Functional grouping of highways to be used:

(i) The functional class groupings of highways will be used to distribute the monitoring effort. Public highways shall be stratified based on the functional classification defined in the FHWA publication *Highway Functional Classification, Concepts, Criteria and Procedures*.² Some of the functional classes have been combined.

(ii) The groupings of functional classes of highway for the speed monitoring program shall be: *Urban* (Interstate; Other Freeways and Expressways and Other Principal Arterials; Minor Arterial Street System and Collector Street System); *Rural* (Interstate; Other Principal Arterials and Minor Arterial Road System; Collector Road System).

(2) Miles of highway with a 55 m.p.h. speed limit, by functional group.

(i) Miles of highway with a 55 m.p.h. speed limit shall be used in the selection of speed monitoring locations. Mileage by functional system has been determined in conjunction with the Federal-aid system realignment in 1976 and was reported to FHWA as part of the 1976 National Highway Inventory and Performance Study³ (NHIPS).

(ii) The proportion of paved mileage in each grouping subject to the 55 m.p.h. speed limit shall be determined by reviewing roadway section logs or other

inventory records that provide speed limit by roadway segment.

(3) Distribution of travel (VMT or DVMT) on highways with a 55 m.p.h. speed limit. The VMT by functional system shall be used to distribute the data collection effort and in the calculation of the statewide percent of vehicles exceeding 55 m.p.h.

(4) Sources of speed data used in calculating sample size (default values or data from previous monitoring).

(5) Number of sampling locations and sessions and their distribution by system and geographic area. A sampling session shall consist of a single period of monitoring at a particular place (sampling location).

(i) The sampling plan shall consist of a statewide number of sampling locations classified into:

(A) Standard sampling locations—where the number of vehicles exceeding 55 m.p.h. and the total number of vehicles passing the location during the monitoring period are the only required items to be collected. Standard sampling locations require one sampling session each year.

(B) Control sampling location—data collection consists of the individual speeds of all vehicles passing the location during the monitoring period, or speeds classified in small ranges. Control sampling locations shall be sampled once each quarter and shall constitute at least 20 percent of the statewide sample locations. A minimum of one control location shall be located in each highway functional grouping.

(ii) The following statistical criteria shall be the basic minimum requirements of the sample design:

(A) The target accuracy of the annual statewide percentage exceeding 55 m.p.h. shall be sufficient to significantly detect either a positive or negative difference greater than 2.5 percent.

(B) A significance level of 5 percent shall be used for all estimates (equivalent to a 95 percent confidence interval).

(iii) A 24-hour monitoring period shall be required for individual sampling sessions.

(iv) The minimum sample size needed by each State shall be determined under both (A) the accuracy of statistical estimates concept and (B) the coverage of population sample concept. The larger of the two numbers shall be used as the statewide minimum sample size.

(v) The statewide number of locations shall be allocated by highway grouping (by estimating the relative travel (VMT or DVMT) carried by the highway segments with a 55 m.p.h. speed limit in each functional grouping).

(A) The following formula shall be used to accomplish this allocation:

$$m_h = m_h w_h$$

where m_h = number of locations allocated to the h^{th} functional highway grouping.
 m_h = statewide minimum sample size (number of locations).

$$w_h = \text{relative travel (VMT or DVMT) on roads subject to the 55 m.p.h. speed limit in the } h^{th} \text{ highway grouping.}$$

(B) No locations need to be allocated to any functional grouping with less than one percent of the statewide travel subject to the 55 m.p.h. limit.

(vi) The selection of location where the sampling sessions will take place shall be made as follows:

(A) Construction of the sampling frames—the statewide frame size shall be the total number of highway segments in the State which are subject to the 55 m.p.h. speed limit. Preferably these will be 5 mile segments, however, other similar segment criteria established for State inventory files are permissible.

(B) Selection of sample segments—the location of sample segments shall be established by simple random selection without replacement with the help of the table of random numbers (see the SMPPG).

(C) The manner and sequence in which both standard and control locations are selected shall be documented and retained for future review. Locations shall be plotted on a map.

(6) Type and capabilities of speed measuring equipment to be used.

(7) Data collection.

(i) Schedule—a detailed schedule shall take into account day of the week, month, and season of the year.

(ii) Field data collection—the goal is to obtain, during each monitoring session, a representative record of the traffic speeds that normally occur in a given segment. Therefore, the choice of a data collection site within a given segment should reflect the geometric design conditions of the segment. In addition, the collection of data should not be attempted if conditions at a site are such that the normal flow of traffic is substantially restricted.

(8) Any deviation from analysis methods described above or in the SMPPG.

§ 559.9 Guidelines and evaluations of operations.

The State shall submit its initial plan to the FHWA Division Administrator for approval. The plan shall be reviewed annually and updated as conditions and new data indicate. The SMPPG describes the recommended procedure for attaining statistical goals. Other

¹This document is included as a appendix to this regulation and will be included in the CFR. Also, it is available for inspection and copying as prescribed in 49 CFR Part 7, Appendix D.

²This document was published by the U.S. Department of Transportation, Federal Highway Administration, July 1974 and Reprinted December 1978. It is issued in FHWA's Highway Planning Program Manual (HPPM) as Transmittal 155, Volume 20, Appendix 12. It is available for inspection and copying as prescribed in 49 CFR Part 7, Appendix D.

³National Highway Inventory and Performance Study Manual: 1976, U.S. DOT/FHWA, July 1975, available for inspection and copying as prescribed in 49 CFR Part 7, Appendix D.

proposed procedures shall be approved in advance by the FHWA Division Administrator.

§ 659.11 Certification requirement.

Each State shall certify to the Secretary (Federal Highway and National Highway Traffic Safety Administrators) before January 1 of each year that it is enforcing the national maximum 55 m.p.h. speed limit on all public highways in accordance with 23 U.S.C. 154. The certification shall be supported by information on activities and results achieved during the 12-month period ending on September 30 preceding the January 1 date by which certification is required.

§ 659.13 Certification content.

The certification shall consist of the following elements:

(a) A statement by the Governor of the State, or an official designated by the Governor, that the 55 m.p.h. national maximum speed limit on public highways in the State is being enforced.

(b) A copy of any State law, regulation, administrative order, statement of policy or any other written instruction relating to enforcement of the 55 m.p.h. national maximum speed limit, which has not been included in earlier certifications, or a statement that there have been no changes to any such documents previously submitted. If a written enforcement agency policy on the 55 m.p.h. speed limit does not exist, a statement to that effect must also be included.

(c) Information relating to enforcement and monitoring as follows:

(1) Miles of highway with a 55 m.p.h. speed limit, by functional group.

(2) The number of citations issued by State agencies for violation of the 55 m.p.h. speed limit during each month of the 12-month period ending on September 30 before the date by which certification is required.

(d) Information relating to observance of the speed limit by motorists on the State highway system.

(1) The statewide percentage of vehicles exceeding the 55 m.p.h. speed limit weighted by the proportion of statewide 55 m.p.h. VMT on each of the six highway functional groupings.

(2) Summary statistics indicating the average speed, the median speed, and the 85th percentile speed and the percent of vehicles exceeding 60 m.p.h. and 65 m.p.h. for the 12-month period to which the certification applies.

(e) Percent of total statewide VMT on facilities with 55 m.p.h. speed limits.

§ 659.15 Certification submittal.

(a) The Governor, or an official designated by the Governor, shall each year submit the original and three copies of the certification to the appropriate FHWA Division Administrator.

(b) FHWA and NHTSA field offices shall provide evaluations and comments when forwarding the original and one copy to the Washington Headquarters Office.

§ 659.17 Effect of failure to certify or to meet compliance standards.

(a) If a State fails to certify as required by § 659.11 or if the Secretary determines that a State is not adequately enforcing the 55 m.p.h. national maximum speed limit on all public highways notwithstanding the State's certification, no Federal-aid highway project shall be approved under 23 U.S.C. 106 in that State.

(b) Beginning with the certification to be submitted before January 1, 1980, for the 12-month period ending September 30, 1979, in those States whose certification indicates that the percentage of motor vehicles exceeding 55 m.p.h. is greater than 70 per centum, the State's apportionment of Federal-aid highway funds under 23 U.S.C. 104(b)(1), 104(b)(2), and 104(b)(6) shall be reduced in an aggregate amount of up to 5 per centum of the amount to be apportioned for the fiscal year ending September 30, 1981. The following schedule will apply to subsequent years:

(1) If the Certification of January 1, 1981, shows a percentage exceeding 55 m.p.h. greater than 60 per centum, an aggregate amount of up to 5 per centum of apportioned funds for the fiscal year (FY) ending September 30, 1982, shall be withheld.

(2) If the Certification of January 1, 1982, shows a percentage exceeding 55 m.p.h. greater than 50 per centum, an aggregate amount of up to 5 per centum of apportioned funds for the fiscal year ending September 30, 1983, shall be withheld.

(3) If the Certification of January 1, 1983, shows a percentage exceeding 55 m.p.h. or greater than 40 per centum, an aggregate amount of up to 10 per centum of apportioned funds for the fiscal year ending September 30, 1984, shall be withheld.

(4) If the Certification of January 1, 1984, and each succeeding year shows a percentage exceeding 55 m.p.h. or greater than 30 per centum, an aggregate amount of up to 10 per centum of apportioned funds for the fiscal year ending September 30, 1985, and each succeeding fiscal year thereafter shall be withheld.

(c) Where a reduction in apportioned funds pursuant to paragraph (b) of this section will result in a hardship to a State, the fiscal year apportionment reduced for such State shall be the apportionment for one fiscal year later than set forth in paragraph (b) of this section. The State must submit a claim of hardship in writing supported by sound reasoning and indications that corrective or remedial measures are to be undertaken to improve the State's compliance posture. Hardship under this paragraph relates to adverse impacts (e.g., economic or environmental) which would result from a delay in the letting of Federal-aid highway projects.

(d) Funds withheld pursuant to paragraph (b) of this section shall be apportioned to a State upon a determination that the percentage of motor vehicles in such State exceeding 55 m.p.h. has dropped to the level specified for the fiscal year in which the funds were withheld. Such a determination shall be made on the basis of a following year's monitoring results.

§ 659.19 Procedure for the reduction of funds.

(a) In addition to the procedure set forth in § 659.17(b) for a State which fails to meet the specified compliance standards, if it appears to the Administrators of the Federal Highway and National Highway Traffic Safety Administrations that a State has not submitted a certification conforming to the requirements of this part, or that the State is not adequately enforcing the national maximum speed limit of 55 m.p.h., the Administrators shall make in writing a proposed determination of nonconformity, and shall notify the Governor of the State of the proposed determination by certified mail. The notice shall state the reasons for the proposed determination and inform the State that it may within 30 days from the date of the letter request a hearing to show cause why it should not be found in nonconformity. If the State informs the Administrators before the end of the 30-day period that it wishes to attempt to resolve the matter informally, the Administrators may extend the time for requesting a hearing by an additional 30 days. In the event of a request for informal resolution, the State and the Administrators (or designees) shall promptly schedule a meeting to resolve the matter.

(b) If a State does not request a hearing in a timely fashion as provided in paragraph (a) of this section, the Administrators shall forward the proposed determination to the Secretary. Upon approval by the

Secretary, the provisions of § 659.17(a) shall take effect immediately.

(c) If a State requests a hearing, the Secretary shall expeditiously convene a hearing on the record, which shall be conducted according to the provisions of the Administrative Procedure Act, 5 U.S.C. 551 *et seq.* Based on the record of the proceeding, the Secretary shall determine whether the State is in nonconformity with this part. If the Secretary determines that the State is in nonconformity, the provisions of § 659.17(a) shall take effect immediately.

(d) If a State fails to meet the compliance standards set forth in § 659.17(b), the Administrators shall notify the Governor of the State of the nonconformity and of the proposed amount of the reduction in apportioned funds. The Governor shall also be informed that within 30 days from the date of the letter the State may request a delay in the penalty on the basis of hardship pursuant to § 659.17(c). While no hearing shall be extended on the question of nonconformity, the State may request an informal meeting to discuss the proposed amount of the withholding and the hardship request, if any. In the event of a request for such an informal meeting, the State and the Administrators (or designees) shall promptly schedule a meeting to resolve the matter. No later than 60 days following the meeting, a final determination shall be made with regard to the amount of the withholding and the hardship request, if any.

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APPENDIX

SPEED MONITORING PROGRAM
PROCEDURAL GUIDE
for the
NATIONAL MAXIMUM SPEED LIMIT



U.S. Department of Transportation
Federal Highway Administration
Program Management Division
Procedural Development Branch
Washington, D.C. 20590

Chapter

I. INTRODUCTION

VII

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BACKGROUND

The national 55 m.p.h. speed limit was first instituted as a temporary conservation measure in response to the severe fuel shortage that occurred in late 1973. The significant reduction in travel speeds and the accompanying decline in traffic fatalities prompted Congress to establish the national 55 m.p.h. speed limit as a permanent measure. The Federal-Aid Amendments of 1974 made annual State enforcement certification a prerequisite for approval of Federal-aid highway projects. Summary data from comprehensive speed monitoring programs have been part of these annual State certifications.

The "Procedural Guide for Speed Monitoring," issued in September 1975, provided guidelines for monitoring speeds to determine the level of motorist compliance with the speed limit. Data were to be collected on level, tangent highway sections under "free-flow" conditions. The original speed monitoring procedures were designed to produce statistics for each of five highway types in a State. Predictably, a desire arose for statewide statistics representative of conditions on all highway types. Methods for calculating statewide statistics varied among the States, making the value of State-to-State comparisons questionable.

Slowly declining compliance with the 55 m.p.h. speed limit and increasing accident and fatality rates prompted the Department of Transportation (DOT) to recommend and the Congress to approve significant changes in the speed limit legislation in 1978. The Highway Safety Act of 1978 provides for both withholding Federal-aid highway funds and awarding incentive grants based on speed compliance data submitted annually. The major data requirement in each State is now an estimate of the percent of motor vehicles exceeding 55 m.p.h. which is representative of travel on roads and streets having legal speed limits of 55 m.p.h. "Interim Speed Monitoring Procedures," issued in December 1978, contains instructions for collecting and reporting speed information on these roads and streets for fiscal year 1979.

