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Special Edition

California's AB 1493: Trendsetting or Setting Ourselves up to Fail?

On July 22, 2002, California's state legislature courageously stepped deeper into the national economic and political minefield of automobile emissions regulation. California once again thrust itself into the forefront of environmental legislation by enacting Assembly Bill 1493 (AB 1493), a law directly aimed at reducing greenhouse gas emissions from automobiles. AB 1493 mandates that the California Air Resources Board (CARB) develop and implement greenhouse gas limits for vehicles beginning in model year 2009. Rather than target particular classes or models of cars, the legislation applies to manufacturers' fleet averages, thereby permitting automakers to decide how best to meet the required limits. Additionally, automakers who reduce emissions from sources other than autos (for example, factories) will be able to apply those reductions to their fleet averages.

AB 1493 is a significant step in domestic greenhouse gas regulation. However, whether California's approach to automobile emissions foreshadows a coming wave of sister state environmental regulation or is merely an aberration from a land of tree-hugging extremists remains to be seen. The issue will no doubt receive a good deal of attention between now and 2009. This special edition issue on AB 1493 will help to provide a foundation for that discussion. It includes relevant excerpts from the transcript of the debate on the law at the 2002 UCLA School of Law Environmental Law Symposium on AB 1493, as well as the legislative history and the statute itself. The symposium participants (in order of appearance) were: Jonathan Zasloff, Acting Professor of Law, UCLA School of Law; Jonathan Varat, Dean and Professor of Law, UCLA School of Law; Ann Carlson, Professor of Law, UCLA School of Law; Dr. Robert J. Lempert, Senior Physical Scientist, Rand Corporation; Kal Raustiala, Acting Professor of Law, UCLA School of Law; K.G. Duleep, Managing Director, Transportation, Energy and Environmental Analysts, Inc; Louis Browning, Transportation, IFC Consulting; Jan Mazurek, Direc-

tor of the Center on Innovation and the Environment, Progressive Policy Institute.

The editors believe this special edition will provide the reader with a comprehensive overview and focal point to understand current and anticipate future economic, political, and environmental debates surrounding California's cutting-edge greenhouse gas regulations. Like AB 1493 itself, these excerpts are meant to invite the reader into a conversation that, one day, will likely grow into a national or even an international dialogue.

RELEVANT EXCERPTS FROM THE 2002 UCLA SCHOOL OF LAW ENVIRONMENTAL LAW SYMPOSIUM ON AB 1493:

Zasloff: Good afternoon. My name is Jonathan Zasloff. I am the moderator of the panel today and in order to welcome you all, I would like to introduce the Dean of the UCLA School of Law, Jonathan Varat.

Varat: Thank you, [Professor Zasloff] It is a wonderful thing to see quite as diverse a group of people in our audience as we have here today. We actually have people here who are from the science community, the law community, the regulator and automotive community, and law students and faculty. That's exactly one of the things that we are trying to accomplish with the Evan-Frankel Environmental Law and Policy program, so I am thrilled that there are all you good people out there to listen to all these good people up here.

My second set of thanks goes to our co-sponsors. First of all, the UCLA School of Law Evan-Frankel Environmental Policy program Second, thank you to the Environmental Law Section of the State Bar of California for participating in and supporting this particular program. We hope to do more work with them, connecting our students and our entire school with them

. . . .

UCLA Law launched its Environmental Law Center last spring. The idea was and is going forward to develop environmental law and policy with an inter-disciplinary focus and to take advantage of all the resources of the University of California, which are many in science, economics, and policy and technology

. . . .

[Politicians often] delegate most of the difficult questions to regulators in the administrative agencies. This raises one of the major questions for today. What are the regulators supposed to

do in trying to actually make these overall objectives and goals work?

Then there are the questions about whether the economic impact of these things will be an absolute disaster for the car and oil industries. On the other hand, will they be effective in reducing gas emissions and pollution at all? Will the policymakers balance the costs and benefits effectively? Many of these answers will be based on the input of scientists and technologists

With that I am going to turn it over to [Professor] Zasloff, who is a wonderfully young and energetic environmental law faculty member here at UCLA. It was principally his idea to have this particular forum today. So [Zasloff], it is all yours.

Zasloff: Thanks. I want to get right to the panel, and the easiest way is to tell you who they are. The one comment I will make, though, is that the legal theorist Grant Gilmore once said, "In heaven there will be no law and the lion will lie down with the lamb. And in hell, there will be nothing but law and due process will be meticulously observed." Well up here today we are in neither heaven nor hell, but what that means is that we have some law and some not law and that is good. That is the way the Center is supposed to work; the only way in which lawyers can learn more about their world is by looking at other people and other disciplines. Other people in other disciplines can learn a lot about their world by talking to lawyers, so it is a good mix and a good balance that we have here

The first person I would like to introduce is Dr. Louis Browning from ICF Consulting, who is a principal in their transportation program. He is internationally recognized as an expert in non-petroleum fuels and advanced transportation technologies. He has examined improvements in vehicle fuel technology, in engine technology and used his engineering expertise in protecting fuel economy for advanced technologies such as electric vehicles, hybrid electric vehicles, and fuel cells. He has a doctorate in mechanical engineering from Stanford. As an aside, I can say on one issue I talked to a friend of mine who also works at ICF and who said that the reason Browning is at ICF is because if you want to do something having to do with environmentalism or air quality in California, Browning has to be on your team. We're very glad that he's on our team today.

It is a great pleasure to welcome K.G. Duleep, who is the managing director of transportation at Energy and Environmental Analysis, Inc. He is also an internationally recognized expert on

vehicular fuel economy and emissions issues. He has been advising governments and putting together programs concerning vehicle technology and fuel technology not only for the United States Environmental Protection Agency [(EPA)] or the Department of Energy and in California, but literally around the world in Canada, Sweden, Australia, Taiwan, and other countries where technology evaluations and forecasts are critical to doing environmental regulation. And he is particularly helpful to us not only because he is very good at doing the economics [of regulation], but also in terms of engineering and the interplay between economics and engineering that is going to be absolutely critical.

We are also pleased to have on the science side Dr. Robert Lempert from RAND. He is a senior scientist at the RAND Corporation, who is an expert, among other things, in atmospheric sciences in terms of the climate aspect of what we are talking about today One of the things that Rob does that is particularly interesting is not just traditional quantitative forecasting, but [forecasting using] a more advanced scenario model that he will discuss in just a few moments. It talks particularly about how you make decisions under conditions of extreme uncertainty. And he's been doing a lot of measurements of these kinds of issues for a whole variety of bodies, including the White House Office of Science and Technology Policy, California public universities, and other important state governments around the country as well as federal governments internationally.

We are also very pleased to have Jan Mazurek of the Progressive Policy Institute in Washington, D.C. She is the director of the Center on Innovation and Environment at the Progressive Policy Institute. Her work focuses on the ways in which you can update the first generation of environmental management techniques. She previously served as an analyst in the claim markets division of the United States Environmental Protection Agency, she is an expert on voluntary environmental agreements, and she has worked in doing and evaluating these kinds of agreements for a wide variety of organizations, including Resources for the Future, the National Academy of Public Administration, and the Organization of Economic Cooperation and Development. She is the author of two major books, both on environmental, science and technology policy: making microchips, restructuring policy and globalization in the semiconductor industry, and then [evaluating the system of] pollution control in the United States.

And last but far from least, it is also a pleasure to introduce a couple of my colleagues who are here to provide a lot of the important legal side of this. Kal Raustiala is a colleague not only here at the law school but for our partner and co-sponsor the Institute for the Environment. He is both lawyer and political scientist. He has a Ph.D. from the University of California, San Diego. He is an expert not only in international environmental law and international politics, but also in international trade law, international security law, and how all of these interact with world politics in the international system. He actually holds three hats because he's not only a professor here at the UCLA law school and the UCLA Institute for the Environment, but this year he's visiting at Princeton University on a very, very prestigious law and public affairs fellowship. These things are extremely, extremely difficult to get and it is virtually unheard of for a young scholar—a junior faculty member—to get them. Fortunately enough for us, however, these things only last for a year, so he will be coming back soon.

And finally, it is a great pleasure to introduce Ann Carlson, my colleague here who is the co-director, along with Tim Malloy, who is in the audience, of the Frank G. Wells Environmental Law Clinic. She also teaches property and environmental law [at UCLA Law]. Before coming here, she was an outstanding practitioner of environmental law, working for a public interest and environmental law firm. She has written a whole series of articles not only on such topics as environmental law and property, but also environmental justice and the constitutional aspects of environmental law which will come into play here. Her most recent article on the takings doctrine was called by several scholars the article of the year in this very, very important area of law. So it is really a wonderful panel we have here today and an interdisciplinary way of combining law, science, public policy, technology and politics.

[Professor Carlson], let me get started with you so we can just get [issue] background. This is the panel about AB 1493, the recent bill that was passed by the California legislature and signed by the Governor as a way of handling greenhouse gas emissions and hopefully global warming. And maybe the best way to do this is to start out saying, What is in this bill? What does it say that California is supposed to do with the Air Resources Board and the legislature and what are the timelines on this?

Carlson: [Professor Zasloff], I am going to do what all lawyers do and avoid your question for a moment. First, let us get some context for California's rule in regulating emissions from automobiles. California leads the country in two ways important for our discussion here. First, we lead the country in air pollution, which is not insignificant in talking today about California's role in regulating greenhouse gas emissions from automobile tailpipes. Second, we have led the country for almost forty years in regulating what comes out of automobile tailpipes. Congress, as many of you may know, passed the Clean Air Act in 1967, the first federal effort to regulate automobile air emissions, among other emissions. But California predated Congress and because of that and because of the severity of our air pollution problems, although Congress kept for itself the authority to regulate air emissions from automobiles (it specifically says in the Clean Air Act that no state shall regulate automobile emissions), there is a specific provision that deals only with California.¹ California has the right to establish its own emissions standards for automobiles, called "mobile sources" in the parlance of air quality regulation, as long as those standards are at least as stringent as the federal standards, and they have been.² They are more stringent than federal standards. That is important because California could not pass AB 1493 without that waiver in federal law. California is the only state in the country that arguably, at least, can regulate greenhouse gas emissions from automobile tailpipes.

Another thing that is important to understand is that there are two kinds of cars in the United States from an air emissions viewpoint. There are California cars and there are federal cars. California cars tend to be regulated more stringently, having more pollution control equipment included on them. California cars are not limited to California. Another thing that the Clean Air Act does is that it allows states to opt into California's regulatory speed.³ It is quite unique in this regard. So Massachusetts, if it wants, can say "we don't want the federal standards, we want the California standards because they are more stringent." That may have important implications for the reach of AB 1493 as well.

California has already given us a lot of technology in the air pollution control world. It has given us the catalytic converter. It is increasingly pressuring auto manufacturers to give us zero or

1. See 42 U.S.C. § 7543(b) (2000).

2. *Id.*

3. *Id.*

very low emissions vehicles, and now it may push auto manufacturers to significantly reduce the amount of greenhouse gas emissions that come out of tailpipes. The principle greenhouse gas that is going to be regulated by this bill is carbon dioxide, but I will let the scientists talk a bit more about that when we turn to them.