PURPOSE

The speed monitoring program is primarily intended to provide reliable data to be included in a State's annual certification of 55 m.p.h. speed limit enforcement. In addition, the data may be used to evaluate:

Table 1-1
Statutory Level of Speed Limit Compliance
for Sections of Incentive Grants

For Period Ending	Sections		Incentive Grants	
	% Exceeding 55 m.p.h.	Amount Withheld ^{1/}	% Exceeding 55 m.p.h.	Amount of Grant ^{2/}
9/30/79	>10%	\$5	<60%	10%
9/30/80	>60%	\$5	<50%	10%
9/30/81	>50%	\$5	<40%	10%
9/30/82	>40%	10%	<30%	10%
9/30/83 and thereafter	>30%	10%	<20%	10%

^{1/}Redesignated highway funds under Sections 104 (b) (1), 104 (b) (2), and 104 (b) (3) of Title 23 (excluding Interstates).

^{2/}Incentive grants shall be equal to 1% of the apportionment made under Title 23, United States Code, and may be used for carrying out any provision of Section 402, Title 23.

- Motorist compliance with the 55 m.p.h. speed limit;
- The effectiveness of various enforcement strategies;
- The effectiveness of various public awareness programs; and
- Speed trends.

The 1978 legislation necessitated major changes from earlier monitoring programs. Procedures presented in this manual include:

- Requirements that a statewide figure for "percent of motor vehicles exceeding 55 m.p.h." be developed that represents statewide trends on all types of highways with limits of 55 m.p.h., not just for individual systems.
- "Free-flow" will no longer be the only condition monitored. Speed statistics must be representative of all travel; thus, all vehicles passing a monitoring station during the observation period must be measured.
- Speeds may now be monitored on other than level, tangent sections of highway.
- Previously, speed monitoring was conducted under rather ideal weather conditions. Although future monitoring during snow conditions is discouraged, wet, damp or rainy weather will no longer be disqualifying.

LEGISLATION

Section 205 of the "Surface Transportation Assistance Act of 1978" (Title II, known as the Highway Safety Act of 1978) is the basis for speed monitoring activities related to the national maximum speed limit (55 m.p.h.) (see Appendix A). Table 1-1 summarizes required levels of speed limit compliance and the consequent Federal-aid withholding or incentive grants. The speed monitoring guidelines presented in this manual outline a statistical sampling approach which will provide speed data with an accuracy reasonable for administering the law.

OBJECTIVE

The objective of this manual is to establish a valid statistical method of measuring a sample of vehicle speeds on a sample of highways in order to comply with the requirements specified in Section 154 of Title 23, United States Code, as amended. The law defines compliance in terms of the statewide "percentage of motor vehicles exceeding 55 m.p.h." on public highways with speed limits of 55 m.p.h. Therefore, the main objective of the speed monitoring program is to estimate this percentage with sufficient accuracy to allow a determination of compliance.

II. SAMPLING PLAN PREREQUISITES

The three types of data that must be assembled before a sampling plan can be developed are:

1. Functional class groupings of highways;
2. Miles of highway, by functional groupings, with a 55 m.p.h. speed limit; and
3. Distribution of vehicle miles of travel, by functional grouping, on highways with a 55 m.p.h. speed limit.

FUNCTIONAL GROUPINGS OF HIGHWAYS

The functional class grouping of highways will be used in the speed monitoring program to distribute the monitoring effort. Public highways will be stratified based on the functional classification defined in the AASHTO publication Highway Functional Classification, Concepts, Criteria and Procedures. Some of the functional classes have been combined. The combined functional classes will be limited to those with a legal 55 m.p.h. speed limit. As a functional class has been administratively determined to treat any facilities functionally classified as "interstate" and any unimproved roads with a 55 m.p.h. speed limit shall be included from the speed monitoring program. (The use of speed monitoring equipment on unimproved facilities is generally impractical and the relative amount of travel on local facilities is quite small.) The groupings of functional classes of highways for the speed monitoring program are:

- Urban
- Interstate
 - Other Freeways and Expressways and Other Principal Arterials
 - Minor Arterial Street System and Collector Street System
- Rural
- Interstate
 - Other Principal Arterials and Minor Arterial Road System
 - Collector Road System

MILES OF HIGHWAY WITH A 55 M.P.H. SPEED LIMIT

Miles of highways with a 55 m.p.h. speed limit will be used in the random selection of speed monitoring locations. Mileage by functional system has

However, an estimate of the percentage of vehicles exceeding 55 m.p.h. is not sufficient to quantify the overall statewide distribution of speeds. Other important characteristics that may indicate the level of enforcement or public compliance are average speed, median speed, percentages exceeding 60 or 65 m.p.h., etc.

The legislation is very specific that the percentage exceeding 55 m.p.h. is the statistic to be used in judging compliance. In order to estimate the distribution of speeds, it is necessary to collect somewhat different data than is required to estimate the percentage exceeding 55 m.p.h. The accuracy of these other statistics that may be developed need not require as high a level of accuracy and, therefore, is not a controlling factor in designing a sampling plan.

DEVELOPMENT AND DOCUMENTATION OF SAMPLING PLAN

Following the guidelines in this manual, each State should develop a speed sampling and analysis plan for approval by the FWA Division Administrator. The plan should be reviewed annually and updated as conditions and new data indicate. As a minimum, the initial plan should include:

- Functional grouping of highways to be used;
- Miles of highway with a 55 m.p.h. speed limit, by functional group;
- Distribution of travel (VMT or DMT) on highways with a 55 m.p.h. speed limit;
- Sources of speed data used in calculating sample size (default values or data from previous monitoring);
- Number of sampling locations and sessions and their distribution by system and geographic area;
- Type and capabilities of speed measuring equipment to be used;
- Data collection schedule; and
- Any deviation from analysis methods recommended in this manual.

Table 11-1 contains an estimate by State of the proportion of VMT on 55 m.p.h. speed limit highways by functional class. These data were extracted from the sample section data submitted by the States to FHWA as part of the NHTS as of 1975. The data do not reflect any changes in speed limits and travel distribution occurring since 1975.

Table 11-2 summarizes the prerequisite data that will be needed to develop the statewide speed monitoring sampling plan.

been determined in conjunction with the Federal-aid system realignment in 1975 was reported as part of the 1976 National Highway Inventory and Performance Study (NHTS). During 1979, similar data are being prepared by the States as part of the Highway Performance Monitoring System (HPMS). Most States report mileage by functional classification under FHWA's Mileage Facilities Reporting System (MFRS). Determining the miles of highway in each grouping of functional highway classes should be a relatively straightforward process. The next step is to determine what proportion of the paved mileage in each grouping is subject to the 55 m.p.h. speed limit. This can be accomplished by reviewing roadway section logs or other inventory records that provide speed limit by roadway segment. It may be desirable to display this information on a State map for reference later.

DISTRIBUTION OF TRAVEL (VMT) ON HIGHWAYS WITH A 55 M.P.H. SPEED LIMIT

The VMT by functional system will be used to distribute the data collection effort in the calculation of the statewide percent of vehicles in conurbation exceeding 55 m.p.h. The VMT by functional system is derived from data collected with several national studies. Information developed from data currently reported by highway functional classification under the Mileage Facilities Reporting System and as part of the Highway Performance Monitoring System. A third source of travel estimates by functional system is the data used by States to prepare the TA-1 table for FHWA's Development of travel estimates by the highway functional classification groupings used in the speed monitoring program becomes basically a process of addition. Determining what proportion of VMT occurs on paved highways subject to the 55 m.p.h. speed limit by highway functional grouping becomes the next step. Building on the data base established for determining the mileage of highways with a 55 m.p.h. speed limit is one possible approach to estimate such travel. In States with relatively even distributions of VMT, an approximation of the proportion of travel within each of the functional groupings of highways with 55 m.p.h. speed limits may be derived by assuming that the VMT on 55 m.p.h. facilities is proportional to the mileage on 55 m.p.h. facilities. Therefore, the proportion of miles of highways with 55 m.p.h. speed limits within the functional grouping could be obtained by basing the calculation on the VMT within each functional grouping occurring on 55 m.p.h. speed limit roadways.

The next step is to estimate the statewide proportion of VMT on facilities with a 55 m.p.h. speed limit for each of the six highway classification groupings. The proportion of VMT for an individual classification grouping is computed by obtaining the VMT of all the roads with a 55 m.p.h. speed limit in that grouping and dividing this figure by the total VMT of all roads with a 55 m.p.h. limit in the State.

1/Travel and Accident Reporting Form 1

Table II-1

Estimated Proportion of VMT By Functional Grouping
for Highways with a 55 M.P.H. Speed Limit^{1/}

State	Urban			Rural		
	Interstate & Expressways	Other Freeway and Other Principal Arterials	Minor Arterial Street System and Collector Street System	Interstate	Other Principal Arterials and Minor Arterial Road System	Collector Road System
ALABAMA	0.072	0.038	0.014	0.137	0.431	0.308
ALASKA	—	—	—	—	—	—
ARIZONA	0.124	0.007	0.000	0.385	0.307	0.177
ARKANSAS	0.084	0.020	0.000	0.204	0.448	0.244
CALIFORNIA	0.294	0.314	0.006	0.105	0.182	0.099
COLORADO	0.144	0.066	0.000	0.261	0.386	0.143
CONNECTICUT	0.548	0.213	0.000	0.161	0.098	0.000
DELAWARE	0.303	0.047	0.000	0.081	0.569	0.000
FLORIDA	0.168	0.158	0.002	0.125	0.442	0.105
GEORGIA	0.171	0.031	0.000	0.230	0.338	0.230
HAWAII	0.777	0.014	0.000	0.021	0.154	0.034
IDAHO	0.045	0.005	0.004	0.304	0.354	0.288
ILLINOIS	0.278	0.052	0.025	0.168	0.299	0.178
INDIANA	0.164	0.049	0.002	0.251	0.385	0.149
IOWA	0.049	0.000	0.000	0.213	0.536	0.202
KANSAS	0.084	0.048	0.000	0.186	0.523	0.189
KENTUCKY	—	—	—	—	—	—
LOUISIANA	0.117	0.024	0.007	0.153	0.339	0.360
MAINE	0.075	0.040	0.000	0.699	0.186	0.000
MARYLAND	0.507	0.183	0.008	0.240	0.061	0.001
MASSACHUSETTS	—	—	—	—	—	—
MICHIGAN	0.141	0.269	0.014	0.207	0.255	0.214
MINNESOTA	0.208	0.080	0.007	0.319	0.388	0.178
MISSISSIPPI	0.000	0.000	0.000	0.179	0.547	0.274
MISSOURI	0.187	0.094	0.001	0.194	0.320	0.204
MONTANA	0.015	0.001	0.001	0.305	0.529	0.149
NEBRASKA	0.069	0.007	0.000	0.243	0.607	0.074
NEVADA	0.084	0.055	0.000	0.383	0.378	0.100
NEW HAMPSHIRE	0.146	0.072	0.000	0.341	0.413	0.028
NEW JERSEY	0.283	0.414	0.010	0.048	0.205	0.038
NEW MEXICO	0.104	0.028	0.001	0.354	0.398	0.113
NEW YORK	—	—	—	—	—	—
NORTH CAROLINA	0.052	0.069	0.000	0.134	0.289	0.456
NORTH DAKOTA	0.209	0.008	0.000	0.220	0.596	0.145
OHIO	0.285	0.073	0.006	0.174	0.195	0.265
OKLAHOMA	0.129	0.039	0.006	0.169	0.408	0.249
OREGON	0.130	0.035	0.001	0.248	0.417	0.169
PENNSYLVANIA	0.107	0.113	0.013	0.221	0.382	0.164
RHODE ISLAND	—	—	—	—	—	—
SOUTH CAROLINA	—	—	—	—	—	—
SOUTH DAKOTA	0.019	0.005	0.000	0.298	0.536	0.142
TENNESSEE	0.184	0.097	0.000	0.274	0.388	0.057
TEXAS	0.221	0.169	0.004	0.155	0.251	0.200
UTAH	0.293	0.026	0.009	0.337	0.259	0.076
VERMONT	0.042	0.002	0.000	0.843	0.113	0.000
VIRGINIA	0.137	0.081	0.005	0.192	0.379	0.206
WASHINGTON	0.304	0.072	0.000	0.177	0.318	0.129
WEST VIRGINIA	0.064	0.019	0.001	0.171	0.373	0.372
WISCONSIN	0.095	0.071	0.004	0.145	0.460	0.228
WYOMING	0.029	0.001	0.000	0.457	0.445	0.068
PUERTO RICO	0.00	0.556	0.000	0.000	0.444	0.000

^{1/}These factors calculated from 1975 mileage, ADT, and speed limit data submitted for the NHIPS.

Table 11-2
Sampling Plan Prerequisite Data

Functional Grouping	Prerequisite Data	Miles of Roadway	Miles of Roadway with 55 M.P.H. Limits	Total DMT	DMT on Roadways with 55 M.P.H. Limits	Proportion of Statewide DMT on Highways with 55 M.P.H. Limits ^{1/}
URBAN						
Interstate						
Other Freeways and Expressways and Other Principal Arterials						
Minor Arterial and Collector Street Systems						
Urban Total						
RURAL						
Interstate						
Other Principal Arterials and Minor Arterial Road System						
Collector Road System						
Rural Total						
Statewide Total						

^{1/}Proportion of statewide DMT on highways with a 55 m.p.h. speed limit calculated as the DMT on facilities in that functional group with a 55 m.p.h. speed limit divided by the statewide total DMT on highways with a 55 m.p.h. speed limit.

III. SAMPLING GUIDELINES

This chapter presents a sampling plan which has been designed to monitor the speeds of all vehicles traveling on selected arterial and collector roads with a 55 m.p.h. speed limit. Particular attention is given to statistical validity and to the applicability of the monitoring system to States of widely varying sizes and geographical characteristics.

The process of sampling design may be conveniently divided into the following steps:

- Overview of sampling plan;
- Statistical objectives of the sample design;
- Length of monitoring period for individual sampling sessions^{1/};
- Minimum number of statewide sampling locations;
- Allocation of sampling locations by highway functional groupings;
- Selection of highway sample segments; and
- Development of annual sampling plans.

Each one of these steps is discussed in detail and examples are provided where appropriate.

OVERVIEW OF SAMPLING PLAN

The sampling plan developed to meet the required objectives of the speed monitoring program is in principle very similar to the one introduced in the "Procedural Guide for Speed Monitoring" published in September of 1975. It consists of a two-stage sample. The first stage is a stratified sample from the population of highway segments in each State. The total number of segments to be sampled in each State is based on the variance of the percentage of vehicles exceeding 55 m.p.h. among locations within the State. The number of segments to be sampled in each stratum (highway functional grouping) is based on the relative vehicle miles of travel (VMT or OMT) of roads subject to a 55 m.p.h. speed limit. The second stage is a simple random sample drawn from the total population of speeds of vehicles passing the specific location.

^{1/} Distinction is made between sampling sessions and sampling locations. A session consists of a single period of monitoring at a particular place (sampling location). For the purposes of this study, up to four sampling sessions may be conducted at one sampling location.

A major revision from the earlier speed monitoring program consists of a new highway grouping scheme described in Chapter II, which has been introduced because of the need for standardized highway data collection systems. The new scheme will also simplify the process of obtaining the VMT statistics necessary for the sample allocation and later for the development of statewide percentage estimates.

The approach employed in previous speed monitoring programs has been to obtain the same level of accuracy for each of the several highway systems or groupings. Because of the requirements included in the 1978 legislation, the new approach will allow the accuracy to vary in the different functional groupings as long as the target accuracy of the statewide percentage exceeding 55 m.p.h. attains the required level.

Even though the percentage of all vehicles exceeding 55 m.p.h. is the criterion on which the certification will be based, this percentage is by itself insufficient to quantify the actual distribution of speeds. As an example of how this percentage can be useful to a State in analyzing speed patterns, two possible situations are considered. In the first situation, 75 percent of the travel is exceeding 55 m.p.h. and the mean speed is 56 m.p.h. In the second, 60 percent is exceeding 55 m.p.h. and the mean speed is 62 m.p.h. The mean speeds indicate that in the first case increased enforcement will probably not significantly affect the result, while in the second case increased enforcement could have a significant effect.

A conflict arises when trying to attain the objectives of a highly reliable estimate of the percentage exceeding 55 m.p.h. which requires a very large amount of data. This is because the more data the more statistics needed to quantify the speed pattern. The more data the more high reliability levels. A compromise solution consisting of two different levels of data collection has been devised to attain these two different objectives. The sampling plan will consist of a statewide number of sampling locations which will be classified into two groups: standard sampling locations and control sampling locations.

Standard Sampling Locations.--A standard sampling location is by definition a location where a minimum of one standard sampling session is required. A standard sampling session consists of a monitoring period of at least 15 hours. At least 100 vehicles must be observed. Items are required, the number of vehicles exceeding 55 m.p.h. and the total number of vehicles passing the location during the monitoring period.

Control Sampling Locations.--Control sampling locations will be sampled once each quarter in order to measure seasonal variation, to collect additional speed data, and to provide a basis for trend determination. At least 20 percent of the statewide number of locations should be

LENGTH OF MONITORING PERIOD FOR INDIVIDUAL SAMPLING SESSIONS

Estimating the percentage of vehicles exceeding 55 m.p.h. with the target accuracy at a 5 percent significance level is the only constraint in the sample size estimation process. The speeds of vehicles passing each location constitute the subpopulation to be sampled. A cluster of these speeds is collected to estimate the percentage exceeding 55 m.p.h. at that particular location. In order to estimate the speeds of vehicles passing each location during the year, it would be necessary to obtain a complete sample of the speeds of vehicles passing each location during the year, during the entire year. Because of the enormity of the size of each cluster and the cost involved, it becomes necessary to select a shorter period of time and to assume that measuring the random sample locations consistently throughout the year will balance out the effects of periodic variation. This is why it becomes so important to distribute the sampling in the manner presented in Chapter V.

A 24-hour monitoring period has been selected for the following reasons:

- Accounts for the varying traffic conditions affecting speeds;
- The within-cluster variation will not allow a reduction of the number of locations required even if much longer periods are used;
- Minimizes cost in terms of the combination of sampling locations required and the need for equipment;
- Facilitates scheduling of data collection; and
- Allows aggregation of estimates by day of week, month, etc.

The fact that the number of vehicles sampled during the 24-hour monitoring period will vary from day to day and from month to month will be accounted for in the estimation process presented in Chapter VI.

MINIMUM NUMBER OF STATEWIDE SAMPLING LOCATIONS

Two concepts will be used in determining the statewide location sample size. The two are accuracy of statistical estimates and coverage of population sampled. The standard statistical requirements for determining statewide sample size, on the accuracy approach presented here, are based on the accuracy of the estimate of the percentage exceeding 55 m.p.h. (percentage exceeding 55 m.p.h.) rather than on mileage or vehicle miles of travel. Since preliminary studies indicate this figure to be similar in the various States, the resultant sample sizes will also be nearly the same with the exception of very small States where the finite population

sampled as control locations, with a minimum of one in each applicable highway grouping.^{1/} Data collected at control sessions will consist of the individual speeds of all vehicles passing the location during the monitoring period, or at least a random sample of these speeds. All the data collected during the 24-hour period from control sessions will be used to estimate the percentage exceeding 55 m.p.h. and also to provide the data to estimate the mean speed, median speed, percentage exceeding 60 m.p.h., percentage exceeding 65 m.p.h., 85th percentile speed, etc.

The advantage of this double approach involving different levels of data collection is that it concentrates the data collection on the required characteristic while minimizing the level of effort and the need for expensive equipment.

STATISTICAL CRITERIA FOR SAMPLE DESIGN

The following criteria are established as the minimum basic requirements of the sample design:

1. The target accuracy of the statewide percentage exceeding 55 m.p.h. must be sufficient to significantly detect either a positive or negative difference greater than 2.5 percent.
2. A significance level of 5 percent shall be used for all estimates.^{2/}
3. Statistical estimates of the percentage exceeding 55 m.p.h. derived from data collected as part of this program will meet the requirements of criteria 1 and 2 on an annual basis.

Criteria 1 and 2 imply that based on the sample design the data collected should be sufficient to estimate a 95 percent one-sided confidence interval of 2.5 percent. Assuming that the target accuracy is obtained, this means that a percentage exceeding 55 m.p.h. greater than 72.5 percent will be judged significantly larger than 70 percent.

Criterion 3 states that only after a full year's data are collected will the estimates be expected to attain the required accuracy. However, because of the procedure by which data will be collected, it will be possible to obtain quarterly estimates which, of course, will have a much lower accuracy than the annual estimates. Assuming that one-fourth of the annual sample is taken each quarter, the quarterly estimates of the percentage exceeding 55 m.p.h. will have an approximate one-sided accuracy level of 5 percent.

^{1/}The 20 percent represents an administrative decision and is based on providing sufficient sessions to estimate the remaining characteristics of interest and seasonal differences.

^{2/}A significance level of 5 percent is equivalent to a 95 percent confidence interval.

Table III-1

Default Values for the Standard Deviation of the Percentage Exceeding 55 M.P.H. on Roads with a 55 N.P.H. Speed Limit

Highway Functional Grouping	Default Value ^{1/}
<u>URBAN</u>	
Interstate	10.0
Other Freeways and Expressways and Other Principal Arterials	12.0
Minor Arterial Street System and Collector Street System	12.0
<u>RURAL</u>	
Interstate	8.0
Other Principal Arterials and Minor Arterial Road System	12.0
Collector Road System	12.0
<u>STATEWIDE</u>	12.0

^{1/} These default values were estimated based on data from selected States using all-vehicle 24-hour monitoring, and were adjusted to reflect the revised highway stratification.

correction will exert more influence. This means that statistically the sizes of the speed populations of different States may differ, but the sample sizes required for estimation, having nearly equal samples for the different States, would seem not to provide data that are representative of the widely varying travel characteristics found among the States.

The concept of coverage of population sampled was introduced to answer the above concern, to provide a balanced work load among the States, and to provide increased accuracy for the larger States with larger mileage and VMT.

In order to incorporate these two concepts into the sampling plan, it was decided to determine the minimum sample size needed by each State under each of the two concepts and then to select the larger of the two numbers as the statewide minimum sample size. In this manner the accuracy requirement will always be met and the sample size will be sensitive to the varying amounts of travel in the States.

Minimum Sample Size Based on Accuracy Requirement.--The sampling scheme consists of two stages of sampling. The first stage consists of a statewide sample of locations selected randomly from the population of highway segments with a 55 m.p.h. speed limit. The statewide number of sampling locations is stratified by highway functional grouping on the basis of their relative travel (VMT or DMVT). In the second stage, a cluster sample is collected from the subpopulation of speeds of vehicles passing each location during the year.

To determine the number of locations required to obtain the desired statewide accuracy, it is necessary to obtain a preliminary estimate of the standard deviation of the parameter to be estimated. This is an important step since the standard deviation greatly affects the sample size. Underestimating the standard deviation will result in estimates that will not meet the specified accuracy requirements. Most existing data represent freeway traffic conditions and were inadequate for use in estimating the standard deviation of the statewide and highway strata. Table III-1 contains default values for the statewide and highway strata standard deviation that should be used for the first year's sample design. States wishing to develop and use their own estimates of standard deviations instead of the default values must document and make available for review and approval the procedure by which the estimates were derived.^{1/}

^{1/} To develop these values, a State must have collected all-vehicle data from a sufficiently large random sample of locations during a 1-year period and based on 24-hour monitoring using a cluster sample approach. The procedure would be comparable to having collected data using the default values for 1 year and applying the procedure in Chapter VI.

^{1/} These default values were estimated based on data from selected States using all-vehicle 24-hour monitoring, and were adjusted to reflect the revised highway stratification.

After a full year's data are collected the procedure presented in Chapter VI should be used to develop the required sample sizes for the following year's plan. To determine the approximate number of statewide locations required to estimate the percentage of vehicles exceeding 55 m.p.h. for the first year's plan use the following formula:

$$n_o = \frac{z^2 \cdot 0.95 \cdot s^2(n)}{d_p^2}$$

$$\text{and } n_p = \frac{n_o}{1 + \frac{n_o}{N}}$$

where n_o = sample size without correction for finite population;

$z_{.95}$ = value of standard normal statistic with level of significance (α) .05;

$s(p)$ = statewide standard deviation of the percentage exceeding 55 (See Table III-1);

d_p = accuracy desired (2.5);

n_p = statewide minimum sample size under accuracy concept; and

N = number of statewide highway segments subject to the 55 m.p.h. speed limit (See section describing frame construction).

2/ The effect of clustering on sample size is ignored here. It will be accounted for as needed in Chapter VI.

The second equation will introduce reductions in sample size for small States, and in statistical terminology is usually defined as the finite population correction.

Example III-1

Compute the sample size required under the accuracy concept for a State with a frame of 1,500 segments subject to the 55 m.p.h. speed limit and using the default standard deviation (12.0).

$$n_o = (1.645)^2 (12.0)^2 / (2.5)^2 = 63$$

$$n_p = 63 / (1 + 63 / 1500) = 61$$

Therefore, the required sample size is 61 locations. Now, to examine the effect the standard deviation has on these formulas, let's recompute the sizes needed for standard deviations of 10.0 and 20.0 respectively.

$$n_o = (1.645)^2 (10.0)^2 / (2.5)^2 = 44$$

$$n_p = 44 / (1 + 44 / 1500) = 43$$

$$\text{and } n_o = (1.645)^2 (20.0)^2 / (2.5)^2 = 174$$

$$n_p = 174 / (1 + 174 / 1500) = 140$$

The sample size for the second case is almost four times that of the first. As this example has shown, the sample size is highly dependent on the statewide standard deviation of the percentage exceeding 55 m.p.h.

The following formula is then used to accomplish the allocation:

$$n_h = n_p \cdot \frac{U_h}{U_p}$$

where n_h = number of locations allocated to the h th functional highway grouping;

n_p = statewide minimum sample size (number of monitoring locations); and

U_h = relative travel (VMT or DMT) on roads subject to the 55 m.p.h. speed limit in the h th highway grouping (See Chapter II).

This formula proportions the sample size on the basis of relative travel. States with most of their travel on highways subject to the 55 m.p.h. speed limit in one or two highway groupings will find that this method will concentrate the sampling on those groupings. If there is no travel subject to the 55 m.p.h. speed limit in a particular highway grouping, no locations will be allocated to that grouping by this procedure.

In order to further simplify the procedure, no locations need to be allocated to any functional grouping with less than one percent of the statewide travel subject to the 55 m.p.h. speed limit (U_h of 0.01 or less) and any such groupings may be completely disregarded from the speed monitoring program. In these cases, the weights of the remaining highway groupings must be factored to represent the total statewide travel.

Example III-3

Allocate a minimum statewide sample size of 120 locations based on the following characteristics:

Highway Grouping (h)	Relative VMT on Roads Subject to 55 M.P.H. Speed Limit (U_h)
1'	0.11
2	0.23
3	0.31
4	0.07
5	0.19
6	0.09

Minimum Sample Size Based on Coverage of Population Sampled—The coverage concept is designed to allocate locations based on the amount of travel (DMT) subject to the 55 m.p.h. speed limit in the States. This concept is needed to provide a balanced sample size; to compensate for additional variation which may be present due to larger volume or larger mileage; and for the potential variation in speed enforcement activities of different police departments, districts, or jurisdictions. For example, if two States with respectively 1,000 and 10,000 miles of highway subject to the 55 m.p.h. speed limit were sampled using 100 locations, then the first State would have one location for each 10 miles of highway while the second would have one for each 100 miles. The coverage of the first State would be 10 times that of the second. Even though the initial statistical model used for both States should result in similar accuracy of the estimates, the potential for variation is much larger in the second State. The method presented here attempts to compensate for this fact. In addition, the coverage concept provides a safety margin for the use of the default standard deviations and for the effects of clustering on sample size.

The minimum sample size needed under the concept of coverage shall be computed by dividing the statewide total daily vehicle miles of travel (DMT) subject to the 55 m.p.h. speed limit by 1,000,000. For example, the minimum sample size under this concept for a State with 40 million DMT on highways subject to the 55 m.p.h. limit would be 40 locations. The divisor (1,000,000) in the procedure represents an administrative decision to ensure that speed data represent the wide range of travel, topography, geometrics, enforcement, etc. present in the various States. The next example illustrates the statewide sample size selection procedure for a hypothetical State.