Now let me tell you some specifics on how the bill actually works. AB 1493 is involved in regulating greenhouse gas emissions. More specifically, here is some of the important language from the bill. It requires the California Air Resources Board ["CARB"], and I understand we have a number of CARB representatives here today . . . to develop regulations to achieve the maximum feasible and cost effective reduction of greenhouse gas emissions for motor vehicles. That is going to be a tough balance, balancing maximum feasible against cost effective. That is the general language. Now let me tell you what kind of time card is given and what model years we are talking about in regulating greenhouse gas emissions. The first important timeline is that CARB has to develop and adopt these regulations by January 1, 2005. Interestingly, I assume in terms of the automobile industry, the regulations don't actually take effect on January 1, 2005. Instead, the legislature is actually specifically given a year to review and determine whether there is new legislation needed presumably to modify whatever CARB is proposing to do. Of course, the legislature could do this on its own, but there is this specific provision that requires the legislature to hold public hearings to see whether in fact there is new legislation needed in response to the proposed regulations.

And finally, the regulations are applicable only to 2009 model years and thereafter. So it is going to be awhile until we see any technology actually installed on automobiles. Interestingly, [Dean Varat] talked about Congress delegating to agencies the authority to develop regulations and the sort of interesting questions that result; this is a bill that delegates very broadly to CARB. CARB is limited to some degree in what it can do, but there are very few specifics in the bill about what kind of technology should be adopted, etc.

There are some factors that the air board is required to consider. [Compared to] environmental factors . . . economic factors seem straight forward. Now, economic factors could include the economic benefits that may be gained from developing new technology. There can be jobs that get created from the push and

control industry. As the automobile industry may in fact be affected negatively, their consumers may bear increased costs as a result of decreases in tailpipe emissions. Social factors and technological factors presumably [mean] what are feasible and economical for consumers. In other words, how much is this going to add to the price of the car over its lifetime? The bill covers essentially passenger vehicles and, you will be happy to know, light duty trucks, which include SUVs, one of the evil sources of carbon dioxide.

Audience Member: Is evil a technical term?

Audience: [laughter]

Carlson: [This also applies to] any other vehicle used for non-commercial personal transportation, meaning it does not apply to, for example, the truck industry.

Finally, CARB is actually prohibited from taking certain steps to reduce greenhouse gas emissions coming out of cars. It can't impose new taxes or fees so it could not, for example, make gasoline a lot more expensive in an effort to get people to drive less. It can't ban any category of vehicles. It can't reduce vehicle weight, although presumably some regulations may have an effect of reducing vehicle weight, but it can't do so directly and perhaps it can't do so even indirectly. It can't reduce the speed limit and it can't limit vehicle miles traveled. In other words, it can't place a limit on the number of miles an individual can drive in a particular year. That is it. The big question that is going to be left open is what are the regulations going to look like? And we're going to turn to some of our other experts to answer that.

Zasloff: In order to give some background to this bill, I would like to turn it over to one of our scientists now to talk a little bit about what this bill, in more or less technical regulatory language even if broad, is supposed to do and the problem it is supposed to combat. From the halls of Sacramento, you go out into the climate of the rest of the globe and what is allegedly a relatively small bill, what conceivably is a very small bill, is supposed actually to have a world-wide impact. I'd like to turn it over to [Dr. Lempert] to talk about what [AB 1493] is supposed to be doing and the problem it is supposed to combat.

Lempert: What I want to talk about is a little bit of the scientific background of the global warming climate change problem with a focus on its very long-term and global character, and then contrast this with the local bill we will be discussing. Then I want to

give you a brief policy framework to lay out one set of contexts, one view about how a bill in one state and one country over a period of ten years in effect is spread long-term and long-range.

[Let's take a look at] the atmospheric concentration of the greenhouse gases over the last roughly three years. Climate change is caused by the atmospheric trace gases . . . that let light in and keep it from going out. Carbon dioxide is one of the chief ones. If we did not have that, the surface of the Earth would be much colder. The oceans would freeze and life would be very unpleasant. And so the fact that there are these greenhouse gases in the atmosphere is very helpful, and over the last several decades as people have been burning fossil fuels, the concentrations have been going up. Currently, they are about 30 percent above pre-industrial level. And as these concentrations go up, they have been making the Earth hotter. In the last 140 years . . . the temperature has been rising. It's squiggled around some and then really taken off in the last forty or so years. I have a quote here from a group called Intergovernmental Climate Change, which is a worldwide collection of scientists who are supposed to meet every five years to assess the state of knowledge about climate change. The last report came in about a year ago and they have said that in fact most of this global warming is due to human caused of emissions of greenhouse gases.

The thousand year record in the northern hemisphere gives you a sense of context. The climate is not static; it varies significantly Our records of the climate system actually go back a couple billion of years, and there is a lot more than that. But in the last fifty or so years, it has really taken off much warmer than it has been in a very long time. I have been talking about the consequences of this, but there are a whole variety of potentially very interesting facts.

This is a global problem. Everybody contributes. When you emit carbon dioxide in any year, it stays up for many hundreds of years, which is a very long time. Over the last thirty years or so, most of the emissions have been coming from the industrialized countries, but the developing [nations] have been catching up quickly. So this is a problem that mostly the rich countries have caused, but which everybody is adding to.

Now, let us look out into the future. Looking at the next several hundred years, the important thing to recognize is that solving the climate change problem, in other words keeping this temperature from going up, will require very, very large global

changes over very many decades—decades to centuries. The Kyoto Treaty, which [Professor Raustiala] will discuss, talks about reductions of seven percent. To really solve this problem over the long-term, we have to talk about reductions of greater than 80 to 90 percent.

And the world's nations have agreed to the long-term goal of changes to stabilize greenhouse gas concentrations at a safe level. No one knows what a safe level is, but here are a couple of scenarios for where we might stabilize. The lowest level that anybody talks about is about 450 parts per million, which is about 60 percent higher than the pre-industrial level People don't really know whether we are going to feel really significant effects at this level. To the extent that you think the weird weather that we started to have already is in part due to climate change, even this level starts to be very serious. If [the weather] is just due to natural variability, then we have not seen any serious impact, such as serious flooding and so forth. . . .

Okay, let me talk about policy framework. The first point to make is that the climate change problem is unavoidably a problem of mismanagement. This is a problem we need to solve over very many decades, a global problem. People talk about what is going to happen ten years from now, fifty years from now. With climate change, people sort of lose their common sense notion that all these predictions have a lot of self-information behind them, but they ignore all the surprises we know we are going to have that make all long-term predictions wrong. And so really, while there may be some nuances in this, basically, no one knows or no one can know any time soon what the long-term costs and benefits are really going to be. Here is just a list of some uncertain facts. We don't know what the base case emissions are going to be. This [International Bureau of Chambers of Commerce] group came up with a variety of emissions scenarios, ranging from emissions going to ten times what we have today by the end of this century, to emissions going to zero by the end of the century. We don't know what the impacts of climate change are. What will be the effects on agriculture or ecosystems, two areas we often hear about? We have some information, but we don't really know for sure. How much will people a hundred years from now even care about many of these things? If there are palm trees in Boston, I mean, are people going to care? Or are they going to like that? And what are the costs of reducing emissions, of bringing them down through future technologies. It is

easy to make a long list of technologies that people can predict will fundamentally change the world. The point is we don't know any of these things; we know things about them. You can't really predict the costs and benefits, but it is still possible, in fact we do it all the time.

Let me do a very quick thought experiment to lay out this framework. Imagine we are 10 years in the future and we are magically going to open an envelope and all of a sudden learn how serious climate change is and what the costs of reduction are; so we know everything that I just said you could not know The question is, what would you want to accomplish today?

I would submit that you [would] want to . . . have a checklist of about four things in something like this. You would want to do the best you could to slow natural emissions, without having to spend too much money doing it. You would want an effective capability to adapt to any of the unavoidable changes. You would want to have a wide array of very effective low-cost technological options so that you can make big reductions if you need to. Because right now, you don't have the technology in order to near zero. And you would want to have well-functioning domestic and international institutions so that you can actually regulate greenhouse gas emissions in a serious way. It is highly likely that any system with good information training or any sort of emissions control is not going to work the way we expect the first three or four times we try it. It would be nice to learn a lot more about these things before we need them for real. My claim is that if we look at AB 1493, it really is addressing these two goals. Primarily, it helps generate more cross-technological options for future large emissions reduction if we determine we need them. And to some extent, it will provide some learning about setting up well-functioning domestic institutions for regulating car emissions.

Zasloff: Well, given the fact that [Dr. Lempert] just told us about domestic and international institutions, what I would like to do is to turn it over to [Professor Raustiala] to talk about what the international context is of all this. Even though we are talking about high technology, at least in this scenario [Professor Raustiala] is very low-tech, which is good for those of us who are trying to master these issues.

[Dr. Lempert] talked about how we need an effective set of international institutions to do this. What is the international institutional context for AB 1493? Does it figure to help advance

those international institutions, rather than hinder them? How does it play into the international, and specifically the international legal, framework?

Raustiala: What I am going to do is to just tell you briefly a tiny bit about what the international legal framework is that California has responded to, the Kyoto Protocol. So a little about Kyoto—a little bit about the political background and the legal background will show how this plays out internationally. For those of you who don't know, the Kyoto Protocol is an international treaty that was negotiated in 1997 with the aim of reducing greenhouse gas emissions, but also stabilizing the climate. It has a bunch of different objectives. The basic idea is to address, or at least get started addressing, the global climate problem. It does this in a number of ways. The most significant way for our purposes is that it sets targets and timetables for emissions. Now technically that's not quite right because there are also ways to absorb carbon. The treaty focuses on, for example, what are called sinks: you grow a tree, you absorb carbon. There is a lot of attention to that, but we'll talk about emissions today just as a shortcut. Kyoto says that the United States, for example, has to reduce its aggregate emissions by seven percent, as [Dr. Lempert] mentioned, from a 1990 base level. So, we look at what emissions were in 1990, and reduce them by seven percent by the year 2012. This is sort of a long window. The idea is that we're supposed to be moving down. Business as usual has us rising by about a third, so reducing by seven percent is actually a very significant drop. It's very difficult to do. It will not happen, for many reasons, one of which [is that] we have now rejected Kyoto. But if we hadn't, we would be unlikely to meet that . . .

So I've already mentioned that Kyoto is not just about CO₂. CO₂ is very important, but there are lots of other greenhouse gases, some of which have much longer atmospheric life spans. There are also sinks and other ways in which you can deal with the climate problem, but, again, CO₂ is the biggest issue.

In the United States, from the national level, the Bush administration's position has been that Kyoto was a mistake and we will not take part in it. We have sort of rejected Kyoto for the moment. That can be revived in the future. Future administrations may decide to join Kyoto, but for the moment it's dead in the United States. That's important because the United States generates about a third of the industrialized countries' emissions. We are a big player. California, of course, is a big part of the

United States, so California is not insignificant. One of the reasons the Bush administration in particular was opposed to Kyoto was the fact that Kyoto focuses on industrialized countries. It does not really focus on the developing world. For example, there was a resolution, the Vern-Hagel resolution, which passed 98 to 0, that said that we will never join a treaty that doesn't impose meaningful targets on countries like China and India. Those developing country emissions are relatively low right now, but they are about to surpass industrialized country emissions, and then they're going to zoom. Once China starts to have large numbers of automobiles, those emissions are just going to grow very high. From the point of view of the U.S. government, what's the point of a treaty that doesn't somehow cabin those emissions and imposes costs on us? That's been the Bush administration's position.

Regardless of the fact that the U.S. has decided to pull out of Kyoto, Kyoto is going forward. It's going to enter into force, meaning it's going to have legally binding effect probably in the next six months to one year depending on a couple of key countries, Russia being one, kind of a wild-card country in a lot of ways. We don't know what Russia is going to do. But assuming one or two other small countries ratify [Kyoto], it is going to enter into force. So the most important point about this is that the process is moving forward internationally regardless of what the Bush administration decides to do. In one respect, California is moving in step with the rest of the world.

One reason that Kyoto is moving forward is that the U.S. has opted out. That might sound paradoxical, but because the U.S. has decided not to ratify, it has actually made it much cheaper for Europe, Japan, and the other major industrialized countries to meet their Kyoto targets. Why? Kyoto has a tradable market and there are a number of tradable emissions schemes imbedded within it. This means, in essence, that you can buy permits to pollute from countries that don't need them, Russia being the number one country that has a large allocation. It is a complicated area, but the basic idea is that when Kyoto was negotiated, Russia was given this enormous allocation to pollute which it doesn't need so now it can sell. We would be the number one buyer. Now that we're out, prices have dropped close to zero, probably.

Audience Member: Five or ten dollars.

Raustiala: Yeah, five or ten dollars is a bargain. Very low prices, so it makes it easier for the rest of the world to sign on, which is politically nice for the Europeans. Another point about Kyoto and the fact that it's going forward: it doesn't matter a damn that the U.S. government has opted out. U.S. consumers and U.S. firms are going to be impacted. If you're a U.S. multi-national, you're still going to have to deal with a world in which carbon reductions are the order of the day. That's going to continue. U.S. consumers will also feel those effects in a more indirect manner. So Kyoto matters regardless of what the Bush administration does or doesn't do.

Let me say a couple of words about [AB 1493] and then I'll close. One of the easy critiques of the bill is to say that it's a drop in the bucket—it doesn't do anything. The same could be said from a global climate perspective and that's a fair point of view. The same thing could be said about Kyoto. A lot of critics of Kyoto say, even if Kyoto went as well as it could possibly go, it's almost meaningless in terms of actually changing, long-term, the kind of [issues Dr. Lempert discussed]. It's going to deflect temperature increases in a tiny little way. So what's the point? That's one of these arguments.

I think that's the wrong kind of metric to take. One of the key points is shifting the technological and political and institutional terrain. You heard the bill actually does a few important things. Again, it follows through with what half the world is doing. It's also curiously in step with some of the other states. New York and New Hampshire have different kinds of laws in place. I think New Hampshire has a kind of power plant reduction bill in place. So other states are doing these things. It shows, one, that states can do something even if the national government doesn't. But most importantly, it's stimulating debate in the United States about our climate changes. This is really important. If nothing else comes out of this bill, but the U.S. as a whole is more aware of the climate problem, then that in turn makes it easier for some future president and future Senate to decide, yes, we're going to join Kyoto or Kyoto 2 or 3 or 4 because there's going to be more of these. I think that's a really important step.

You always come back to the question of what are the costs? The downside is, perhaps California consumers will pay more for cars. There's a number of different issues, which other people talk about. But there are some significant possible upsides that make this bill a very important part of the international process.

What it basically means is since it . . . [causes] debate, one of the most important effects of [AB 1493 and] the Kyoto treaty has been that we're having this meeting. You're all important. Congratulations. So now we know the world of things we have to do about global warming. We have a bill that says we have to improve technology. We know that global warming exists and that the climate changes. In order to handle that, we have to improve technology in a cost-effective way. Can we do it? No.

Audience: [laughter]

Duleep: Professor Zasloff, thanks for having me here. You have to know that I'm very happy to be here as part of the grand jury. Before we get started on this, one of the things that Professor Carlson didn't say was that if you burn gasoline, you get carbon dioxide, so really carbon dioxide is similar to controlling fuel economy In effect, there's only two ways you can reduce carbon dioxide from an automobile: 1) make [the automobile] more efficient; or 2) burn something else or have less carbon.

We should look at it from a short- /mid-term perspective rather than a long-term perspective. This is sort of as far out as we can go—20 to 30 years—beyond that gets to be pie-in-the-sky type of stuff Essentially, you can make a car more fuel efficient. There's lots of alternative fuels out there: natural gas, and LPG [(a propane-based fuel)] and so on Only ethanol and diesel look like they can sort of have greenhouse gas benefits. And I will focus on cars using those fuels; I will talk about cars and then about fuels. Lastly, there's been a lot of talk about hydrogen. My own theory is that it's not a short-term option. It might be something that happens years from now.

Let me talk about technology for a second. There's good news there: over the next year or two you're going to get a lot from lots of vehicles. In fact, last year there was a bill in the Senate about increasing fuel economy, and I think it was the Senate majority leader who . . . held up a picture of a tiny European car and said you guys will be stuffed into little match boxes like these and have to drive around. But the fact of the matter is that you should look at clinical studies, of which there have been a fair amount done in the last ten years, including one very recently by the National Academy of Sciences. First, all these studies essentially freeze the fleet in terms of what you get in attributes, such as vehicle size, luxury, comfort . . . and [then asks] what can you do. When you do that, it looks easier (and I'll get back to why

they are important), like about a 15 percent increase in fuel economy is pretty cheap. It is not hard to do. It costs a few hundred dollars depending on the size of the vehicle. But then you get up to 30 percent and the [costs] go up to \$500 to \$1,500, again depending on the size of the vehicle. Once you start talking about a 50 percent increase in fuel economy, you are talking about a fairly large [increase to] \$4,000. And those are retail price increases of the average vehicle. That gives you a feel for the typical high class—you know, \$18,000, \$20,000—and should give you in percentage terms what kind of increase we are looking at.

The kicker is that all the effects hold constant size and performance; that's how these calculations are done. I think that there's some bad news here on that front. First, you know all those studies assume that you get all these scale economies and the economies of scope and so on and so they are all being done on a national basis. And you know, if you are doing ten million cars versus doing one million cars, the costs are different because the fixed costs of engineering [are on a] much more limited basis

....

The second aspect of fuel economy is this first fifteen percent that I said was very cheap; market forces are going to make that happen. You have already seen that in the Hondas. If you sort of do a side-by-side comparison of Honda, Toyota, and Nissan, the best classes usually run 15 to 20 percent better than the worst class. So there is that 15 percent on average that you are going to see. It's always been happening out there and we see it—just market forces bringing that about.

But, of course, you're not going to choose it. You know you could get fuel economy. You can take these benefits in an area you want. But all these attributes are outweighed by better acceleration time or more powerful air conditioners or your own private Hummer or H2. There is a saying in the tribe that power corrupts but horsepower corrupts absolutely. Lots of guys like lots of horsepower; I think 15 years ago carmakers did 240 horsepower in my Honda Accord. I understand Ducati or someone is coming out with a car that has 1001 horsepower. It's a two-seater. There's no end to what people want, and this being a car town, I'm sure many of you in the audience are guilty of wanting these, lusting after these wonderful machines. And that is going to happen in all the countries; for example, people in Havana with hardly any wilderness are buying SUVs. All of this is almost

inexplicable from any engineer's point of view, but I'm not a social scientist.

The other part of it that's important is that you have very stringent emission standards for the conventional pollutants, which is going to deter the technology that is used in Europe: diesel. A diesel engine in a car gets you 40 or 50 percent better fuel economy, which is right up there with hybrids, but it will have a tough time meeting California's standard. Also, there is a fair amount of anti-diesel feeling within California, so those two effects are going to detract from the biggest technology in Europe coming into California.

Let me just briefly touch upon the light in technologies. You've heard a little bit about hybrids and I know a lot of you are probably familiar with the Toyota Prius and the Honda Insight and so on. Those are not very expensive ways to get fuel economy. Literally, the cheapest way to get fuel economy is to do a lot of little things that can make your car run more efficiently. Things like a variable valve timing, not having a V8 when you don't need it . . . those kinds of things can actually give you lots of fuel economy benefit which alone gives you 10 to 12 percent. Also, things that require better tires and better transmissions and cutting friction help. They all are fairly inexpensive to do and that constitutes the first 15 or 30 percent. The National Academy of Science went through all these variations about what's cost effective over the vehicle's lifetime, and they figure it is something like a 30 percent improvement. The money that you save in the fuel pays for the increase in first costs. But, of course, people don't compute it that way. Their cars are depreciating as they hold onto them for 15 years, which most people don't do. They trade them in after three or four years. You don't know the resale market value . . . this is very steep . . . people like buying other things, too. It's more fun to go faster than to go further.

Then you get the hybrid technology. This kind of thing is very promising. They do have big gains but they have high costs, too. You've seen the costs coming down . . . a little bit, but there's still some big costs in doing it. Hybrids have to have an electric motor or battery . . . all those with very high cost performance, but then you have to charge the battery before it [loses its charge]. So relative to conventional technologies, I still see this as being a fairly high class technology. So if you're looking at the next 20 years, all this stuff about how much you can do and what you can do is very dependent on what consumers are going to do and how

they are going to buy in 20 years. Will everyone be driving a Hummer?

We talked a little bit about the idea of technology forcing. Any kind of government regulation is going to disrupt the market, and in fact there is a purpose in doing so [Regulations] almost prohibit demand side regulation because [you can't tax or really do anything] reducing the choices available to consumers. All those options are sort of restricted from consideration, so the supply side orientation leads to some inconsistencies. If you make it cheaper it's just a standard economic factor, so if you increase fuel economy and fuel costs stay the same then basically people are going to drive more. It's not a huge amount. The elasticity is approximately 0.1, which means if you make it 10 percent cheaper people drive one percent more. Also, if you make cars more expensive, people hang onto their cars a little longer; you see that in Canada, where cars are more expensive in Canadian dollars You also see all these things on a worldwide basis and that all these things have small negative effects makes them detract from the picture. The big thing, of course, is that any form of standard is going to create winners and losers among other companies. And that, I think, is where the big fight is going to be. Some company is going to win, some [company] is going to lose.

And the market place is brutal out there. You see all these financing offers—zero percent financing, [companies that] give you a thousand dollars to trade [your] car in, and so on. It's a tough market to be fighting in because [the domestic car companies are] losing money hand over fist. And under these conditions, they think that because the outcomes [of regulation] are never completely certain, they [may] hate this stuff [with a] passion A standard that says everybody has to meet the same absolute goal clearly punishes people who are selling Suburbans and Hummers, and so there is almost no way that they can impose a regulation without actually creating some winners and losers in this marketplace. That really is the kind of situation that we're in—the kind of cost problems that make automakers afraid of what will happen to the company. And I think this is a very tough fight; you are going to see a lot of ads on the radio

What would I do? I think the first thing is . . . [to figure out] how much further you can push beyond national programs. And I think that it requires really understanding which technologies

actually have economies of scale. [Raustiala] mentioned that Kyoto is being adopted by Europe and Japan, where they have imposed a lot of fairly stringent fuel economy standards and are developing a lot of technologies. Some of those technologies perhaps can be brought in from Germany or from Japan fairly cheaply here, others not. But I think that analysis really hasn't been done I think that the Kyoto adoption by Japan and Europe is a helpful factor in designing [AB 1493]. In Europe they did a very bizarre kind of regulation: a voluntary agreement by the manufacturers to reduce the emissions. All the car manufacturers got together and said we need 120 grams per kilometer of CO₂ regulation for the year 2008. But somehow they never got around to allocating the standards of who's going to need what I think [this] is [what] the head of Volkswagen said: "Just because Mercedes sells big cars, if you think Volkswagen is going to do more, you are mistaken." I think the fights are going to break out

Big bucks are at stake because [the] auto industry is, as you know, perhaps the world's largest industry, and so these kinds of competitors should dominate the landscape. And I think the Air Resources Board's biggest target, California, is a huge target if you recognize that [a 10 to 40 percent] increase in fuel economy can be done. How do you set the standard [so the] competitive effects don't kill you? With that I will just leave it. Thank you.

Zasloff: Well, whenever we have a conference that is pitched as part of an environmental law center, we usually get a lot of people in the audience who see themselves as environmentalists. For those of you out there, this may be something you already know, or maybe it is somewhat of a warning shot across your bow; we will see when we get to question and answer. First, two final people. [Mr. Browning], why don't we move to you and talk about the fuel side: what can possibly be done, apart [from the] vehicle technology side.