Example III-2

Determine the number of monitoring locations required by a State with 80 million DMT on roads subject to the 55 m.p.h. limit and with a frame size of 1,500 segments. From Example III-1, the number of locations under the accuracy concept is 61 locations. Under the coverage concept the number is $80 (80,000,000 / 1,000,000)$. The larger of the two is 80, and this then becomes the statewide minimum sample size.

ALLOCATION OF SAMPLING LOCATIONS BY HIGHWAY FUNCTIONAL GROUPING

Having determined the statewide number of locations needed, we proceed to allocate them by highway grouping. To do this, it is necessary to estimate the relative travel (VMT or DMT) carried by the segments with a 55 m.p.h. speed limit in each functional grouping (See Chapter II).

Using the formula for $h = 1$, $n_1 = 120$ (11) = 13, the results are summarized below:

Highway Grouping	Sample Size (n_h)
1	13
2	28
3	37
4	8
5	23
6	120

SELECTION OF HIGHWAY SAMPLE SEGMENTS

The final step in the sample design involves the selection of locations where the sampling sessions will take place. The process can be subdivided into two steps:

1. Construction of sampling frames.
2. Selection of sample segments.

Construction of the Sampling Frames.—A sampling frame consists of a listing of every individual item in the population to be sampled so that a probability assignment can be made. The ideal way of sampling the population of speeds would be to construct a frame consisting of the speeds of vehicles traveling on each highway system during the year, and then to take a simple random sample without replacement. This is, of course, impossible to do, and other more practical alternatives such as cluster sampling have to be used.

To construct a frame of highway segments, it is necessary to identify the mileage of every highway with a 55 m.p.h. speed limit in each highway functional grouping (See Chapter II). Then subdivide the mileage into 5-mile segments^{1/} and assign a unique sequential number to each segment. Individual segments need not be identified by mileposts, but only a sequential number for each of the functional groupings. The statewide frame size is the total number of 5-mile segments in the State which are subject to the 55 m.p.h. speed limit.

^{1/}The determination to use 5-mile segments was a compromise between statistical validity and practical considerations. Statistically, the smaller the segments the more confidence we have in the assumption that conditions affecting speeds in the segment are constant. However, to be of practical use the frame must be of manageable size.

As an option, existing frames with similar segment lengths (either fixed or variable) which may have been constructed for previous studies or inventories may be applicable with or without modification.

Selection of Sample Segments.—In order to meet the two-fold requirements of estimating with the specified accuracy the percentage exceeding 55 m.p.h. and of collecting other important statistics without a reliability constraint, the statewide number of sample locations is divided into standard and control locations. As previously stated, the standard locations are selected by simple random sampling from the collection of the number of vehicles exceeding 55 m.p.h. and the total number of vehicles passing the location during a 24-hour period. The location of these sessions should be established by a simple random selection without replacement with the help of a table of random numbers^{1/}. It is imperative that random selection be used because all formulas presented assume a random selection.

Control sampling locations (and sessions) serve three purposes: to collect 24-hour control data on vehicles exceeding 55 m.p.h. and total number of vehicles as for a standard session; to collect the individual or groups of speeds of all vehicles passing the location during the 24-hour period to provide other necessary statistics; and to provide an estimate of seasonal variation of speed statistics. Control locations should constitute at least 20 percent of the number of locations in each highway grouping. A minimum of one control location must be monitored in each applicable highway grouping. Control locations are also to be selected randomly from the frame.

The manner and sequence in which the locations, both standard and control, are selected should be documented and retained for future review. It will also be very helpful to plot the locations on a map while the selection process is taking place. This will permit visual inspection of the resulting geographic distribution. In general, because of the size of the frame, the locations will be geographically distributed throughout the State. The locations should be selected by simple random sampling, introduced by selecting the locations from geographical subareas of the frame or by any other method that does not affect the randomness of the sample. The analysis presented in Chapter VI ignores the effects of the geographical stratification, but the procedures in that chapter can be easily modified to produce estimates by geographical region.

^{1/}See Appendix B for a table of random numbers and instructions.

For smaller States with limited mileage, it is probable that locations will be in close proximity. These locations whether standard or control should be sampled at different times during the year.

Example III-4

Construct a frame for the Interstate-rural portion of a State with 160 miles of Interstate with 55 m.p.h. limits.

The frame mapping the actual segments onto a sequential distribution is presented in the following table.

Route	Segment Mileage	Segment	Sequence Numbers
I-95	1-5	1	1
	6-10	2	2
	11-15	3	3
	16-20	4	4
	21-25	5	5
	26-30	6	6
	31-35	7	7
	36-40	8	8
	41-45	9	9
	46-50	10	10
I-25	1-5	1	11
	6-10	2	12
	11-15	3	13
	16-20	4	14
	21-25	5	15
	26-30	6	16
	31-35	7	17
	36-40	8	18
	41-45	9	19
	46-50	10	20
	51-55	11	21
	56-60	12	22
	61-65	13	23
	66-70	14	24

I-44	1-5	1	25
	6-10	2	26
	11-15	3	27
	16-20	4	28
	21-25	5	29
	26-30	6	30
	31-35	7	31
	36-40	8	32

A shorter summary is,

Route	Total Mileage	Number of Segments	Sequential Number of Segments
I-95	50	10	1 to 10
I-25	70	14	11 to 24
I-44	40	8	25 to 32

Assume that the sample size needed for this grouping is 7 locations. Seven numbers between 1 and 32 were selected by using a table of random numbers. The selected segments are listed below.

Random Number	Route	Segment
29	I-44	5
5	I-95	5
9	I-95	9
23	I-25	13
10	I-25	10
17	I-25	7
12	I-25	2

The manner of selection used in this example specified that the first selection was the control location. Therefore, four control sessions (one each quarter) will be conducted on I-44 segment 5, and one standard session in each of the remaining segments.

This is by far an oversimplified example, but it presents the approach which should be followed. Further guidelines as to the location and scheduling of sessions are presented in later chapters.

The selection of 24-hour clusters of speeds also assumes that the date selected is random. However, for the sake of simplicity, practically, and to allow for an orderly schedule, it has been assumed that the scheduling procedures presented in Chapter V will satisfy this requirement.

At the time these instructions are being written, the FHWA and the Strategic Highway Implementation Study (SHIS) are in the process of developing a speed monitoring sample as a subset of the much larger HPMS sample. It will be a feasible alternative. This topic will be further examined in the future. For information about the HPMS, refer to the HPMS Field Implementation Manual listed in the bibliography.

DEVELOPMENT OF ANNUAL SAMPLING PLANS

The procedures presented in this chapter have purposely been designed to attain the required objectives in the face of limited resources. This has necessitated many assumptions for the development of the initial plans. Major emphasis has been placed on maintaining approaches which are consistent among States, and which provide a basis for equitable decisions. After a complete year's data are available, and thereafter on an annual basis, an evaluation must be made to determine the actual accuracy level obtained. Based on this evaluation, changes should be made to the sampling plan to increase its overall efficiency or to attain the desired accuracy level. In the future, the statewide standard deviation estimate derived by the procedure described here should be used to recompute the necessary sample size under the accuracy concept. If it becomes necessary to increase the sample size, new locations can be randomly selected by the methods described in this chapter. In the same manner, a decrease in sample size may permit a random selection of sessions or locations where monitoring will stop. In any case, the locations selected during the initial plans may be considered permanent locations. Additions or deletions necessitated by changes in sample size, by speed limit changes, by highway grouping changes or by other factors should be reflected in the location of any sessions selected during the implementation of the initial plan. Annual evaluations should also include an examination of the travel figures (VMT or DVMT) to ascertain their validity and to make updates as needed.

IV. EQUIPMENT

A wide variety of speed measurement devices are available, many of which are oriented toward enforcement applications. These devices may be grouped generally as nonrecording equipment (radar) and automatic speed monitoring equipment. The nonrecording equipment is most useful when the monitoring periods of relatively short duration. Most automatic speed monitoring equipment can be left unattended at a site for 24 hours or more by utilizing detectors in the pavement (i.e., inductance loops) or on top of the pavement (i.e., rubber tubes, cable sensors, tape switches). This chapter provides a general discussion of the various types of speed monitoring devices available and their applicability to this program. No doubt all States will wish to become familiar with the specific equipment available from the various manufacturers.

NONRECORDING EQUIPMENT (RADAR)

For many years nonrecording equipment has been used by police agencies for enforcing speed limits and by highway departments for spot speed planning studies. Free-flow speed monitoring under previous regulations was done largely by nonrecording equipment. Nonrecording equipment is particularly useful for measuring speeds on lower volume facilities or of leading vehicles in platoons.

For speed monitoring under these procedures, however, a number of difficulties may be encountered when using nonrecording equipment. Where the speeds of all vehicles are to be measured, certain operational difficulties arise on high volume highways and where there are two or more lanes in one direction. Nonrecording equipment may not be able to discriminate among vehicles and measure the speeds of all vehicles. Interference can also be caused by opposing traffic in some instances. Radar and electronic detection is another problem faced by nonrecording equipment. In order for nonrecording equipment manufacturers to make improvements to avoid detection, they must include an additional group of transmitting frequencies (K-band) and devices that transmit either periodically or on command. Optional add-on equipment now available includes microprocessors for storing individual vehicle speeds and for calculating and displaying selected statistics at the conclusion of a monitoring session. At present this equipment does not provide a permanent record of the individual vehicle speeds. Data storage capacity may also limit the monitoring session duration on higher volume facilities. Nonrecording equipment must be corrected for the approach angle of traffic relative to the nonrecording equipment unit. If this angle is 15 degrees or more, the correction can be significant.

RECORDING EQUIPMENT

Recording equipment runs the gamut from relatively inexpensive devices utilizing simple detectors on top of the pavement to more sophisticated devices using inductive loops, photoelectric detectors, and laser detectors and to laser detectors. In addition, equipment is available as add-on to permanent traffic recorder stations (including those on a telemetry system). The requirement for collecting 24 hours of speed data each quarter may warrant expenditure for permanent installation of traffic measuring equipment.

Since the critical statistic to be developed in each State is percent of traffic exceeding 35 m.p.h., the minimum data to be collected at a monitoring site are total number of vehicles and number of vehicles exceeding 35 m.p.h. These minimum data may be collected using axle detectors (one or two detectors per vehicle), photoelectric detectors, or light equipment that records cumulatively the two appropriate vehicle counts. The more expensive machines utilize most detector types including loops and either record each vehicle speed or classify speeds into preset speed ranges, generally 2 or 5 m.p.h. These detectors sometimes have problems, such as when vehicles are stopped over the detector essentially deactivating the system. Data may be recorded on paper or cassette tape. One very new device tallies speeds of all vehicles and multicasts vehicles by 2 m.p.h. speed groups from 16 to 99 m.p.h. by lane. These more detailed data will have broader application than the minimum data required for the critical statistic. This recording equipment has the potential for rapid accumulation of accurate traffic measurements. All such devices that utilize axle detectors mounted on top of the pavement are dependent on accurate spacing and installation for obtaining satisfactory data.

Table IV-1 summarizes the different types of equipment that might be used to measure vehicle speeds during a monitoring session.

Table IV.1
Equipment For Measuring Vehicle Speeds

Type of Equipment	Data Obtained	Roadway Detectors	Traffic Condition	Approximate Accuracy	Approximate Cost 1978
Radar	Individual Vehicle Speeds	None	Light	3-4% ± 2 m.p.h.	\$1000
VASCAR	Individual Vehicle Speeds	None	Light	3-4% ± 2 m.p.h.	
Speed Counter	Total Volume Number Exceeding Pre-set Speed	2 Electronic Sensors, Loop Detectors or Road Tubes	Light to Heavy (no stopped traffic)	± 2 m.p.h.	\$550
Dual Speed Counter	Total Volume Multiple Speed Ranges	2 Electronic Sensors, Loop Detectors or Road Tubes	Light to Heavy (no stopped traffic)	± 2 m.p.h.	\$3200
Speed Recorder	Total Volume Number of Vehicles in the Speed Range	2 Electronic Sensors, Loop Detectors or Road Tubes	Light to Heavy (no stopped traffic)	$\pm 1\%$	\$3000 to \$10,000
Computerized Speed Recorder	Total Volume Individual Vehicle Speeds Vehicle Classification Vehicle Speeds by Vehicle Classification	2 Electronic Sensors, Loop Detectors or Road Tubes	Light to Heavy (no stopped traffic)	$\pm 1\%$	\$10,000 and up

V. DATA COLLECTION

This chapter summarizes the data collection procedures that could be used during the speed monitoring program. It is intended to be a brief outline of basic procedures that should be expanded on by each State in developing its speed monitoring program.

ORGANIZATION

The program manager or his representative should be responsible for obtaining all speed measurement equipment, other support equipment and personnel. In addition, a detailed schedule should be developed that includes:

- Date/time of equipment setup at each location;
- Date/time of equipment takedown at each location;
- Travel time; and
- Makeup time for equipment malfunction; bad weather, etc.

This schedule should be as comprehensive as possible so that each member of the data collection team knows what work is expected of him. This schedule should be shown to district or local engineers so that data collection does not occur during construction/maintenance activities that might interfere with normal vehicle speeds.

SCHEDULING THE DATA COLLECTION

Data collection scheduling should be developed to account for the hour of the day, day of the week, month, and season of the year. To account for the hour of the day and the day of the week, all data collection sessions should be 24 hours long and evenly distributed by day of the week. At the control locations one session of data will be obtained each quarter. At standard locations one session of data will be obtained each year. Table V-1 is an example of how to distribute 60 locations. First, the number of control locations in each highway system must be determined (20% of $60 = 12$). Divide the standard sessions into four equal parts. These four parts represent the four quarters of the year. Within each quarter, all sessions whether standard or control should be evenly distributed by day of the week and by month. In this example 48 standard locations (48 standard sessions) and 12 control locations (48 control sessions) must be evenly distributed throughout the year.

The resulting data collection schedule in Table V-1 provides for four standard and four control sessions every month. The monitoring sessions are further distributed by day of the week. No specific days of the month are selected, therefore leeway is provided for bad weather, equipment malfunctions, etc. Adjustments in sessions by month within a quarter may also be necessary because of severe weather.

As an option, to evenly distributing standard sessions among the four quarters, States having disproportionate quarterly VMT figures (northern States during the winter quarter) may wish to allocate the standard monitoring sessions on the basis of estimated quarterly VMT. In any case, control locations must be monitored once each quarter in order to derive quarterly estimates.