Browning: I think I have probably a more optimistic view than my friend as a third generation Californian. Anyway, I am going to talk a little about alternative fuels and advanced technologies and how they fit into greenhouse gases. Basically, alternative fuels and advanced vehicle technologies can substantially reduce greenhouse gas emissions. Now, since we are talking about alternative fuels, things like natural gas, when you start talking about hydrogen and some of these fuels, they all are in different forms. To compare them, we want to compare them on what we call the

miles per equivalent gasoline gallon (MPEG), which is basically an energy basis. This gives you a fairer, better way to compare fuel economies.

Also, when you compare alternative fuels to conventional fuels, you need to look at what we call a full fuel cycle basis. [To understand a fuel,] you have to really look back and say how did that fuel occur; for example, in the same way you have to look at how is gasoline as a fuel, you also have to ask how that gasoline came about. [The question is] not only that you are burning [fuel], but also how did it come [into being]? So really when we get into this fuel cycle here, which includes things like feed stock extraction, [we have to look at]: pumping oil out of the ground; transporting crude oil to the refinery; refining; storing the gasoline or whatever the fuel is; transporting that fuel to a vault storage terminal and then transporting that fuel by truck to, say, a local refueling station; and, finally, refueling your vehicle and burning it into the [atmosphere].

So these are basically the pathways of fuel, essentially the feed stock or the basic building blocks of fuel. Petroleum and crude oil goes into things like diesel and reformulated gasoline, or LPG. North American natural gas goes into the [production of] natural gas, as well as propane and hydrogen [which are] used to generate electricity, remove and flare natural gas into methanol, synthesize diesel [gasoline into] diesel as liquefied natural gas

....

Then we look at the fuels and vehicle technologies. California reformulated gasoline is burned in car engines, hybrid electric vehicles, gasoline hybrid electric vehicles, fuel cells in diesel, synthetic diesel in diesel engines, and diesel hybrid electric vehicles There is also hydrogen used for fuel cells, electricity for electric vehicles, and sort of a variation of hybrid electric vehicles called "grid-connected" or "plugged-in" hybrids. These are basically hybrids with larger battery. You plug them in overnight and you can run some as an electric vehicle; when you run out of juice you run them as a hybrid electric vehicle So you get a little bit of both, sort of like the ethanol vehicles running on ethanol or gasoline. This you can run on electricity or gasoline.

Okay, here is a comparison of fuel economies for various technologies. Basically this comparison happens to be for subcompact vehicles. Its ratios as such would be the same for larger vehicles, yet for SUVs the fuel economy range would be about half. In other words, if fuel economy is 30 miles per gallon

[(mpg)] for your typical gasoline car, SUVs would get 15 mpg; conversely, diesels would get around 40 [mpg]. Connected hybrids are almost up to 60 [mpg]; hybrid electric vehicle and gasoline is a little over 40 [mpg]. These three are fuel cells, different types of fuel cells. Gasoline and NAFTA require a reformer, which is an autothermal proton exchange membrane fuel cell, and gets up around 40 some odd miles per gallon. Methanol and steam reformed fuel cells get around 45 to 50 [mpg]; hydrogen is up in the 50 [mpg] range

Okay, here is one of the answers based on this full fuel cycle looking at near term technologies. Each originates by extraction and transport (i.e. getting the fuel out of the ground and getting it to the refinery). Production is the refining [and] marketing, namely . . . getting the fuel from the refinery to the gas station. Finally, there is actual consumption of the fuel by the vehicle. [Currently, we typically use] California's Reformulated Gas 2 [(RFG 2)]. RFG 2 is typical gasoline with MTBE [(methyl tertiary-butyl ether)]. RFG 3, the next generation gasoline, which has been delayed slightly, will use ethanol in it instead of MTBE. Typical vehicles [produce] around 330 grams of CO₂ (or greenhouse gas) per mile. Typically, CO₂ is about 98 percent of the greenhouse gas emissions from the vehicle. Thus, hybrid electric vehicles offer about 30 percent reduction in greenhouse gas emission, as do diesel and natural gas vehicles. LPG offers a [slightly larger reduction]. [The CO₂ reduction for hybrid] connected is about a 40 percent.

Longer-term technologies look at fuel cells, more specifically running different fuels in fuel cells. Let's assume 2010; whether these fuel cells will actually be available in 2010 is a question, but it gives us a frame of reference. Using gasoline as a fuel cell achieves about a 30 percent reduction in greenhouse gases, methanol and landfill gas Hydrogen fuel cells from natural gas, that is hydrogen produced from natural gas and [water], gives you almost a 90% reduction. The hydrogen is created by electrolysis, taking something like water and using electricity to split the hydrogen from the oxygen in a water molecule. It produces hydrogen, but also creates a fair amount of greenhouse gases to produce the amount of energy needed. Recall that you have a fair amount of CO₂ from the production of electricity. Now, if we take renewables into account, while something like landfill gas is wasted, it will basically end up as CO₂ anyway. If you can convert that into a fuel and burn it, then you are essentially elim-

inating that CO₂; it is almost free CO₂ in a sense. Overall, you get again about a 90 percent reduction in CO₂ emissions if you can use renewables in fuel cells to create methanol.

In conclusion, the carbon dioxide emissions are the full fuel cycle basis, which are basically affected by the feed stock mix: what the components of making the fuel are, the carbon content of the fuel, and the vehicle fuel economy. Mid-term technology, such as gasoline hybrid electric vehicles and diesel vehicles . . . [raises] caveats of having these vehicles in California. Right now, it is pretty hard for any diesel vehicle to meet the gasoline emissions standards, although there are some things happening to make diesel vehicles a lot cleaner. Diesel gives you about a 30 percent reduction in CO₂. [With] mid-term technologies, such as [gasoline electric] hybrid vehicles, you get about a 40 percent reduction. In the long-term technologies, such as fuel cells operating on hydrogen, if you make hydrogen from natural gas you get about 90 percent reduction. CO₂ from electric vehicles on a full fuel cycle basis, with fuel cells operating on hydrogen derived from electrolysis and on methanol, range from around 30 percent reductions. Again, if you take the renewables into account—your biomass and landfill created methanol gas—fuel cells are about on par with the hydrogen fuel cell, namely about a 90 percent reduction. The nice thing about methanol versus hydrogen is that methanol is a liquid fuel. It is a lot easier to store in a vehicle than hydrogen.

As you can see, there are some real issues There are near-, mid- and long-term technologies that can significantly reduce greenhouse gas emissions. Thanks.

Zasloff: Last and certainly not least before we open it up for the questions, I would like to turn it over to [Mazurek]. We know that we are supposed to have a good set of strong domestic institutions to be able to put all this in place. California might not want to go alone too much because it will have to drag or go against the rest of the country. The question is what is the possibility that the rest of the country will come along with us so that AB 1493 might have some national scope. What's going on in Washington, anyway?

Mazurek: Well, not much from the White House I would like to provide a little bit of context for some of the tensions we see in terms of how this is playing out in Washington, and what is going on at the federal level. Up until the 1960s, states and local-

ities passed their own environmental laws to control pollution. As a result of a couple of different tensions, most notably smoke stack chasing and industries complaining about an uneven playing field, Congress in the 1960s and 1970s moved to create our federal system of environmental law. I am going to talk about some federal efforts to stop the [movement] in Congress to address this issue, and why it is so important that whatever occurs at the state level ultimately be able to attract other states in order to address the problem of CO₂ in an effective and efficient way.

Before turning to that, though, I just want to talk briefly about emission sources. I know you got a lot of data thrown at you here in the last few minutes, but I'd like to offer just a few more details. At the level of national transportation, the rule of thumb is usually a third [of CO₂ emissions come from] commercial and industrial sources together. These estimates include the electricity it takes to run plants and keep office buildings lit; if you go one step further back, this is usually coal, which is just carbon in another form. And most efforts at the federal level are focused on how to control emissions on electric generators and switch them from burning coal into other cleaner sources, such as renewables and natural gas. Everybody sort of wants to punt on transportation because it is a very formidable question, both politically as well as administratively. What we refer to in economics as transaction costs very quickly start to outweigh any [savings] that you might have from, for example, emissions trading to reduce carbon dioxide and other greenhouse gases.

So what has been going on in Washington? We know what happened with Kyoto, but what is less well understood is that [during his campaign], then-candidate Bush pledged to implement mandatory carbon dioxide caps from electric generators. In 2001, [there was] pressure from part of the coal industry that had some significant as well as insignificant concerns about displacing miners in West Virginia and so forth. The President retreated from his campaign pledge and put [former] EPA administrator Christine Todd Whitman in a very, very embarrassing situation. Nonetheless, when Senator [Jim] Jeffords flipped parties, that gave the Senate the opportunity to make right on the President's campaign pledge In 2001, Senator Jeffords, along with a number of his colleagues, introduced the Clean Power Act as SB 556. It contains provisions both to reduce some conventional pollutants from electric utilities (not referring to transportation, households, businesses, or industries, but simply

electric generators) and it would be modeled on the very successful (on some accounts) acid rain trading program created by former President Bush under Title 4 of the 1990 Clean Air Act. Now, the Jefford's bill, which was quite hot up until May [2002], takes a very dramatic approach to reducing carbon dioxide emissions, [but] it doesn't cover any of the other gas emissions. What it can do, though, is basically get us back to 1990 levels, which is kind of a benchmark, very quickly—by 2007. Is it practical [and] cost effective? I think most economists think it would cause some pretty significant economic disruptions if we were to do that.

Nonetheless, it is a very important gesture that got the debate going and reignited discussions in the Senate about what to do about carbon dioxide emissions, at least from the electric utility sector. Now the Bush administration earlier [in 2002] responded to criticism of his campaign pledge withdrawal to [cap CO₂ emissions from electric generators] by seeking to establish the Clear Skies Program, which would cap things that cause acid rain and ground level problems. Earlier this year, the Bush administration released the Clear Skies bill, which would get electric generators to start reducing emissions that lead to smog and acid rain. At the same time, the administration adopted a voluntary program to reduce greenhouse gases I don't care too much for voluntary [programs]. I am trying to evaluate them, but you get into benchmark and baseline issues very quickly, and [questions about] what would industry adopt for that voluntary program. What the administration wants to do is a very curious proposal: in order not to cause very serious disruptions to the economy by reducing greenhouse gases across the board, they have [proposed regulating] greenhouse gases per million dollars in the gross domestic product [(GDP)]. Using that [intensity] measure, greenhouse gas is supposed to decline by 18 percent over the next 10 years, which is consistent with the levels that [former President George] Bush agreed to at the predecessor to the Kyoto Conference, called Rio. Curiously, by most accounts, adjusting emissions for GDP will actually lead to about a 14 percent increase in emissions by 2012. This is one of the reasons that voluntary programs, while they have a number of ancillary benefits—for example, helping us to document issues or record them and start thinking about how to get our institutions properly aligned—they don't provide certainty into the regulated entities. Obviously, we can't allow emissions to do this.

In response to this and declining support for Jefford's bill, some senators from the center of the aisles on the Democratic side and the Republican side, in the spirit of [bipartisanship have taken action]. Senator Gordon Smith introduced, and in deference to Senator Jeffords, very quickly withdrew [in May 2002], an amendment to reduce aggregate CO₂ emissions at a fairly reasonable rate: to about 2.6 billion tons by 2008, which would bring us back down to 2000 levels, and about 2 billion tons by 2012, which gets us back down to 1990 [levels]. The reason for [this multi-step approach] is obviously to avoid severe economic disruption. These numbers would cause the cost of electricity to go up by about one cent for a while, which I think most companies [would find difficult. However,] they would prefer this over the regulatory scheme that the EPA is contemplating, which is to just impose end of pipe controls. Those would be much more costly to these companies down the road.

Now that is only the carbon side. What has happened is that we are addressing carbon dioxide issues in electric utilities, but what about the fuel side? We heard mentioned earlier some of the developments that have happened in Washington [in late 2002]. [In late 2002,] the House and Senate conferees agreed to require light trucks in 2006 - 2012 model years to use 5 billion gallons less gas than the 2002 model year For those of us who were hoping to see tighter fuel economy standards, that was a very disappointing development. In addition, some members had tried to compel the regulatory agency that has been delegated the task of developing tighter standards to move very quickly—in six months or less—to develop tighter fuel standards since these standards go to the National Institute of Transportation standards

So that being said, what role does AB 1493 play in the context of the developments in Washington? I think it turns on a couple of points. One is the degree to which courts will use CO₂ as an emissions problem rather than a problem pertaining to fuel; there are a number of similar interpretation issues like this. EPA interprets the Clean Air Act to give it authority not to regulate carbon dioxide but to study it, to analyze it, and to value the costs and benefits of producing carbon. That is how we got through that last Congress—we were trying to implement Kyoto through the back door. In terms of the science, I have heard the arguments that [California may] just constitute a blip, but if other states adopt California's method as an emissions-based approach,

it can become a de facto standard and result in some very significant reductions.

It also is a promising interim solution I think in terms of how sites implement this program at the Progressive Policy Institute [(PPI)]. [PPI] wants to advocate what we call a second-generation approach. We see that emissions trading has been tested and proven in some context. It asks [for reductions] much more cheaply than a conventional regulatory approach would. I know that a number of my environmentalist colleagues have trouble with the emissions trading programs due to what we refer to as hotspots and some of the human health environmental impacts that can ensue However, [PPI] likes emissions trading. Due to transaction cost issues, we are very afraid of regulating the sector on every single driver. Finally, [with] all federal actions far off, we hope that we can reconcile whatever does finally happen in California with a national cap and trace system for CO₂.

I just want to say in closing that [PPI] could work very closely with Senators [Joe] Lieberman and [Tom] Carper on a bipartisan effort to limit carbon dioxide emissions and greenhouse gas emissions, though, unfortunately, the approach we take is very different from the California model. We would trade emissions among industry in electric generators, the emission's source. But for carbon dioxide, we use what is called an upstream model: we go all the way up to the top of the economy and impose the trading system on the fuel producers. There are a lot fewer of them, they are easier to target, and they can raise the price of fuel [as necessary]. In terms of my economics training, I think that ultimately higher fuel prices are worth it to give consumers the signals that make different consumption and driving tools.

Lastly, I know a number of critics that have called [AB 1493] symbolic, but I think it is very important to elevate public awareness and link the fact that [emissions] not only create smog that causes asthma and lung cancer, for example, but also they drain an enormous amount of resources protecting various oil interests. Moreover, the fact that driving your car can actually lead to global warming is something that not all drivers in this country are familiar with; before long, hopefully they will be.

Zasloff: Thanks. Well, if driving creates global warming, I suppose everybody has to stay here for the next few days, but in the meantime I have a whole lot of other questions and other ways to follow things up. But given where we are in terms of the hour, we got a late start and there has been so much data, I want to

know what the audience has to say about this; what are the questions here for the panel on all of this?

It is good to have Terry Tamminen here, [Executive Director of] Environment Now ready to jump in the fray. [Mr. Tamminen].

Tamminen: What a great panel. Thank you very much. Terrific thoughts and statistics—you made it all very palatable. Thank you for coming and presenting this array of information and challenges in many ways. Let me cut to the chase on one of the issues that cuts across what many of you have said We talk about hydrogen fuel cell vehicles, and some of the cost benefit analysis of that, as well as the practicality, which is in part based on technology and current market forces. Why could the states not adopt a model—maybe even through 1493—where, for example, revenue bonds were floated to upgrade the infrastructure of our gas stations in the state of California to include hydrogen as a fuel in as little as a third of the stations. Just like if you drive a diesel car and can't get fuel at every station, you know that if you can get it at roughly a third that is where market acceptance is. We have heard that from Rocky Mountain Institute and other estimates that could [cost] as little as 4.5 billion dollars, and a revenue bond obviously would cost the tax payer nothing today but would be paid back by the sale of hydrogen later on. So let us assume that if that were done, the car companies would have a signal that by, say, 2009, or perhaps even sooner, the fueling infrastructure would be available to the average consumer. They could start rolling these vehicles off the assembly line sooner. Our research is much more optimistic than the car companies in terms of the readiness of this technology, especially if the forces I am discussing were in place. So I am wondering if any of the panelists, see that as a viable and somewhat more aggressive approach to AB 1493 solution?

Browning: First of all, I think your estimates are a little off. I think really you are looking at least at a million dollars a station to include hydrogen. Second of all, there are a number of [safety] issues in my mind in storing hydrogen on a vehicle. There are basically three ways of storing hydrogen on a vehicle. First, it can be stored as hydrogen 1: compressed hydrogen requiring almost 5000 pounds per square inch [(psi)], though some people have talked about 10,000 psi. That is quite a high pressure. Typical compressed natural gas is about 3000 psi. So you have basically a large compressed cylinder on your car that

presents some safety issues; some safety issues, but that doesn't mean that everything is going to be like the Hindenburg. There are ways around it, but currently there are all sorts of restrictions, such as hydrogen trucks prohibited from tunnels. Second, liquefied hydrogen can be used. Basically, you store it as a cryogenic liquid at negative 260 - 270 degrees Fahrenheit. The problem is that if you leave your vehicle and don't drive it for a few days, it starts to vent, so you have to be very careful about where you store your vehicle. If you put it in a garage and it vents, you have a potential fire hazard, particularly if most of us have our water heater in the garage. The third way is metal hydrides. Basically, they are metal alloys that you heat to take the hydrogen; it stores the hydrogen, and then you have to actually heat it to get it off. That is the safest way, but the problem is that they are very heavy and right now the technology is not there. The weight outweighs the benefits of storing that way.

Overall, you still have some real problems. That is not to say that in the next 10 years they can't be solved. Right now, though, looking at hydrogen technologies since the 70s, it hasn't changed much. These things haven't changed yet, so there is still an issue in my mind in storing hydrogen. Until that is solved, I don't think you are really going to see mass use of hydrogen in the U.S.

Zasloff: [Dr. Lempert], did you want to jump in here?

Lempert: Yes. I am not going to comment on the specific numbers. The dynamic here is what you always see: there are dozens of technologies and everyone has proposed very optimistic numbers, and then there are all these pessimistic people that always say that you can't. Most of the time, the pessimists are right, and every now and then the optimists are correct. But I applaud the spirit of your comment. The most important thing I think [AB 1493] can do is to set up reasonable incentives for automakers and fuel suppliers to take risks to try to push new technologies in the hopes that the ones they are pushing will actually prove to be much better than the pessimists say. This creates some small market for the new technologies, and if they do come forward then in ten years we will be much better placed as a nation and as a world to go forward.

Zasloff: What would be an example of a couple of those kinds of reasonable incentives to push technology?

Lempert: Well, the [limits on] emissions, which pushed battery technology, did cause many of the car companies to think about

the different sorts of power trains and generated experiments in hybrid vehicles. It is interesting that examples of things that make people laugh and sort of shape the market today didn't exist ten years ago. One of them was hybrids; on the other side were SUVs—Hummers and things like that. There is actually a very different fleet out there today than we had ten years ago. On the hybrid end, part of that difference is due to automakers. So there are ways where, and I don't know if this is consistent with current legislation, government can encourage firms to take [risks]. That is a part of regulation that changes the market.

Carlson: As I said in my introductory remarks, California every year has gotten a waiver from federal emissions standards to establish its own emissions standards. One of the things California has done that differs from other states is to force auto manufacturers to develop a certain percentage of zero emission vehicles. There have been a lot of problems with that program, but there have also been a lot of advances. The California Air Resources Board has responded to that problem in part by changing the mix of what can meet the zero emissions vehicle [(ZEV)] requirements. One of its regulatory choices has been struck down by a federal district court on grounds that an entirely different federal statute—the one that controls fuel economy standards—preempts California from engaging in anything that relates to fuel efficiency. So if they are regulating emissions in a way that relates to fuel efficiency—according to this court—that is preempted by federal law. One of the regulations in the ZEV regulatory scheme briefly discusses fuel efficiency, which is the issue that the court struck down. This decision by federal district court judge is now being appealed.

Why do I tell you all this? It has bearing on California's regulatory alternatives under AB 1493. California has to be careful not to directly regulate fuel economy, even though direct regulation of fuel economy would dramatically reduce carbon dioxide emissions. So California has to take different regulatory approaches, since one potential legal challenge to anything that CARB does is federal preemption by federal statutes regulating fuel economy standards. But there is another question. California historically has been allowed to regulate emissions that are related to air pollution; however, there is a question under the Clean Air Act about whether California will receive a waiver for trying to regulate greenhouse gas emissions. That may be a different question, and auto manufacturers are going to argue first

that EPA should not grant California the waiver—that California doesn't have the legal authority to do it. Secondly, even if the waiver is granted, [the manufacturers will argue,] "Look, the Clean Air Act is about regulating air pollution emissions, not greenhouse gas emissions."

So it is a question about where the battle is even going to be fought. There is an administrative battle that can be fought at the EPA level, arguing that California should not be granted a waiver in the first place, but there still is an interesting legal question about whether California can regulate greenhouse gas emissions. I'm not going to offer my predictions about how it will come out, but a court that is hostile to California's efforts has the room to play there. A court that is sympathetic to California's interest I think also has room to play, so it's a tough question.

Zasloff: Roy Cohn, the famous litigator, said "I don't want to know what the law is, I want to know who the judge is." Here is J.R. DeShazo, a professor in the UCLA School of Public Policy and Social Research.

DeShazo: I don't think we can teach the bill enough. We have taken it as a given. I am an economist: when I look at something, I first ask what are the incentives in the legislation to change people's behavior. We have talked about the supply side: we have done exactly what the legislature would like us to do: to not touch consumers, not change prices, taxes or fees that would change [consumers'] choices when it comes to how much [they] drive or what kinds of cars to buy. I think one important thing to realize right up front is if we really care about this issue, we need to look forward to create statutes in the future that actually focus on consumer choices because [AB 1493] doesn't. If you look at it, it does say cost effectiveness, and anyone who knows anything about analysis knows that you can't apply a cost effectiveness standard without a target. Moreover, one of the most cost-effective strategies you can use in economic perspective didn't happen. So the bill is flawed in terms of its design and in terms of achieving any meaningful target. What it is going to do, though, is give everyone a dry run. We are going to see how the American Petroleum Institute responds through the strategies that they employ. And it is going to begin to muscle up some of the domestic institutions that are ultimately going to have to pay for this. But I think one of the important things is for state and federal legislatures to try to identify statutory designs and taxes that

will be meaningful in the long-term. I don't know if you guys have any thought on improvements on these At this particular level, but I don't think we have done enough to talk about that. We have just taken it as given.

Mazurek: [You may] recall that the Clinton administration tried to do this early on. A number of economists in Washington argued that the way we control carbons is by employing a carbon tax, but no one in Congress wants to touch that with a ten-foot pole. They don't want to do it, which is why you are getting these systems that Senators Lieberman and Jeffords are all proposing. They focus upstream where the targets are easy to get—industrial sources, electric generators, industries—and away from cars. Now Senator Lieberman and I are actually trying to do that with his upstream-downstream hybrid system. We try to sneak in kind of a fuel tax upstream to the fuel producers, which they can pass along in the price [to consumers]. That is one of the concerns in Washington with this approach – passing on this transaction cost.