Table V-1

Example Schedule for Data Collection During Fiscal Year

Number of Sessions

	FIRST QUARTER			SECOND QUARTER			THIRD QUARTER			FOURTH QUARTER		
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MON	1 (1) ^{1/}	1 (1)		1 (1)		1 (1)		1 (1)	1 (1)		1 (1)	
TUE	1 (1)		1 (1)	1 (1)		1 (1)		1 (1)		1 (1)	1 (1)	
WED	1 (1)		1 (1)		1 (1)	1 (1)		1 (1)		1 (1)		1 (1)
THUR	1 (1)		1 (1)		1 (1)		1 (1)	1 (1)		1 (1)		1 (1)
FRI		1 (1)	1 (1)		1 (1)		1 (1)		1 (1)	1 (1)		1 (1)
SAT		1 (1)		1 (1)	1 (1)		1 (1)		1 (1)		1 (1)	1 (1)
SUN		1 (1)		1 (1)		1 (1)	1 (1)		1 (1)		1 (1)	
TOTAL	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)

Total Number of 96 Sessions

^{1/}Number in parenthesis refer to control sessions.

FIELD DATA COLLECTION

Review Highway Conditions.--When the field personnel arrive at the designated highway segment (5 miles long), they should visually determine the suitability of conditions at the site. Speed monitoring should not be attempted under the following conditions:

- Extreme weather conditions expected during the next 24-hour period (severe rainstorms, heavy snow accumulating or icy roadway);
- Presence of non-routine enforcement activity within the highway section in the next 24 hours; or
- Construction/maintenance activity or other disruptive activities which affect the speed of vehicles passing the site.

If any of these conditions appear to exist within the designated highway section, the field personnel should immediately contact the program manager or his representative so that the session can be rescheduled.

Location of Monitoring Station.--Once the highway section is located, the field crew should drive the section to become familiar with its characteristics and to spot any unusual conditions. A second drive along the section should be made to select the location for the speed monitoring station. The location should be chosen so that the program manager or his representative may want to select the location of the speed monitoring equipment before it is scheduled so that a loop detector or some other type of permanent sensor can be placed in the pavement. Since control stations will be monitored over a long period of time, this may be a cost-effective measure.

Once the location of the speed monitoring station has been decided, the field crew should review the location to avoid any features that could be expected to encourage or discourage vehicle speeds. The location of the speed monitoring station should be representative of typical conditions on the section. Situations to be avoided are:

- Near or on a sharp horizontal curve with a speed advisory plate less than 55 m.p.h. (i.e., greater than 50 curve);
- Steep grades (i.e., greater than 4 percent) not representative of predominant alignment (if predominant alignment is greater than 4 percent, a representative sample of vehicle speeds in both directions of travel should be obtained.);

- Near significant roadway intersection (i.e., less than 1,000 feet) or commercial entrances (e.g., shopping center ingress and egress points); or
- Where other unusual features exist that might influence the speed (e.g., narrow bridge).

It is also extremely important that the monitoring station location match all of the additional location criteria developed by the program manager. The criteria established should be carefully followed in locating all speed monitoring stations since failure to follow these guidelines will result in speed data that are not directly comparable.

Procedures for Obtaining and Recording Data.--The minimum speed data to be obtained at each site shall include a count of all vehicles and of those exceeding 55 m.p.h. in one randomly selected direction of travel. This will enable the calculation of the percent of vehicles exceeding 55 m.p.h. during a 24-hour data collection session. The additional requirement to measure the speed of all vehicles passing the speed monitoring station during the observation period will affect the decision on the type of equipment to be used. The data collection procedure will first be reviewed for the recording equipment then for nonrecording equipment (radar).

1. **Recording Equipment.**--Since recording equipment varies considerably depending on the manufacturer and model, only general guidelines can be suggested here.

Two types of detectors are available to be placed on the roadways for speed monitoring. The first is the standard loop detector. Loop detectors are permanently placed in the pavement. The second type includes temporary sensors (e.g., tape switch, cable sensors) and other axle detectors. These sensors must be placed on the pavement just before the start of each speed monitoring session. Extreme care is needed in placing the cables on the pavement since the wires are in one direction must be stopped from 1 to 3 minutes. The sensors are placed on the pavement. The sensors are typically held on the pavement by glue or tape or both. There may be some problems holding the sensors to the pavement during wet or cool weather. Both types of sensors perform well when properly placed on the highway.

Data recorders can be placed at a great distance from the sensors where the recorder can be secured. The deployment of the data recorder with the temporary sensors will take approximately 1 hour. A shorter deployment period would be needed if permanent loop detectors were already in place.

a. Document Speed Monitoring Station—The field data collection crew should take care to document the location, equipment setup, and equipment used. The following information should be included in station setup documentation:

- Location of site
- Station number
- Session number
- Equipment used (no malfunctioning equipment can be identified)
- Field data collection crew names
- Time of arrival at site
- Sketch of site indicating
 1. Location of speed monitoring equipment (sensor, recorder, etc.)
 2. Direction of traffic monitored
 3. Geometrics of highway (lane width, shoulder width, etc.)
 4. Other physical features
- Calibration of equipment checklist completed (check manufacturer literature)
- Time equipment is turned on

Each manufacturer's recommended calibration procedures should be completed before the monitoring session begins. Any discrepancy should be reported to the Program Manager or his representative. No measurement should be taken with inaccurate equipment.

- b. End of Session Procedures—When the crew first arrives, they should determine if the equipment is operating and run all calibration tests and then record the data, if appropriate, on the data collection form. The crew should review the data collected to see if it is reasonable. The speed monitoring equipment should be removed from the road and stored. All forms should be reviewed for completeness, assembled and secured in a single envelope to prevent loss and forwarded to the program manager or his representative.

2. Nonrecording Equipment—Nonrecording equipment is the type of equipment used by most law enforcement agencies and consists of variable speed radar, WADAN, etc. It will be assumed that this discussion that radar is the most common form of nonrecording equipment.

The radar equipment should be set up and operated in accordance with the manufacturer's instructions, using the procedure discussed in the training sessions. Since the capabilities of radar units in the training sessions were limited, the minimum operating range of some units is 500 feet while others are still considerably less (170 feet) depending on the manufacturer and model, only general guidelines can be suggested.

Several types of station layouts are presented in Figures V-1 through V-4. When suitable cover is available (e.g., bridge supports or roadside foliage), method A may be the most appropriate configuration. Under heavy traffic conditions, however, the accurate measurement of vehicles may become complicated.

Method B may be used for situations where sufficient cover for effective concealment is not available. Since the equipment is positioned on the opposite side of the road, motorists will be less inclined to react.

Method C is perhaps the most common configuration used for enforcement. This method should not be used unless ample screening is available to hide the crew and measurement equipment. Radar units effectively concealed in mailboxes or other containers can be used. For States in which recreational or highway maintenance vehicles have been shown to not influence drivers' speeds, method C may be used in conjunction with appropriately disguised State vehicles containing the measurement equipment.

Although method D can be effectively applied to any site for which a highway overpass is available, it is most suitable for multilane freeways. It is extremely important of course to select the areas to place the equipment (e.g., sidewalk) and to park the vehicle that powers the radar unit be available to prevent safety hazards to the crew or substantial inconvenience to motorists on the bridge.

The field crew should choose the most appropriate configuration to monitor speeds at each station. At a minimum, the station must have the following characteristics:

- Able to accurately measure speeds of all vehicles in all lanes in the designated direction;
- Concealment such that motorists do not slow down before their speeds are measured (CB radios and radar detectors must not have any effect on speeds of vehicles monitored); and

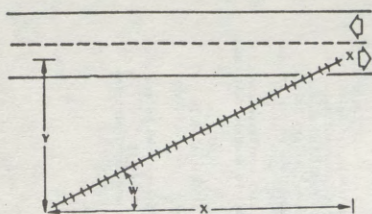


Figure V-1 Radar Setup - Method A

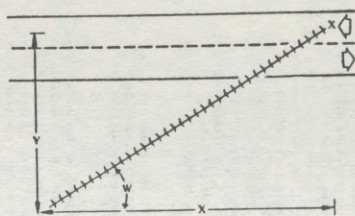


Figure V-2 Radar Setup - Method B

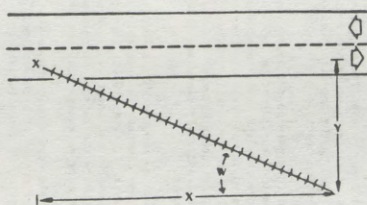


Figure V-3 Radar Setup - Method C

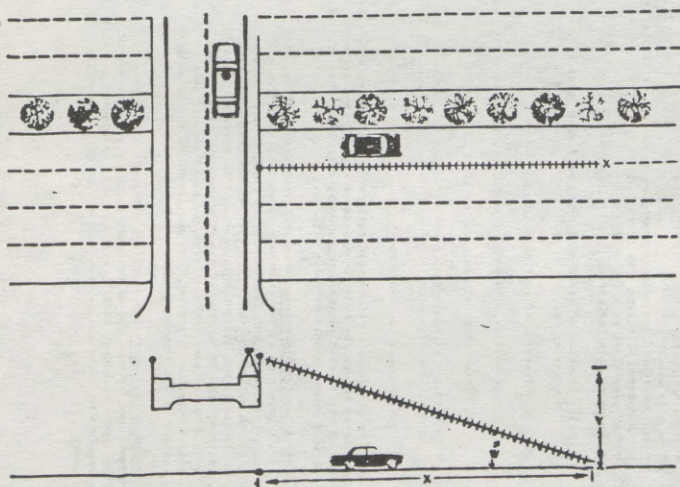


Figure V-4 Radar Setup - Method D

This chapter describes the procedures to be used in analyzing speed monitoring data. The main objective is to develop standard procedures applicable to all States in order to insure that comparable results are obtained. The chapter is divided into four sections:

- Computation of statistics related to the percentage exceeding 55 m.p.h.;
- Sample size determination based on data analysis;
- Computation of other statistics (mean, median, 85th percentile, and percentages exceeding other speeds); and
- Specialized analysis.

Each of these sections is designed to present both the formulas and the procedure to be followed. Simplified examples are provided to illustrate the procedures. These examples also present a worksheet approach which can be used to make the actual calculations.

COMPUTATION OF STATISTICS RELATED TO THE PERCENTAGE EXCEEDING 55 M.P.H.

An estimate of the percentage exceeding 55 m.p.h. and its standard error are derived for each highway grouping and then combined for the statewide estimates. Only the percentages exceeding 55 m.p.h. are needed to complete the certification forms. The standard errors can be used to determine the actual statistical reliability obtained and to determine whether the sample size for the next year's design needs adjustment.

The proportion exceeding 55 m.p.h. at each standard location is computed by dividing the number of vehicles traveling at speeds in excess of 55 m.p.h. by the total number of vehicles measured. The percentage of vehicles exceeding 55 m.p.h. is derived simply by multiplying the proportion by 100.

At control locations four quarterly sessions are obtained and require a special procedure in order to estimate them with annual sessions at standard locations. This is done by averaging the number of vehicles exceeding 55 m.p.h. and the total number of vehicles measured during the four control sessions. (Example VI-1). These averages are then used to compute the annual proportion of vehicles exceeding 55 m.p.h. at that control location and also to represent that location in the highway grouping and statewide figures.

Example VI-1

Compute the average percent of vehicles exceeding 55 m.p.h. at a control location.

Location Number 1	Number of Vehicles Exceeding 55 m.p.h.	Total Vehicles Measured
Quarter		
1	2377	6731
2	3268	5508
3	3565	7343
4	2674	4895
Total	11,884	24,476
Average	2,971	6,119
Average Percent Exceeding 55 M.P.H.	$= 100 \times \frac{2,971}{6,119} = 49\%$	

Percentage Exceeding 55 m.p.h. by Highway Grouping.--The estimated percentage exceeding 55 m.p.h. for each highway grouping is derived by summing the number of vehicles exceeding 55 m.p.h. in all the sample locations within the highway grouping, dividing this sum by the total number of vehicles measured in the highway grouping, and multiplying the result by 100. Control location figures must be averages of the four sessions.

In equation form

$$P_h = P_h \times 100 = \frac{\sum_{i=1}^{n_h} Y_{hi}}{n_h} \times 100$$

$$\sum_{i=1}^{n_h} Y_{hi}$$

where P_h = percentage exceeding 55 m.p.h. in the h th highway grouping ($h = 1, \dots, 6$);

P_h = proportion exceeding 55 m.p.h. in the h th highway grouping;

n_h = number of locations in the h th highway grouping;

Y_{hi} = number of vehicles exceeding 55 m.p.h. in location i ($i = 1, \dots, n_h$) of the h th highway grouping; and

$\sum_{i=1}^{n_h} Y_{hi}$ = number of vehicles measured in location i of the h th highway grouping.

Example VI-2

Compute the estimated percentage exceeding 55 m.p.h. based on the following data from a highway grouping ($h = 1$):

(1) Location Number (1)	(2) Number of Vehicles Exceeding 55 m.p.h. (Y_{hi})	(3) Total Vehicles Measured ($\sum_{i=1}^{n_h} Y_{hi}$)
1	2,971	6,119
2	2,069	4,484
3	3,381	7,949
4	12,561	15,412
5	8,631	12,703
6	1,921	4,918
7	2,168	4,682
Total	35,682	36,287

^{1/}For control locations this would be the average of the four control sessions (Example VI-1).

The proportion of vehicles is the sum of vehicles exceeding 55 m.p.h. divided by the number of vehicles measured,

$$P_1 = 35,682 / 56,267 = 0.634$$

and the estimated percentage is 0.634 times 100 equals 63.4 percent.

Statewide Percentage Exceeding 55 m.p.h.—Once estimates have been computed for each of the applicable highway groupings, the statewide estimate of the percentage exceeding 55 m.p.h. is derived by the following formula which weights the estimates from each highway grouping by the relative VMT subject to the 55 m.p.h. speed limit of each highway grouping:

$$P_{st} = \sum_{h=1}^6 P_h P_h$$

where P_{st} = statewide estimate of the percentage exceeding 55 m.p.h.;

P_h = percentage estimated for the h th highway grouping; and

V_h = relative travel (VMT or DMVT) subject to the 55 m.p.h. limit for the h th highway grouping^{1/}.