Zasloff: Do any of you want to jump in?

Duleep: Yes, just a comment on the tax issue. Canada has been trying another approach for a long time. Whatever the reason, they have not been successful. Canadians pay \$2.00 a gallon or more for fuel, [even though] the Canadian fuel economy is almost identical to the U.S. Thus, they think that at these levels the elasticity with respect to taxes is very low. In other words, fuel taxes aren't going to buy you [fuel economy]. But Canada is almost a perfect experiment. It is almost like you couldn't ask for a better experiment: been there done that. What about Europe? It's a different story: there are a lot of other factors in Europe. Population densities are ten times as high as the U.S. and cities are desperate.

I would like to add one more thing. To be fair in California, there are some constraints on what California can do. Some of them are simply that it is a state and has to worry about what it is doing vis a vis other states. It can't take away fuel economy; and, as was mentioned earlier, it may be [in an indirect] way trying to regulate where federal law [has jurisdiction].

Zasloff: Thank you all for you thoughts in laying the groundwork for this national dialogue.

Statute and Legislative History, Reprinted:
2001 CA A.B. 1493

CALIFORNIA 2001-02 REGULAR SESSION

CHAPTER 200

FILED WITH SECRETARY OF STATE JULY 22, 2002

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PASSED THE ASSEMBLY JULY 1, 2002

PASSED THE SENATE JUNE 29, 2002

AMENDED IN SENATE JUNE 28, 2002

AMENDED IN ASSEMBLY MAY 3, 2001

INTRODUCED BY ASSEMBLY MEMBER PAVLEY

(PRINCIPAL COAUTHOR: ASSEMBLY MEMBER
SIMITIAN)

(COAUTHORS: ASSEMBLY MEMBERS ARONER, CHU,
COHN, DIAZ, FIREBAUGH, FROMMER,
JACKSON, KEELEY, KEHOE, KORETZ, LONGVILLE,
NATION, SHELLEY, AND STROM-MARTIN)

(COAUTHORS: SENATORS BOWEN, ESCUTIA, KUEHL,
PERATA, AND ROMERO)

FEBRUARY 23, 2001

2001 Bill Text CA A.B. 1493

VERSION: Chaptered

VERSION-DATE: July 22, 2002

SYNOPSIS: An act to amend Section 42823 of, and to add Section 43018.5 to, the Health and Safety Code, relating to air quality.

DIGEST:

LEGISLATIVE COUNSEL'S DIGEST

AB 1493, Pavley. Vehicular emissions: greenhouse gases.

(1) Existing law establishes the California Climate Action Registry, and requires the registry to perform various functions relating to the provision of technical assistance for emissions reductions, including maintaining a record of certified greenhouse gas emission baselines and emission results. Existing law requires these records to be available to the public, except for any portion deemed confidential by a participant in the registry. Existing law, the California Public Records Act, provides that all public records, as defined, are open to inspection at all times during the office hours of a state or local agency and any person has

a right to inspect any public record, except as specifically provided in the act.

This bill would revise the exception applicable to records maintained by the registry to make those records available to the public, except that portion of the data or information exempt from disclosure pursuant to the act. The bill would require the registry, in consultation with the State Air Resources Board, to adopt procedures and protocols for the reporting and certification of reductions in greenhouse gas emissions from mobile sources for use by the state board in granting the emission reduction credits.

(2) Existing law requires the state board to endeavor to achieve the maximum degree of emission reductions possible from vehicular and other mobile sources in order to accomplish the attainment of the state standards at the earliest practicable date.

This bill would require the state board to develop and adopt, by January 1, 2005, regulations that achieve the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and any other vehicles determined by the state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill would prohibit those regulations from taking effect prior to January 1, 2006, in order to give the Legislature time to review the regulations and determine whether further legislation should be enacted prior to the effective date of the regulations. Under the bill, the regulations would apply only to a motor vehicle manufactured in the 2009 model year, or any model year thereafter.

The bill would require the regulations to provide flexibility, to the maximum extent feasible, in the means by which a person may comply with those regulations, including, but not limited to, authorization for a person to use alternative methods of compliance with the regulations. The bill would prohibit the state board from imposing a mandatory trip reduction measure or land use restriction in providing that compliance flexibility. The bill would prohibit the state board, in adopting the regulations, from requiring the imposition of additional fees and taxes on any motor vehicle, fuel, or vehicle miles traveled; a ban on the sale of any vehicle category, a reduction in vehicle weight; a limitation on, or reduction of, the speed limit on any street or highway in the state; or a limitation on, or reduction of, vehicle miles traveled. The bill would declare that the provisions of the bill prohibiting the state board from imposing additional fees or taxes on any

motor vehicle, fuel, or vehicle miles traveled, or to limit or reduce the speed limit on any street or highway in the state to be declaratory of existing law. The bill would require the state board to ensure that any alternative methods of compliance achieve equivalent or greater reductions in emissions of greenhouse gases as the regulations. The bill would also require the state board to conduct public workshops regarding the regulations in specified communities with the most significant exposure to air contaminants. The bill would also require the state board to grant emission reduction credits for reductions of greenhouse gas emissions achieved prior to the operative date of the regulations, utilizing the 2000 model year as the baseline for calculating those reductions. The bill would require the state board to include an exemption in those regulations for vehicles subject to specified exhaust emission standards. The bill would authorize the state board to elect not to adopt a standard for a greenhouse gas, if the state board determines that the federal government has adopted a standard regulating that greenhouse gas, and the state board makes specified findings related to the similarity of the federal standard.

The bill would also require the state board, by January 1, 2005, to provide a report to the Legislature on the contents of those regulations.

TEXT: THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. The Legislature hereby finds and declares all of the following:

- (a) Global warming is a matter of increasing concern for public health and the environment in the state.
- (b) California is the fifth largest economy in the world.
- (c) The control and reduction of emissions of greenhouse gases are critical to slow the effects of global warming.
- (d) Global warming would impose on California, in particular, compelling and extraordinary impacts including:
 - (1) Potential reductions in the state's water supply due to changes in the snowpack levels in the Sierra Nevada Mountains and the timing of spring runoff.
 - (2) Adverse health impacts from increases in air pollution that would be caused by higher temperatures.

(3) Adverse impacts upon agriculture and food production caused by projected changes in the amount and consistency of water supplies and significant increases in pestilence outbreaks.

(4) Projected doubling of catastrophic wildfires due to faster and more intense burning associated with drying vegetation.

(5) Potential damage to the state's extensive coastline and ocean ecosystems due to the increase in storms and significant rise in sea level.

(6) Significant impacts to consumers, businesses, and the economy of the state due to increased costs of food and water, energy, insurance, and additional environmental losses and demands upon the public health infrastructure.

(e) Passenger vehicles and light-duty trucks are responsible for approximately 40 percent of the total greenhouse gas pollution in the state.

(f) California has a long history of being the first in the nation to take action to protect public health and the environment, and the federal government has permitted the state to take those actions.

(g) Technological solutions to reduce greenhouse gas emissions will stimulate the California economy and provide enhanced job opportunities. This will continue the California automobile worker tradition of building cars that use cutting edge technology.

(h) It is the intent of the Legislature to require the State Air Resources Board to adopt regulations that ensure reductions in emissions of greenhouse gases in furtherance of Division 26 (commencing with Section 39000) of the Health and Safety Code. It is the further intent of the Legislature that the greenhouse gas regulations take effect in accordance with any limitations that may be imposed pursuant to the federal Clean Air Act (42 U.S.C. Section 7401 et seq., as amended by the federal Clean Air Act Amendments of 1990 (Pub. L. 101-549)) and the waiver provisions of the federal act.

SEC. 2. Section 42823 of the Health and Safety Code is amended to read:

42823. The registry shall perform all of the following functions:

(a) Provide participants with referrals to approved providers for technical assistance and advice, upon the request of a participant, on any or all of the following:

- (1) Designing programs to establish greenhouse gas emissions baselines and to monitor, estimate, calculate, report, and certify greenhouse gas emissions.
- (2) Establishing emissions reduction goals based on international or federal best practices for specific industries and economic sectors.
- (3) Designing and implementing organization-specific plans that improve energy efficiency or utilize renewable energy, or both, and that are capable of achieving emission reduction targets.
 - (b) In coordination with the State Energy Resources Conservation and Development Commission, the registry shall adopt and periodically update a list of organizations recognized by the state as qualified to provide the detailed technical assistance and advice in subdivision (a) and assist participants in identifying and selecting providers that have expertise applicable to each participant's circumstances.
 - (c) Adopt procedures and protocols for certification of reported baseline emissions and emissions results. When adopting procedures and protocols for the certification, the registry shall consider the availability and suitability of simplified techniques and tools.
 - (d) Qualify third-party organizations that have the capability to certify reported baseline emissions and emissions results, and that are capable of certifying the participant-reported results as provided in this chapter.
 - (e) Adopt procedures and protocols, including a uniform format for reporting emissions baselines and emissions results to facilitate their recognition in any future regulatory regime.
 - (f) Maintain a record of all certified greenhouse gas emissions baselines and emissions results. Separate records shall be kept for direct and indirect emissions results. The public shall have access to this record, except for any portion of the data or information that is exempt from disclosure pursuant to the California Public Records Act (Chapter 3.5 (commencing with Section 6250) of Division 7 of Title 1 of the Government Code).
 - (g) Encourage organizations from various sectors of the state's economy, and those from various geographic regions of the state, to report emissions, establish baselines and reduction targets, and implement efficiency improvement and renewable energy programs to achieve those targets.

- (h) Recognize, publicize, and promote participants.
- (i) In coordination with the State Energy Resources Conservation and Development Commission and the state board, adopt industry-specific reporting metrics at one or more public meetings.
- (j) In consultation with the state board, adopt procedures and protocols for the reporting and certification of reductions in emissions of greenhouse gases, to the extent permitted by state and federal law, for those reductions achieved prior to the operative date of the regulations described in subdivision (a) of Section 43018.5.

SEC. 3. Section 43018.5 is added to the Health and Safety Code, to read:

43018.5. (a) No later than January 1, 2005, the state board shall develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of greenhouse gas emissions from motor vehicles.

(b) (1) The regulations adopted pursuant to subdivision (a) may not take effect prior to January 1, 2006, in order to give the Legislature time to review the regulations and determine whether further legislation should be enacted prior to the effective date of the regulations, and shall apply only to a motor vehicle manufactured in the 2009 model year, or any model year thereafter.

(2) (A) Within 10 days of adopting the regulations pursuant to subdivision (a), the state board shall transmit the regulations to the appropriate policy and fiscal committees of the Legislature for review.

(B) The Legislature shall hold at least one public hearing to review the regulations. If the Legislature determines that the regulations should be modified, it may adopt legislation to modify the regulations.

(c) In developing the regulations described in subdivision (a), the state board shall do all of the following:

- (1) Consider the technological feasibility of the regulations.
- (2) Consider the impact the regulations may have on the economy of the state, including, but not limited to, all of the following areas:
 - (A) The creation of jobs within the state.

(B) The creation of new businesses or the elimination of existing businesses within the state.

(C) The expansion of businesses currently doing business within the state.

(D) The ability of businesses in the state to compete with businesses in other states.

(E) The ability of the state to maintain and attract businesses in communities with the most significant exposure to air contaminants, localized air contaminants, or both, including, but not limited to, communities with minority populations or low-income populations, or both.