Example VI-3

Compute the statewide percentage exceeding 55 m.p.h. based on the following data from the six highway groupings.

(1) Highway Grouping (h)	(2) Relative Travel (V_h)	(3) Estimated Percentage Exceeding 55 m.p.h. (P_h)	(4) Column 2 Times Column 3
1	0.12	80.0	9.60
2	0.10	62.3	6.23
3	0.24	49.6	11.90
4	0.07	79.3	5.55
5	0.17	70.5	11.99
6	0.30	52.1	15.63
Total	1.00	—	60.9

^{1/}These are the same or nearest figures used in allocating the sample in Chapter III.

The statewide estimated percentage exceeding 55 m.p.h. is 60.9, the total of column 4.

Standard Error of Estimates by Highway Grouping.--The approximate standard error of the estimated proportion exceeding 55 m.p.h. of each highway grouping can be derived by the formula:

$$s(p_h) = \sqrt{\left(1 - \frac{p_h}{N_h}\right) \left(\frac{\sum_{i=1}^{n_h} x_{hi}^2}{n_h} + p_h^2 \sum_{i=1}^{n_h} \frac{x_{hi}^2}{n_h} - 2p_h \sum_{i=1}^{n_h} \frac{x_{hi}^2}{n_h} \right)}$$

where $s(p_h)$ = standard error of the estimated proportion exceeding 55 m.p.h. of the h th highway grouping;

N_h = number of 5-mile segments subject to the 55 m.p.h. speed limit in the h th highway grouping; and the remaining terms are as defined in the previous section.

The standard error of the percentage exceeding 55 m.p.h. can be easily derived by multiplying the above $s(p_h)$ by 100.

Example VI-4

Compute the standard error of the percentage exceeding 55 m.p.h. using the data in Example VI-2.

1/ This is the standard ratio estimate formula applicable to cluster samples.

(1) Location Number (1)	(2) Number of Vehicles Exceeding 55 m.p.h. (y_{11})	(3) Column Squared (y_{11}^2)	(4) Total Vehicles Measured (x_{n1})	(5) Column Squared (x_{n1}^2)	(6) Column Times ($y_{11} x_{n1}$)
1	2,971	8,828,106	6,119	37,442,106	18,180,106
2	2,989	8,934,106	7,886	62,158,106	24,210,106
3	12,561	157,778,106	15,412	237,570,106	193,580,106
4	12,561	157,778,106	15,412	237,570,106	193,580,106
5	8,631	74,494,106	12,703	161,368,106	109,640,106
6	1,921	3,690,106	4,918	24,187,106	9,447,106
7	2,168	4,700,106	4,682	21,921,106	10,151,106
Total 7	35,682	282,510,106	56,267	565,739,106	392,900,106

For the purposes of this example, assume that the total number of segments in this highway grouping is 1,500, then using the table above:

$$1 - n_1 / N_1 = 1 - 7 / 1500 = 0.995$$

$$\sum_{i=1}^7 y_{11}^2 = 282,510,106, \text{ the total of column (3)}$$

$$p_1 = 0.634 \text{ from Example VI-2}$$

$$\sum_{i=1}^7 y_{11} x_{n1} = 392,900,106, \text{ the total of column (6)}$$

Example VI-5

Compute the statewide standard error of the estimated percentage of vehicles exceeding 55 m.p.h. using the data in the following table.

(1)	(2)	(3)	(4)	(5)	(6)
Highway Grouping (n)	Relative VMT of the Percentage Exceeding 55 m.p.h. Squared $[s(P_h)]^2$	Standard Error v_h^2	Column (2) v_h^2	Column (1) $[s(P_h)]^2$	Column (4) Squared Times Column (5)
1	0.12	6.55	0.0144	42.90	0.6178
2	0.10	12.32	0.01	151.78	1.5178
3	0.24	11.15	0.0576	124.32	7.1608
4	0.08	8.90	0.0064	21.96	0.3624
5	0.37	9.00	0.0849	86.40	2.6996
6	0.30	14.72	0.0900	216.09	13.4491
Total	1.0	—	—	—	31.6065

The total of column (6) is the variance, and the standard error is 5.62, the square root of the variance. The subsequent section uses this number to determine the statistical reliability of the sample.

Accuracy of Statewide Estimates.—The actual statistical accuracy achieved can be determined by computing confidence intervals. The magnitude of an approximate one-sided 95 percent confidence interval of the estimate assuming a normal distribution of speeds is given by:

$$d = t_{.95, n-1} s(P_{st})$$

where d = actual accuracy achieved,

$t_{.95, n-1}$ = value of student's t distribution with $n = 0.05$ and n , the number of statewide monitoring locations

$s(P_{st})$ = standard error of the statewide percentage exceeding 55 m.p.h.

$$\sum_{i=1}^7 y_i^2 = 392.900 \times 10^6, \text{ the total of column (6)}$$

$$\text{and } \bar{y} = 8.038 \times 10^3, \text{ the total of column (4) divided by } n_1 \text{ (} n_1 = 7 \text{)}$$

completing the formula

$$s(P_1) = \sqrt{\frac{(.975) [282.510 + (.634)^2 (565.739) - 2(.634)(392.900)] \times 10^6}{7(6) (8.038)^2 \times 10^6}}$$

$$= \sqrt{.00429}$$

$$= 0.0655$$

The standard error of the percentage of highway grouping 1 is obtained by multiplying this last value by 100.

$$s(P_1) = 6.55 \text{ percent.}$$

Statewide Standard Error Estimate.—Once values have been computed for each of the applicable highway groupings, the statewide standard error estimate is derived by the following formula:

$$s(P_{st}) = \sqrt{\sum_{h=1}^6 v_h^2 [s(P_h)]^2}$$

where

$s(P_{st})$ = standard error of the estimated statewide percentage of vehicles exceeding 55 m.p.h.;

v_h = relative travel (VMT or DPMVT) subject to the 55 m.p.h. limit on the h th highway grouping; and

$s(P_h)$ = standard error of the estimated percentage exceeding 55 m.p.h. for the h th highway grouping.

Since the desired accuracy of the estimate was used to determine the initial sample size, this is an easy way of determining whether the sample size needs to be adjusted. If the interval computed is less than or equal to 2.5 percent (the desired accuracy presented in Chapter III), then no change to the statewide number of locations is needed.

The initial sample size was based on the concepts of accuracy and coverage. For those States where the coverage concept was the deciding factor in selecting sample size, it is unlikely that any change in sample size will be needed. For States, where the accuracy concept decided the sample size or for borderline States where the accuracy and coverage concepts were similar, increasing the sample size will be needed. Increasing the sample size, the accuracy requirement is mandatory when the sample size is determined. The sample size is optional. The next section describes a procedure to adjust the sample size under the accuracy concept.

Example VI-6

Compute the accuracy achieved based on the data in Example VI-5. The standard error from Example VI-5 is 5.62. The value of the t statistic ($t_{.95,90}$) with $\alpha = 0.05$ and assuming a sample size of 90 is 1.645. The interval then is (1.645×5.62) equals 9.24. This means that even though the target accuracy was 2.5, the actual accuracy of the statewide estimate is 9.24. This sample is presented only to explain the concept. If the sample size was any way smaller than a sample of 90 locations would produce such poor results.

SAMPLE SIZE DETERMINATION BASED ON DATA ANALYSIS

These procedures are only required for States not meeting the desired sampling accuracy (2.5) of the estimated percentage exceeding 55 m.p.h. The procedure presented in Chapter III to estimate sample size under the accuracy concept is to be used only for the first year's plan. In theory, the determination of sample size for cluster sampling is a more involved process.

The following empiric procedure has been designed to relate sample size to reliability obtained and therefore provides a better and simpler tool to approximate the required sample size. First, determine the actual reliability achieved by the method in the previous section. Then, divide by 2.5 and multiply by the 518 sample size to obtain the new sample size under the accuracy concept. The statewide minimum sample size shall be decided by comparing the numbers produced by the accuracy and coverage/ concepts and selecting the higher number of locations.

If the coverage concept sample size should be based on the latest available figures on travel (DVMT).

As before, at least 20 percent of the locations should be labeled control locations and sampled quarterly. A monitoring schedule which assumes randomization over the year must be used (see Chapter V).

Example VI-7

Determine the new sample size under the accuracy concept assuming that a percentage standard error of 2.0 was derived for the previous year based on a sample of 45 locations.

From the previous section, the actual sampling accuracy is

$$t_{.95,44} \times (5.96) = 1.688 (2.0) = 3.37$$

The new sample size is determined by dividing 3.37 by 2.5 and multiplying by 45, which equals 61 locations.

The new statewide sample size would then be dependent on the number derived based on the coverage concept. The coverage sample size is derived by dividing the total statewide DVMT figure by 1,000,000 (see Chapter III, Example III-2).

COMPUTATION OF OTHER STATISTICS

The statistics discussed in this section are averaged speed, median speed, 85th percentile speed, and proportions exceeding specific speeds. The data on which these estimates are based are collected at control locations according to the procedures in Chapter III. Since the number of control locations is not very large, the accuracy levels of these estimates will not match that achieved for the percentage exceeding 55 m.p.h. estimates. However, computing these estimates by highway grouping and control sites as a whole will present much better picture of the actual characteristics of the population. Since the purpose of the national speed data is to improve safety by enforcing motorist compliance, a valuable tool will be provided to aid in the planning of safety or enforcement activities.

The discussion will concentrate on the average, median and 85th percentile speeds only. Statistics regarding the proportions exceeding 60 m.p.h., 65 m.p.h. or any other speed can be derived using exactly the same procedure presented in the previous sections by simply using the proportions exceeding the desired speed instead of the proportion exceeding 55 m.p.h.

To compute the session statistics, two procedures will be presented which deal with the two possible alternatives of individual speeds or groups of speeds. The simplest and most statistically sound method of data collection would be to collect individual speeds for a 24-hour period at each session. However, equipment and other considerations may result in the collection of groups of speeds.

Session Average or Mean Speed.--For each control session the average speed is computed by summing the speeds of all vehicles sampled and dividing by the number of vehicles sampled. If a group of vehicles is used, the mean speed is derived by multiplying the midpoint of each group by the number of vehicles in each group, summing all groups, and dividing the total by the total number of vehicles. This procedure assumes equal group intervals and a uniform distribution of speeds within groups.

Example VI-8

A worksheet approach is presented to compute the average speed of grouped data from a control session.

(1)	(2)	(3)	(4)
Speed Group	Number of Vehicles	Midpoint	Col. (2) X Col. (3)
41-45	200	43	8,600
46-50	250	48	12,000
51-55	550	53	29,150
56-60	450	58	26,100
60-65	350	63	22,050
66-70	300	68	20,400
71-75	200	73	14,600
Total	2,300	—	132,900

The average speed is the total of column 4 divided by the total of column 2, or 132,900 which equals 57.8 m.p.h.

Session Median Speed.--The median speed or 50th percentile speed of each control session is defined as the speed value which divides the distribution so that 50 percent of the vehicles measured were traveling below

that speed value. For individual speed data, the median is the middle value when speeds are ordered according to magnitude. If the number of vehicles is even, then average the two middle values.

Example VI-9

Compute the median of the following two sets of numbers

3 3 7 9 11 13 15 17 19
and 3 3 9 11 13 15 17 19 21

There are nine values in the first set, and hence, the middle is the fifth. The fifth value (11) is the median. For the second set the middle values are 11 and 13 and the median is the average 12. This example also illustrates that the median is not necessarily one of the given values.

For grouped speed data it is necessary to determine in which group the middle value falls and then to proportionately allocate the middle value within that group. Example VI-10 presents a worksheet which can be used for this purpose.

Example VI-10

Compute the median of the data in Example VI-8.

(1)	(2)	(3)
Speed Group	Number of Vehicles	Cumulative Frequency
41-45	200	200
46-50	250	450
51-55	550	1,000
56-60	450	1,450
61-65	350	1,800
66-70	300	2,100
71-75	200	2,300

The middle value is the 1,150th value (2300 divided by 2). From the cumulative frequency column, the 1,150th value is in the 56-60 speed group. There are 450 values in that class and therefore the interval allocation for the 150th value (1150-1000) is 150/450 (1/3). Hence the group interval (1/3 x 5). The median is then the lower limit of the group plus the fraction of the group interval (56 + 5/3 = 57.7). This procedure assumes a uniform distribution of values within each group interval.

VII. REPORTING RESULTS.

Session 85th Percentile Speed.--The 85th percentile speed is the speed below which 85 percent of the vehicles were traveling. For individual speed data ordered by speed magnitude, it is the value of the observation determined by multiplying the total number of vehicles sampled by 0.85. For grouped data it is computed by the same procedure as the median.

Example VI-11

Compute the 85th percentile of the data in Example VI-10. The 85th percentile observation is the 1955th observation ($2100 \times .85 = 1955$). From the cumulative frequency in Example VI-9, it falls in the 66-70 group. Then proportion the interval ($1932-1800 \times 5 = 2.6$) and the estimated 85th percentile is 68.6 m.p.h. ($66 + 2.6 = 68.6$).

Highway Functional Grouping and Statewide Estimates.--Data for each control session within a highway functional grouping should be combined to form a composite data set. Then the mean, median, and percentile speeds can be estimated by using the same procedures presented for the estimation of session estimates. Statewide estimates can be derived from all control sessions by combining the data from all control sessions to form a statewide composite data set and applying the same session procedures.

SPECIALIZED ANALYSIS

Based on the fact that quarterly measurements were taken at each control location, it is possible to develop estimates by quarter which can be used to determine the extent of seasonal variation. All of the procedures which have been presented in previous sections are applicable to annual as to quarterly data. The data collected from standard sessions can also be used for this purpose. However, since the measurements were made at different locations, the seasonal differences will be confounded by locational differences. In the same light, these types of analyses can be conducted by month, day of the week, or geographical location within a State depending on the manner in which the measurement sessions were arranged and on the method of data collection.

1/ In statistical terminology confounding indicates that effects cannot be differentiated.

Summary speed statistics from each State's monitoring program are required to be submitted to FHWA as part of the annual certification of 55 m.p.h. speed limit enforcement. In addition, FHWA is requesting a continuation of the current practice of submitting quarterly reports showing results of monitoring during the previous 3-month period. The statewide value of "percent of motor vehicles exceeding 55 m.p.h." calculated to represent all traffic throughout the State is the critical statistic required in a State's annual certification. Figure VII-1 shows the desired format for reporting both required annual and optional quarterly speed summary data. In the annual certification, the following data must be reported for each functional group:

- Weighting factor for calculating statewide values (calculated from system VPI subject to the 55 m.p.h. speed limit).
- Highway mileage with a legal speed limit of 55 m.p.h.
- Number of monitoring locations. Show in parentheses the number of control locations where detailed speed data were collected.
- Number of vehicles measured.
- Percent of vehicles exceeding 55 m.p.h.
- Percent of total statewide vehicle miles of travel on facilities with a legal speed limit of 55 m.p.h.

Based on control locations where more detailed data are collected, the following data will be collected and shall be reported using the same format in Figure VII-1:

- Average speed
- Median speed
- 85th percentile speed
- Percent of vehicles exceeding 60 m.p.h.
- Percent of vehicles exceeding 65 m.p.h.

Individual session reports can be useful at the State level for identifying locations exhibiting increased enforcement activity. Although reporting of these session statistics is not required, States should maintain these data in their files for a minimum of 3 years following the year of collection.

Figure VII-1
Speed Summary Report

☐ QUARTERLY REPORT—CALENDAR QUARTER ENDING _____

☐ ANNUAL REPORT—YEAR ENDING _____

STATE _____

	ALL LOCATIONS ^{1/}			CONTROL LOCATIONS ^{2/}							
	Weighting Factor	Miles 3/	No. of Locations 4/	No. of Vehicles Observed	Percent Exceeding 55MPH	No. of Locations	No. of Vehicles Observed	Avg. Speed	Median Speed	85th Percentile Speed	Percent Exceeding 60MPH 65MPH
Interstate											
Urban											
Interstate											
Rural											
Other Urban											
Principal Arterials											
Urban Minor											
Arterials and Collectors											
Other Rural Principal and Minor Arterials											
Rural Collectors											
Statewide	1.00										

Percent of Total Statewide VMT on Facilities with 55MPH Speed Limits 1/

1/ These data are required with annual certification. Quarterly submissions are requested.

2/ These data are required with annual certification and data will be collected at control locations. Quarterly submissions are requested.

3/ That paved mileage subject to a legal speed limit of 55MPH.

4/ Report in parentheses () the number of control Locations.

PROPOSED NEW SPEED MONITORING PROCEDURES

The new speed monitoring procedures being developed differ from the existing procedures in the following key areas:

1. Sample design
2. Target sampling design parameters
3. Distribution of sampling effort
4. Duration of a sampling session
5. Data collection technique
6. Sampling site restrictions
7. Calculation procedures

EXISTING SPEED MONITORING PROCEDURES	PROPOSED SPEED MONITORING PROCEDURES
<u>1. SAMPLE DESIGN</u>	
Based on the idea of producing a statistically valid value for the % > 55 for each of five administratively chosen highway systems.* The five values then being combined to produce a statewide value.	Based on the concept of producing a statistically valid statewide value for the % > 55 representing travel on all highways in a State with a 55 mph speed limit.
<u>2. TARGET SAMPLING DESIGN PARAMETERS</u>	
The annual figure for the % > 55 for each highway system: + 5% @ 95% confidence. The statewide value (combination of five systems) does not have a corresponding target value.	The statewide annual figure for the % > 55: + 2% @ 95% confidence.
<u>3. DISTRIBUTION OF SAMPLING EFFORT</u>	
A sample size is determined for each of the five highway systems, based on statistical methods. The sum of the five is the statewide sample size.	A sample size for the entire State is determined by: (1) a statistics basis; and (2) a coverage of population sampled basis. The larger of the two becomes the minimum sample size. The sample is then distributed to six highway functional groupings** in proportion to the relative VMT @ 55 on each grouping.
<u>4. DURATION OF A SAMPLING SESSION</u>	
the speeds of 400 vehicles or 6 hours, whichever is first.	24 hours.
(Continued)	

EXISTING SPEED MONITORING PROCEDURES	PROPOSED SPEED MONITORING PROCEDURES
<u>5. DATA COLLECTION TECHNIQUE</u>	
Data is based on the speeds of "free-flow" or isolated vehicles in the traffic stream. An acceptable alternate for use in FY-80 is to collect the speeds of "all vehicles" at all locations	Data to be based on speeds of all vehicles.
<u>6. SAMPLING SITE RESTRICTIONS</u>	
Data is collected on straight, level sections of highway in good weather.	The sampling site is representative of the geometrics of the 5-mile sampling segment especially with regard to grades and curvature. Data collection would be allowed under all but extreme weather conditions.
<u>7. CALCULATION PROCEDURES</u>	
The value obtained (for any statistic) from each of the five highway systems could originally be weighed to produce a statewide single value by any one of three factors: Mileage, vehicles measured, or relative VMT on each system. For FY-80, all States are using relative VMT on each of the five systems.	The value obtained (for any statistic) from each of the six functional groupings will be weighed by the relative VMT on that grouping.

*Interstate Urban
 Interstate Rural
 Multilane Divided
 Multilane Undivided
 Two-Lane Rural

**Urban: Interstate
 Other Freeways & Expressways
 Other Prim. & Minor Arterials

Rural: Interstate
 Other Prim. & Minor Arterials
 Major Collectors

3. Under the revised Procedural Guide, States will be required to monitor all traffic rather than free flow traffic. Please explain the difference between these two methods.

Free Flow measurements of speed are taken when it is clear to the speed observer (radar operator) that the vehicle driver is not being held back by other traffic, geometric road conditions (grades and curves), or weather conditions.

All Traffic measurements of speed will cover all vehicles passing the observer or equipment during a sampling period. The site will be selected to be representative of the highway being sampled and all weather conditions would be accepted for sampling with the possible exception of snow or icy conditions.

4. Q. Penalties levied by States for exceeding the 55 MPH speed limit vary considerably. Do you believe a severe penalty is an effective deterrent to exceeding the speed limit?

A. Nineteen States do not permit the assessment of points against a driver's record for violation of the 55 mph limit. Three do not permit the 55 mph violation to be recorded in the driver's record, while one State law prohibits the suspension of a driver's license based on 55 mph violations. There are statutes that do not permit the assessment of court cost in 55 mph cases and others that prohibit the use of 55 mph violation convictions for insurance purposes.

Although not outright rejection of the 55 mph limit, such limitations on penalties for its violation are evidence of less than 100% support for its enforcement. The motorist quickly learns that repeated violation of the 55 mph speed limit is no threat to his driving privilege. These limitations influence the degree of voluntary compliance and reduce the effectiveness of an aggressive enforcement program.

However, the major problem with penalties for traffic offenses is the inconsistent application of sanctions by the multitude of courts that hear traffic cases. Even though States pass laws establishing certain penalties, the courts tend to impose the penalties based on the particular judges' views. Nearly all State police agencies have stated it as almost impossible to get convictions and/or assessed penalties for violations under 60 mph.

There are too many variables affecting 55 mph compliance (i.e.: enforcement presence, public information, penalties, adjudication, etc.) to enable us to assess the effect of one or two variables on the total compliance problem. Therefore, penalties cannot be directly correlated with compliance. However, we believe that it is not necessarily the size of a penalty for traffic violations that affects compliance, it is the surety with which the established penalties are fairly imposed.

If the courts and the community are not convinced of the value of the need for and the commitment to the 55 mph speed limit, it will make little difference what the size of penalties are authorized or even required because of the discretion available to the judges and magistrates.

Number 5

Question: Congress authorized funds in the Surface Transportation Assistance Act of 1978 for the enforcement of the 55 mph speed limit. How much has been appropriated for this purpose since that time, including highway safety funds?

Answer: The Congress authorized \$50 million per year for Fiscal Years 1979-82 for enforcement of the 55 mph speed limit. The appropriation for FY 79 did not provide sufficient or separate funds for 55 mph enforcement, however NHTSA administratively required that \$40 million be used for this purpose. For FY 80 a separate amount was set forth in the appropriation of \$20 million. Because of the shortfall of \$20 million between FY 79 and FY 80 NHTSA encouraged the States to continue their 55 mph enforcement activities to the FY 79 level using their regular 402 funds. As of May 31, 1980, \$79.4 million of Section 402 funds have been obligated to 55 mph enforcement since 1976.

6. Q. Section 154 of Title 23 provides for incentive grants to those States who are doing a particularly good job of enforcing the 55 mph speed limit. Have any incentive grants been made to the States? Do you believe these kinds of grants would encourage States to more effectively enforce the speed limit?

A. Section 154 of Title 23 (The Surface Transportation Assistance Act of 1978) directs the Secretary of Transportation to award incentive grants to those States having 55 mph speed limit compliance at specified levels in excess of those required by the Act. The incentive grants are not predicated upon enforcement levels.

There have been no incentive awards presented to date because no funds have been appropriated for this activity.

In theory we agree with the incentive award concept. All too often, programs are predicated upon negative sanctions instead of rewarding the States for a job well done. However, we believe that such an award process should be subject to project approval with the appropriate NHTSA Regional office.

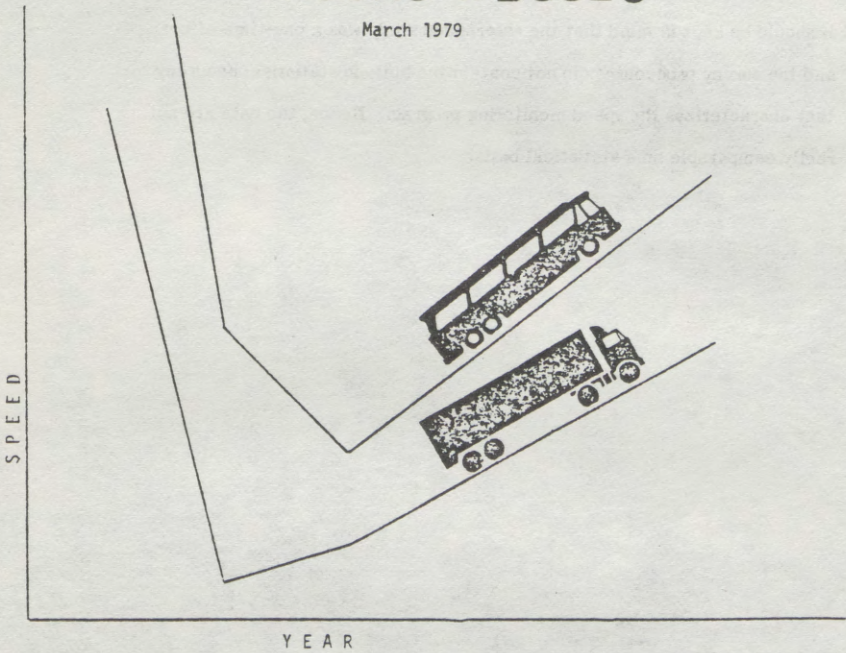
7. Is there a significant difference in observation of the speed limit among different classes of vehicles? For example, between cars, trucks and buses?

Since we have begun speed monitoring for 55 mph certification purposes, we have conducted only one study of speeds based on vehicle type. This study was conducted during the summer of 1978 and showed car and truck speeds to be nearly the same. Very few buses were included in this study; however, their reported speeds were slightly higher than either cars or trucks.

Attached for your information is a copy of our report on this study. It should be kept in mind that the referenced study was a one-time effort and the survey procedures did not contain the built-in statistical accuracy that characterizes the speed monitoring program. Hence, the data are not really comparable on a statistical basis.

SPECIAL SPEED MONITORING SURVEY TRUCKS & BUSES

March 1979



Voluntary Truck and Bus Fuel Economy Improvement Program
National Highway Traffic Safety Administration, NRD-20
United States Department of Transportation
Washington, D.C. 20590



SPECIAL SPEED MONITORING SURVEY --- TRUCKS AND BUSES

The National Highway Traffic Safety Administration (NHTSA) of the United States Department of Transportation is charged with promoting compliance by all vehicles with the national maximum speed limit. NHTSA also manages the Joint Government-Industry Voluntary Truck and Bus Fuel Economy Improvement Program. This program strives to achieve maximum energy conservation by the motor carrier industry. Accordingly, the manager of the Voluntary Program initiated a request to the Federal Highway Administration and through it to the States, to perform a special speed monitoring survey during their routine quarterly speed monitoring program. The special study was designed to help determine the speeds at which trucks and buses were traveling in general, to determine the compliance level of the 129 motor-carrier members of the Voluntary Program and to generate speed comparisons among trucks, buses and "all vehicles" on the same highways at the same time.

In 1975 and prior years, data on vehicle speeds on our nation's highways, made available by the various States, included a breakdown according to vehicle type. Providing the speed data by type of vehicle was particularly valuable prior to 1974, due to the fact that trucks (and buses) were frequently subject to lower speed limits than automobiles. After 1975, however, the data furnished by the States no longer distinguished motor vehicle type and after 1973 all vehicles were subject to the same national maximum speed limit of 55 miles per hour.

The national maximum speed limit of 55 mph was established by the Congress and signed into law by the President specifically to conserve fuel. It has subsequently been shown that the 55 mph limit has been the single most effective step taken to save lives and to prevent serious injuries on our highways.

Before the adoption of the national maximum speed limit 27 States posted lower speed limits for trucks than for cars (5-15 mph difference on the Interstates and 5-20 mph difference on other highways). As Table 2 shows, actual truck speeds at that time were substantially lower than passenger car speeds and it was more unusual for motorists to be passed by trucks. With the adoption of a national uniform speed limit motorists are more often passed by trucks and are more likely to perceive that trucks are exceeding the speed limit.

State participation in this special speed monitoring survey was strictly on a voluntary basis. Twenty-five States responded with data input for this survey. Speed data were collected primarily during the July-September 1978 quarter, in conjunction with the State's regular "all vehicle" speed mon-

itoring. This allowed comparisons of truck and bus average speed with average speed for "all vehicles" at the same time and place.

Only "free-flow" vehicle speeds are included in these data. "Free-flow" means that only unimpeded vehicles on straight, level sections of highway in good weather with light to moderate traffic volumes were monitored. The only constraints to speed were the driver's own choice and the 55 mph speed limit. Data were taken using many different models of radar, subject to varying machine error, probably averaging around ± 1 mph.