(F) The automobile workers and affiliated businesses in the state.

(3) Provide flexibility, to the maximum extent feasible consistent with this section, in the means by which a person subject to the regulations adopted pursuant to subdivision (a) may comply with the regulations. That flexibility shall include, but is not limited to, authorization for a person to use alternative methods of compliance with the regulations. In complying with this paragraph, the state board shall ensure that any alternative methods for compliance achieve the equivalent, or greater, reduction in emissions of greenhouse gases as the emission standards contained in the regulations. In providing compliance flexibility pursuant to this paragraph, the state board may not impose any mandatory trip reduction measure or land use restriction.

(4) Conduct public workshops in the state, including, but not limited to, public workshops in three of the communities in the state with the most significant exposure to air contaminants or localized air contaminants, or both, including, but not limited to, communities with minority populations or low-income populations, or both.

(5) (A) Grant emissions reductions credits for any reductions in greenhouse gas emissions from motor vehicles that were achieved prior to the operative date of the regulations adopted pursuant to subdivision (a), to the extent permitted by state and federal law governing emissions reductions credits, by utilizing the procedures and protocols adopted by the California Climate Action Registry pursuant to subdivision (j) of Section 42823.

(B) For the purposes of this section, the state board shall utilize the 2000 model year as the baseline for calculating emission reduction credits.

(6) Coordinate with the State Energy Resources Conservation and Development Commission, the California Climate Action Registry, and the interagency task force, convened pursuant to subdivision (e) of Section 25730 of the Public Resources Code, in implementing this section.

(d) The regulations adopted by the state board pursuant to subdivision (a) shall not require any of the following:

(1) The imposition of additional fees and taxes on any motor vehicle, fuel, or vehicle miles traveled, pursuant to this section or any other provision of law.

(2) A ban on the sale of any vehicle category in the state, specifically including, but not limited to, sport utility vehicles and light-duty trucks.

(3) A reduction in vehicle weight.

(4) A limitation on, or reduction of, the speed limit on any street or highway in the state.

(5) A limitation on, or reduction of, vehicle miles traveled.

(e) The regulations adopted by the state board pursuant to subdivision (a) shall provide an exemption for those vehicles subject to the optional low-emission vehicle standard for oxides of nitrogen (NO_x) for exhaust emission standards described in paragraph (9) of subdivision (a) of Section 1961 of Title 13 of the California Code of Regulations.

(f) Not later than July 1, 2003, the California Climate Action Registry, in consultation with the state board, shall adopt procedures for the reporting of reductions in greenhouse gas emissions from mobile sources to the registry.

(g) By January 1, 2005, the state board shall report to the Legislature and the Governor on the content of the regulations developed and adopted pursuant to this section, including, but not limited to, the specific actions taken by the state board to comply with paragraphs (1) to (6), inclusive, of subdivision (c), and with subdivision (f). The report shall include, but shall not be limited to, an analysis of both of the following:

(1) The impact of the regulations on communities in the state with the most significant exposure to air contaminants or toxic air contaminants, or both, including, but not limited to, communities with minority populations or low-income populations, or both.

(2) The economic and public health impacts of those actions on the state.

(h) If the federal government adopts a standard regulating a greenhouse gas from new motor vehicles that the state board determines is in a substantially similar timeframe, and of equivalent or greater effectiveness as the regulations that would be adopted pursuant to this section, the state board may elect not to adopt a standard on any greenhouse gas included in the federal standard.

(i) For the purposes of this section, the following terms have the following meanings:

(1) "Greenhouse gases" means those gases listed in subdivision (g) of Section 42801.1.

(2) "Maximum feasible and cost-effective reduction of greenhouse gas emissions" means the greenhouse gas emission reductions that the state board determines meet both of the following criteria:

(A) Capable of being successfully accomplished within the time provided by this section, taking into account environmental, economic, social, and technological factors.

(B) Economical to an owner or operator of a vehicle, taking into account the full life-cycle costs of a vehicle.

(3) "Motor vehicle" means a passenger vehicle, light-duty truck, or any other vehicle determined by the state board to be a vehicle whose primary use is noncommercial personal transportation.

SEC. 4. Paragraphs (3) and (4) of subdivision (d) of Section 43018.5 of the Health and Safety Code, as added by this act, do not constitute a change in, but are declaratory of, the existing law.

SPONSOR:

Pavley

SENATE Floor Bill No. **AB 1493****Date of Hearing:** July 02, 2002**COMMITTEE:** SENATE Floor**BODY:**

BILL ANALYSIS

SENATE RULES COMMITTEE AB 1493

Office of Senate Floor Analyses

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327-4478

THIRD READING

Bill No: **AB 1493**

Author: Pavley (D), et al

Amended: 6/28/01 in Senate

Vote: 21

PRIOR VOTES NOT RELEVANT

SUBJECT: Vehicular Air Pollution Standards: Greenhouse**SOURCE:** Bluewater Network Coalition for Clean Air Natural Resources Defense Council Sierra Club**DIGEST:** Senate floor amendments of 6/28/02 delete the provisions of the bill. This bill now requires the State Air Resources Board to develop and adopt, by January 1, 2005, regulations that achieve the maximum feasible and cost-effective reduction of greenhouse gas emissions from passenger, light-duty, and other non-commercial vehicles.**NOTE:** This bill is similar, with modifications, to AB 1058 which passed the Senate 22-13 on May 2, 2002.**ANALYSIS:** Existing law:

1. Under the federal Clean Air Act, prohibits states from adopting or enforcing standards for the control of new motor vehicles or engines subject to the Act. However, the Act also authorizes the Administrator of the US EPA to waive this prohibition and to allow states to adopt standards if specified conditions are met.
2. Under the Energy Policy and Conservation Act of 1975, and the federal Motor Vehicle Information and Cost Savings Act, au-

thorizes the secretary of transportation to establish standards for new motor vehicle fuel economy (so-called "corporate average fuel economy" or "CAFE" standards) and generally prohibits states from enacting such standards.

3. Under Division 26 of the Health and Safety Code, requires the state Air Resources Board (ARB) to endeavor to achieve the maximum degree of emission reductions possible from vehicular and other mobile sources in order to achieve attainment of state ambient air standards by the earliest practicable date.

4. Under Chapter 6 of the Health and Safety Code, requires the Secretary for Resources to establish a California Climate Action Registry (CCAR) for the purposes of allowing parties which emit greenhouse gas emissions voluntarily to register reductions in their emissions in order to have them recognized by the State of California in any future regulatory or treaty protocol requiring the reduction in greenhouse gases.

5. Also under that chapter, requires the Governor to appoint a seven-member board of directors to oversee operation of the registry and establishes detailed procedures for the quantification and registering of emissions registered under the registry's auspices and requires the State Energy Resources Conservation and Development Commission (The California Energy Commission or CEC) to undertake specified activities relative to the implementation of the CCAR.

6. Under the Warren-Alquist Energy Resources Conservation and Development Act, requires the CEC to prepare an inventory of greenhouse gas emissions produced by the state, to update that inventory by specified dates, to establish a task force and advisory committee on climate change, and to coordinate state responses to the impacts of climate change on the state.

FISCAL EFFECT: Appropriation: No Fiscal Com.: Yes Local: No

SUPPORT: (Verified 6/28/02): Bluewater Network (co-source), Coalition for Clean Air (co-source), Natural Resources Defense Council (co-source), Sierra Club (co-source), American Lung Association, Architects/Designers/Planners for Social Responsibility, Bay Area Air Quality Management District, California League of Conservation Voters, Cities of Los Angeles and San Jose, Clean Power Campaign, Community Alliance with Family Farmers, East Bay Municipal Utility District, Planning and Con-

ervation League, Sacramento Municipal Utility District, Coalition of Organizations, 160 individual letters from all across the U.S.

OPPOSITION: (Verified 6/28/02): Alliance of Automobile Manufacturers, Automobile Club of Southern California, California Chamber of Commerce, California Council for Environmental and Economic Balance, California Manufacturers and Technology Association, California Motor Car Dealers Association, California State Automobile Association, Daimler Chrysler Corporation, General Motors Corporation, San Diego Industrial Environmental Association, Tustin Chamber of Commerce, Western States Petroleum Association, California League of Off Road Voters

ARGUMENTS IN SUPPORT: According to the author's office and the bill's supporters, global warming is an international problem with the potential for state and local impacts including: reductions in the state's water supply due to changes in the snow pack levels in the Sierra Nevada Mountains and the timing of spring run-off; adverse health impacts from increases in air pollution caused by higher temperatures; adverse impacts upon agriculture and food production as a result of projected changes in the amount and consistency of water supplies; potential damage to the state's extensive coastline and ocean ecosystems due to the increase in storms and rise in sea level.

Supporters state that the United States is home to four percent of the world's population and 25 percent of the greenhouse gasses. California is the fifth largest economy in the world. Passenger vehicles and light-duty trucks are responsible for approximately 40 percent of the total greenhouse gas pollution in the state. More than twice the amount of greenhouse gas pollution from motor vehicles in other parts of the country. California has a long history of being the first in the nation to take action to protect public health and the environment with respect to motor vehicles and federal law recognizes the authority of California to take such actions. Finally, the supporters note that they have gone to great pains to amend the bill to address most of the opponents stated concerns.

The purpose of this measure is to direct the ARB to adopt standards to address greenhouse gas emissions from motor vehicles.

ARGUMENTS IN OPPOSITION: Opponents to this measure state that the provisions of the bill "offers no California emis-

sions benefits, are bad for consumers, and are pre-empted by federal law.” They note that regulation of vehicular fuel economy is a federal issue into which the states may not intrude, and that enactment of the measure will almost certainly lead to litigation in the federal courts over its effect. The opponents also state that the bill will limit consumer choice and increase the costs of vehicles in the state while potentially making vehicles less safe due to presumed reductions in their weight to increase fuel efficiency and reduce emissions. Opponents further state that, unlike standards for criteria air pollutants, greenhouse gas emission standards will not assist in improving public health since greenhouse gas emissions disperse evenly in the atmosphere. They state that California’s contribution to greenhouse gas emissions is less than one tenth of one percent and that adoption of the standards will have a “negligible effect” on climate change worldwide. Finally, opponents state that California voters rejected greenhouse gas emission controls in 1990 when they defeated Proposition 128, the so-called “Big Green” Initiative.

Assembly Floor Bill No. **AB 1493**

Date of Hearing: June 30, 2002

COMMITTEE: Assembly Floor

BODY:

BILL ANALYSIS

CONCURRENCE IN SENATE AMENDMENTS

AB 1493 (Pavley)

As Amended June 28, 2002

Majority vote

ASSEMBLY: (June 6, 2002) SENATE: 23-16 (June 29, 2002)

(vote not relevant)

Original Committee Reference: RULES

SUMMARY: Requires the Air Resources Board (ARB) to adopt regulations to reduce the emissions of greenhouse gases by motor vehicles. Specifically, this bill:

- 1) Makes legislative findings and declarations regarding global warming, greenhouse gas emissions, and the contribution of the transportation sector in contributing to these emissions in California.
- 2) Requires the California Climate Action Registry (CCAR) to consult with ARB in order to adopt procedures and protocols for the reporting of reductions in greenhouse gases.
- 3) Restricts public access to CCAR records that are exempt from disclosure pursuant to the Public Records Act.
- 4) Requires ARB to develop and adopt, no later than January 1, 2005, regulations that achieve the maximum feasible and cost-effective reduction of greenhouse gases emitted by motor vehicles.
- 5) Prohibits ARB regulations from going into effect before January 1, 2006, and provides that they may apply only to model-year 2009 or later motor vehicles.
- 6) Requires ARB, within 10 days of adopting the regulations, to transmit them to the appropriate policy and fiscal committees of the Legislature for review.