Data for this special speed monitoring survey were not taken on any pre-arranged sound statistical basis. There is, therefore, no assurance that the data are representative of the speeds of all vehicles. However, we do believe that certain comparative information and trend information is of value.

In comparing the data shown here with other speed data and with past Federal Highway Administration speed data, a number of "caveats" must be kept in mind. Those "caveats" mentioned above and others are included as part of each table in the text. The special speed monitoring survey summary data averages are weighted (i.e. the individual vehicle speeds are all added up and then divided by the number of vehicles monitored) as are the "all vehicle" data taken at the same sites and the same time. By comparison, the Federal Highway Administration's yearly data are averaged by State (i.e. each State's average speed is counted equally in figuring a grand average, regardless of the number of vehicles which were monitored in that State.) FHWA yearly data for the past few years includes all States reporting with information for each quarter of the year. In the case of "all vehicles," this should represent monitoring data on approximately 8 times as many vehicles as the "all vehicle" data from the special speed monitoring survey.

Table 1 presents the State-by-State data, indicating the number of locations at which monitoring was performed, the number of trucks, buses and "all vehicles" monitored, their average speeds and the dates during which the special monitoring was performed.

Table 1
STATE BY STATE SPEED MONITORING DATA

State	# locations monitored	# trucks and buses monitored	avg. truck and bus speed	# "all vehicles" monitored during regular spd. monitoring	avo. "all vehicle" speed	dates of speed monitoring
AL	2	151	60.8	800	61.1	9/13-14
AR	5	275	58.5	2363	58.7	8/21-23
CO	13	682	55.9	5997	55.8	8/9-11, 8/23 9/7-9, 9/11
CT	3	208	60.2	1214	59.9	8/17-18, 9/6
IW	4	410	57.7	1602	58.7	10/26-27
KS	2	103	54.1	826	57.8	7/20-21
KY	7	411	58.9	2824	59.8	8/3, 8/8-9, 16 10/12, 19, 11/8
LA	4	203	60.3	1915	59.5	7/18, 28; 3/4, 8
MA	2	100	58.5	816	57.0	8/8, 28
MD	4	558	57.7	4738	57.5	7/19, 26, 27
MT	3	152	57.8	1388	58.6	10/4, 5, 12, 17
NE	6	358	59.1	2818	58.9	8/1, 3, 8, 9, 10
NC	4	227	55.7	1636	58.1	8/30; 9/12, 13
ND	7	391	60.4	3320	58.3	8/3, 16, 28-30
NM	2	121	60.8	882	59.2	7/18, 25
NY	5	263	58.5	2156	58.7	8/17, 23, 24, 29 9/7
OH	8	524	56.1	3067	59.1	8/14-16, 28
OK	3	129	60.7	750	60.3	7/10, 27
PA	3	149	58.7	1200	58.7	8/1, 2; 9/1
SD	5	367	57.8	2507	54.8	9/7, 8, 12
TX	5	270	63.2	2140	62.6	8/3, 5, 15, 16 9/7

Table 1 (cont.)

State	# locations monitored	# trucks and buses monitored	avg. truck and bus speed	# "all vehicles" monitored during regular sod. monitoring	avo. "all vehicle" speed	dates of speed monitoring
UT	2	167	59.1	1293	58.8	8/15; 9/12
VA	9	525	59.2	4285	58.6	7/10, 18; 8/7, 21; 9/12, 13, 21, 25
VT	2	100	56.6	880	56.7	7/18, 25
WN	7	549	57.8	4638	58.5	7/24, 25; 8/8, 10, 22; 9/7, 14
<u>25 States</u>	<u>117</u>	<u>7393</u>	<u>58.3</u>	<u>56,055</u>	<u>58.3</u>	

Note:

Although trucks and buses are combined in this table, only 2.2% of the total monitored were buses. Therefore the State-by-State average truck and bus speeds basically reflect truck speeds.

Table 2, below, summarizes the 1973 through 1978 general speed data and the 1978 special survey data.

Table 2

SPEEDS ON MAIN RURAL INTERSTATES (mph)

Year	All vehicles	Trucks	Buses
1973	65.0 (37)	60.3	65.1
1974	57.6 (40)	56.3	58.4
1975	57.6 (28)	56.6	57.4
1976	58.2 (48)	NA	NA
1977	58.8 (48)	NA	NA
1978*	58.8 (48)	NA	NA
1978 special study	58.3 (25, see below)	58.3	59.7

Notes:

1973-1977 data from Federal Highway Administration's "Highway Statistics," Table 1S-1.

* 1978 Federal Highway Administration data preliminary and unpublished at this time.

Notes: (cont.)

() Number of States reporting

Special study involved 25 States and was done only during one quarter. Other data represent four quarters of speed monitoring and present unweighted averages of State-reported average speeds (see explanation on p. 2).

It is clear from Table 2 that data from monitoring during one quarter, from 25 States are not fully representative of four quarters of monitoring from all States during 1978. However, comparisons among types of vehicles, within the special study, should be reasonably valid, since all monitoring was done at the same sites, at the same time.

Table 3 allows a comparison of "all vehicle" speeds among various types of highways. The clear indication from this comparison is that speeds on Interstate rural highways are higher (over 2 mph in all cases) than speeds on other types of highways with 55 mph speed limits. This makes it clear that the data reported above, and the special study data, represent "worst case" conditions. That is, these data are taken on the types of highways on which drivers normally drive fastest. In addition, of course, the data are taken only during good weather with unrestricted traffic flow. Nationwide average speed, on all roads posted at 55, during all weather conditions and all traffic conditions, should be slower than the numbers reflected in this report.

Table 3
ALL VEHICLE AVERAGE SPEEDS (mph)
BY TYPE OF ROADWAY

Type of highway	1976	1977	1978*
Interstate Rural	58.2	58.8	58.8
Interstate Urban	56.1	56.5	56.7
Multi-lane Divided	55.8	56.4	56.6
Multi-lane Undivided	53.7	54.2	53.5
2-lane Rural	54.5	54.9	55.0

Notes:

1976-1977 data from Federal Highway Administration's "Highway Statistics," Table VS-1.

* 1978 Federal Highway Administration data preliminary and unpublished at this time.

All States reporting in all cases.

All speeds represent unweighted averages of State average speeds.

It was the hope and expectation of the Department of Transportation that Voluntary Program member fleets, which have otherwise been distinguished by their energy conservation efforts, would show lower average speeds than seen for the total 7393 trucks and buses monitored. This seems to be the case for truck fleets but bus fleets in the Voluntary Program appear to be worse offenders than all buses monitored.

One hundred and twenty-nine motor carriers are Voluntary Program members. Generally these 129 are among the largest carriers in the country, although they do range in size down to carriers with as few as 16 and 30 tractors. One thousand and sixty-three of the 7393 trucks and buses monitored (14.4%) were operated by Voluntary Program members.

Tables 4 and 5 provide a comparison of all truck and bus speeds monitored with the speeds of Voluntary Program members' vehicles.

Table 4

ALL TRUCK AND BUS SPEEDS

	<u>Total # of Vehicles Monitored</u>	<u>Average Speed</u>
Trucks	7227	58.3 mph
Buses	166	59.7 mph
Total	7393	58.3 mph

Table 5

VOLUNTARY PROGRAM MEMBER SPEEDS

<u>Type of Voluntary Program Carrier</u>	<u>Number of Carriers Monitored</u>	<u>Number of Vehicles Monitored</u>	<u>Average Speed</u>
Private Carriers of Property	38	135	57.8 mph
Authorized Carriers of Property	49	928	58.0 mph
Passenger Carriers	4	93	60.9 mph

The specific data acquired in the special 1978 survey have allowed the Voluntary Truck and Bus Fuel Economy Improvement Program to report to its member fleets on the speeds of their own vehicles in operation, including date, time, location, and the carrier's vehicle number to

provide them with an independent status report on their efforts to control the speeds of their fleet vehicles. The data are also being communicated by the American Trucking Associations to other fleets. This effort is being made to encourage better compliance with the national maximum speed limit and to assist fleets in controlling their vehicles' speed for better fuel economy, safer operation and improved image in the eyes of the motoring public.

For further information on the special speed monitoring survey, the Voluntary Truck and Bus Fuel Economy Program, or the information included in this report, please contact:

Manager, Voluntary Truck and Bus Fuel Economy Improvement Program
National Highway Traffic Safety Administration, NRD-20
U. S. Department of Transportation
Washington, D.C. 20590

Phone: (202) 426-4560

8. Q. Is a tolerance range allowed by most highway patrols in enforcing the 55 mph speed limit? Do you believe a 5 mph tolerance range should be allowed?

A. Most police departments providing police traffic services allow tolerances that range from 5 to 10 mph when engaging in speed enforcement. These tolerance policies are usually informal and are intended to allow for human and mechanical error of the vehicle operators. However, there are other bases for tolerances used in speed enforcement.

In some jurisdictions, the courts dictate tolerances by not prosecuting or convicting offenders unless they have reached certain thresholds such as 5 to 10 mph over the posted speed limits. Pennsylvania has a 7 mph tolerance written into their speed limit legislation.

The International Association for Chiefs of Police in its 1975 Manual of Police Traffic Services states, "Legally there is no defense for exceeding the posted speed limit or for driving faster than conditions permit, however, slight.

"Practically, however, there exists sufficient reason to believe that factors such as improperly calibrated factory speedometers, marginal weather conditions, and other factors, may give a subject cause to believe that his speed may have been slightly less than that stated by the officer, or that existing conditions are less severe than stated by the officer.

"For these reasons, it is suggested that the officer exercise such tolerance that he may believe to be necessary to remove substantial doubt from the mind of the accused."

The decision by a police agency to allow a tolerance is reflected by legal and operational factors that affect each State on an individual basis.

9.(a) Q. How much Federal assistance is necessary, do you believe, in order for all the States to comply with the schedule the law currently requires? With the compliance schedule in S.1337?

A. It is extremely difficult to precisely determine from existing records within a State, what enforcement costs are solely attributable to the 55 mph speed limit. Since the necessary information is not readily available, it is therefore difficult to assess both the magnitude of the resource allocation cost burden 55 mph has placed on the States and the additional funding assistance, if any, needed to alleviate that burden.

We are currently undertaking two studies that we feel will provide important information in these areas. In the first study, NHTSA, through modification of an existing contract with the International Association of Chiefs of Police (IACP), will determine whether or not it is feasible to develop reasonably accurate cost estimating methodology and data sufficient to estimate the cost of enforcing the 55 mph limit within a State. If feasible and acceptable to NHTSA, the methodology will then be pilot tested in several selected States. If the pilot tests are successful, we will then proceed to develop similar 55 cost estimates for all other States.

The second study, the 55 MPH Impact Project (which is actually two separate projects - one in Utah and one in Connecticut), is attempting to determine what level of enforcement presence is required on a highway to affect a high degree of voluntary compliance with the 55 mph speed limit. We also expect to determine the cost-effectiveness of each level of enforcement presence.

9.(b) Q. What will the impact on the States' ability to enforce the 55 MPH speed limit be if no Federal funds are made available?

A. We believe that elimination of Federal funding assistance for State 55 mph programs will cause:

1. Sharp reductions in the size and quality of State 55 mph enforcement efforts.
2. Increases in speed and motorist noncompliance with the 55 mph limit.
3. Some erosion of the safety and fuel benefits of the 55 mph speed limit.
4. Funding sanction confrontations with several States for failure to meet the 55 mph compliance criteria established by the Congress.

The 55 mph speed limit calls for expanded and/or improved State enforcement programs which are otherwise beyond the scope of the resources traditionally allocated by the States. Since enforcement is already the single most costly element within a State's highway safety program and one of the largest items within any State or local government budget, it is also the most difficult to expand beyond those levels historically authorized by the State or local government.

In the face of fixed or decreasing manpower ceilings, uncooperative State legislatures and increasing demands for other police services,

police administrators do not have the resources to mount and/or sustain the expanded enforcement effort necessary to satisfy the Federal compliance standards established by the Congress in the Highway Safety Act of 1978.

Federal Leadership -- both Congressional and Executive Branch -- has been strong to date, and that has done much to achieve the current compliance levels. A decision not to provide Federal financial assistance -- even at the modest level that has been provided to date -- would be interpreted at the State level as an indication of a lack of Federal commitment and leadership.

This perception of a lack of commitment could and probably would lead to reduced enforcement levels, which could put many States into non-compliance with the 1978 Surface Transportation Assistance Act -- no State shall have more than 60 percent of their vehicles exceeding 55 mph by September 30, 1980, which means they would be facing a 5 percent reduction in their highway construction program funding.

More importantly, the public currently views the 55 mph speed limit as a very visible national effort to conserve energy and save lives. Lack of continued Federal assistance to 55 mph enforcement could alter the public's commitment to the individual long-term energy conservation initiatives that the nation needs to take.

10. Q. Current law states that if data submitted by a State shows that the percentage of vehicles exceeding the 55 MPH speed limit is higher than 60%, the State's apportionment of Federal-aid, non-interstate funds are to be reduced up to 5%. What criteria will the Secretary use to determine what percentage funds should be reduced if a State fails to certify compliance?
- A. At this time, there is no official policy which outlines the criteria that will be used by the Secretary to determine what percentage funds should be reduced if a State fails to meet the mandated compliance with the 55 mph speed limit. We have under consideration a policy document that outlines our proposed criteria. The criteria are as follows:
1. Extent of noncompliance - the amount by which the compliance level certified by a State falls short of the minimum level established by law.
 2. Quality of a State's 55 mph legislation - which can include the following considerations:
 - a. penalties for 55 mph violations.
 - b. notation of 55 violations on driver's records and assessment of points on the driver's licenses of violators.
 - c. comparison of present 55 mph penalties with pre-55 maximum speed violations.
 - d. State budget decisions that inhibit 55 mph enforcement -
 - e.g. by prohibiting State police from using radar, aircraft enforcement, etc.

3. Maintenance of compliance activities at an adequate level - this provides for evaluation of the diligence of State officials in attempting to gain improved compliance with the 55 mph speed limit. Examples of inadequate effort might be:
 - a. a drop in the number of 55 arrests and citations.
 - b. shrinkage of public information programs.
 - c. diversion of police manpower to duties other than 55.

We do not have suggested weights for these factors since we feel that a State's total program should be scrutinized prior to any imposition of sanctions. This is especially true if sanction imposition would cause a hardship to the State.