7) Requires the Legislature to hold at least one public hearing to review the regulations, and allows the adoption of legislation to modify them.

8) Requires ARB, in developing the regulations, to:

a) Consider their technological feasibility and economic impact;

b) Conduct workshops in areas of the state with significant exposure to air contaminants or with minority or low-income populations, or both;

c) Grant emission reduction credits for previous reductions in greenhouse gas emissions from motor vehicles; and,

d) Coordinate with the Energy Commission, CCAR, and the interagency task force.

1) Requires the regulations to provide flexibility in the means by which compliance may be achieved. Alternative methods of compliance must achieve equivalent or greater reductions in emissions but may not impose any mandatory trip reduction measures or land use restrictions.

2) Prohibits the regulations from including additional fees and taxes on motor vehicles, fuels, or vehicle miles traveled, bans on any specific vehicle category, reductions in vehicle weights, speed limit reductions or limitations, or vehicle-miles-traveled restrictions or limitations.

3) Requires the regulations to provide an exemption for low-emission vehicles meeting optional standards for oxides of nitrogen (NO_x).

4) Requires CCAR, by July 1, 2003, to adopt procedures for reporting mobile source greenhouse gas emission reductions.

5) Requires ARB to report to the Legislature and Governor by January 1, 2005, on the content of the regulations.

6) Allows ARB to elect not to adopt a standard for any greenhouse gas included in an equally or more effective standard adopted in substantially the same timeframe by the federal government.

The Senate amendments delete, entirely, the prior provisions of this bill, replacing them with the current language.

EXISTING LAW assigns various duties to ARB in regard to setting and enforcing clean air goals and standards.

AS PASSED BY THE ASSEMBLY, this bill was a spot bill dealing with the Bureau of State Audits.

FISCAL EFFECT: ARB staff estimates their costs to be \$ 100,000 in fiscal year (FY) 2002-03 for start-up activities and an additional \$ 100,000 per year through FY 2004-05 to develop regulations and implement this bill. California Energy Commission (CEC) staff indicates there are no costs to CEC to adopt procedures and protocols for the reporting and certification of reductions in greenhouse gas emissions from mobile sources as these duties are consistent with CEC's mandate as set out in SB 1771 (Sher), Chapter 1018, Statutes of 2000. ARB staff indicates they intend to fold the emission reduction regulations into the next round of passenger vehicle emission regulations that are expected to come before their governing board in FY 2004-05. Public hearings, workshops, consultations with auto manufacturers and other stakeholders would be expanded to include greenhouse gases along with other emission reduction strategies.

COMMENTS: This bill is essentially a reintroduction, with some modifications, of AB 1058 (Pavley), which is currently pending concurrence in Senate amendments.

This bill's sponsor, Bluewater Network, references a report from the United Nations Intergovernmental Panel of Climate Change predicting an increase of up to 10.4 degrees in the Earth's temperature over the next century and indicating that the past decade was the warmest on record in the last 140 years. The sponsor further notes that California is home to 0.5% of the world's population, yet emits nearly 7% of global CO₂ emissions. This bill is intended to remove the ambiguity in the Clean Air Act, which, according to the sponsor, is unclear on, whether ARB has the authority to regulate CO₂ emissions.

While the scientific community appears largely to accept that CO₂ emissions are associated with increasing temperatures, global warming theories continue to be the subject of some debate. Nevertheless, it seems clear that warming of the magnitude quoted from the United Nations report would be severely disruptive to water supplies, agriculture, human health, coastlines, and entire island nations. And, according to most sources, automotive emissions are a major contributor to CO₂ levels in the atmosphere.

Under former President Clinton, the United States (U.S.) was a signatory to the 1997 "Kyoto Protocol to the United Nations

Framework Convention on Climate Change.” This treaty would commit the United States to a target of reducing greenhouse gases by 7% below 1990 levels during a “commitment period” between 2008-2012. The U.S. Senate, however, has not approved the treaty.

The Bush administration, while acknowledging the likelihood of global warming, is not supportive of the treaty either. In the absence of federal action on CO₂ emissions, this bill would put California in the forefront of efforts to address global warming issues.

Opponents contend that federal Corporate Average Fuel Economy (CAFE) law and the Clean Air Act prohibit state action on CO₂ regulation. This contention is based on the theory that CO₂ regulation is equivalent to fuel economy regulation, preempted by CAFE, and that CO₂ does not create localized pollution problems, making it ineligible for state regulation. (Proponents counter that CO₂ regulation need not entail fuel economy standards and that other states have successfully enacted CO₂ standards.) Opponents also point out that modern vehicles emit 97% less pollution than their 1970 counterparts and that new vehicle pollution will be reduced an additional 75% over the next seven years. They would prefer that consumers be encouraged to embrace advanced, and more fuel-efficient, technologies through incentives rather than what they characterize as “command-and-control” methods such as this bill.

This bill’s predecessor, AB 1058, attracted a great deal of public attention. Much of this attention centered around possible measures, real or imagined, that ARB might take through their regulations in order to reduce greenhouse gas emissions. In response to these concerns, this bill lays out a fairly extensive list of actions ARB would be prohibited from enacting through its regulations. The prohibited actions would include: motor vehicle tax surcharges, increased fuel taxes, vehicle miles traveled limits or fees, sport utility vehicle or minivan bans, vehicle weight reductions, or speed limit reductions. Nevertheless, it is fairly certain that the opponents of AB 1058 will continue to oppose this bill for the reasons cited above.

Analysis Prepared by: Howard Posner / TRANS. / (916) 319-2093

SENATE Floor Bill No. **AB 1493****Date of Hearing:** June 29, 2002**COMMITTEE:** SENATE Floor**BODY:**

BILL ANALYSIS

SENATE RULES COMMITTEE AB 1493

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327-4478

THIRD READING

Bill No: **AB 1493**

Author: Pavley (D), et al

Amended: 6/28/02 in Senate

Vote: 21

PRIOR VOTES NOT RELEVANT

SUBJECT: Vehicular Air Pollution Standards: Greenhouse

SOURCE: Bluewater Network Coalition for Clean Air Natural
Resources

Defense Council Sierra Club

DIGEST: Senate floor amendments of 6/28/02 delete the provisions of the bill. This bill now requires the State Air Resources Board to develop and adopt, by January 1, 2005, regulations that achieve the maximum feasible and cost-effective reduction of greenhouse gas emissions from passenger, light-duty, and other non-commercial vehicles.

NOTE: This bill is similar, with modifications, to AB 1058 which passed the Senate 22-13 on May 2, 2002.

ANALYSIS: Existing law:

1. Under the federal Clean Air Act, prohibits states from adopting or enforcing standards for the control of new motor vehicles or engines subject to the Act. However, the Act also authorizes the Administrator of the US EPA to waive this prohibition and to allow states to adopt standards if specified conditions are met.

2. Under the Energy Policy and Conservation Act of 1975, and the federal Motor Vehicle Information and Cost Savings Act, authorizes the secretary of transportation to establish standards for new motor vehicle fuel economy (so-called “corporate average fuel economy” or “CAFE” standards) and generally prohibits states from enacting such standards.

3. Under Division 26 of the Health and Safety Code, requires the state Air Resources Board (ARB) to endeavor to achieve the maximum degree of emission reductions possible from vehicular and other mobile sources in order to achieve attainment of state ambient air standards by the earliest practicable date.

4. Under Chapter 6 of the Health and Safety Code, requires the Secretary for Resources to establish a California Climate Action Registry (CCAR) for the purposes of allowing parties which emit greenhouse gas emissions voluntarily to register reductions in their emissions in order to have them recognized by the State of California in any future regulatory or treaty protocol requiring the reduction in greenhouse gases.

5. Also under that chapter, requires the Governor to appoint a seven-member board of directors to oversee operation of the registry and establishes detailed procedures for the quantification and registering of emissions registered under the registry’s auspices and requires the State Energy Resources Conservation and Development Commission (The California Energy Commission or CEC) to undertake specified activities relative to the implementation of the CCAR.

6. Under the Warren-Alquist Energy Resources Conservation and Development Act, requires the CEC to prepare an inventory of greenhouse gas emissions produced by the state, to update that inventory by specified dates, to establish a task force and advisory committee on climate change, and to coordinate state responses to the impacts of climate change on the state.

This bill:

1. Not later than January 1, 2005, requires the state Air Resources Board (ARB) to develop and adopt regulations to achieve the maximum feasible and cost-effective reduction in greenhouse gas emissions from passenger, light-duty, and other non-commercial vehicles.

2. Prohibits the regulations from taking effect prior to January 1, 2006 and applying to vehicles manufactured prior to the 2009 model year.
3. Requires the board to consider the technological feasibility of the regulations and the impacts of the regulations on the economy of the state, including specified job, business, and competitive impacts.
4. Requires the regulations to provide the maximum feasible flexibility for persons complying with the regulations to use alternative methods of compliance provided the ARB determines that such methods achieve the equivalent or greater reduction in greenhouse gas emissions as the standards adopted by the board.
5. Prohibits the ARB's regulations from:
 - A. Imposing mandatory taxes or fees under this provisions of law or any other provision of law.
 - B. Banning the sale of any vehicle category, including sport utility vehicles and light duty trucks.
 - C. Imposing vehicle weight reductions.
 - D. Imposing trip reduction measures or land use restrictions.
 1. Requires the ARB to conduct specified public hearings in the state in low-income and minority communities.
 2. Requires the ARB to provide emission reduction credits (ERC's) for actions taken to reduce greenhouse gases from motor vehicles prior to implementation of the regulations and requires that such credits be approved by the board and recorded with the California Climate Action Registry (CCAR).
 3. Requires the ARB to coordinate its regulations with the activities of the CCAR and the California Energy Commission (CEC) pursuant to their statutory responsibilities.
 4. Within 10 days of adopting the regulations, requires the ARB to transmit the regulations to the appropriate policy and fiscal committees of the Legislature for review, authorizes the Legislature to hold at least one public hearing to review the regulations and authorizes the Legislature to enact legislation modifying the regulations before they take effect.
 5. Provides that if the federal government adopts a vehicular greenhouse gas standard for new motor vehicles which the ARB determines to be equivalent or greater in its effectiveness, the

board may elect not to adopt standards pursuant to the bill's provisions.

6. Defines "greenhouse gases" to mean those gases listed under the provisions of law governing the CCAR.

FISCAL EFFECT: Appropriation: No Fiscal Com.: Yes Local: No

SUPPORT: (Verified 6/28/02): Bluewater Network (co-source), Coalition for Clean Air (co-source), Natural Resources Defense Council (co-source), Sierra Club (co-source), American Lung Association, Architects/Designers/Planners for Social Responsibility, Bay Area Air Quality Management District, California League of Conservation Voters, Cities of Los Angeles and San Jose, Clean Power Campaign, Community Alliance with Family Farmers, East Bay Municipal Utility District, Planning and Conservation League, Sacramento Municipal Utility District, Coalition of Organizations, 160 individual letters from all across the U.S.

OPPOSITION: (Verified 6/28/02): Alliance of Automobile Manufacturers, Automobile Club of Southern California, California Chamber of Commerce, California Council for Environmental and Economic Balance, California Manufacturers and Technology Association, California Motor Car Dealers Association, California State Automobile Association, Daimler Chrysler Corporation, General Motors Corporation, San Diego Industrial Environmental Association, Tustin Chamber of Commerce, Western States Petroleum Association, California League of Off Road Voters

ARGUMENTS IN SUPPORT: According to the author's office and the bill's supporters, global warming is an international problem with the potential for state and local impacts including: reductions in the state's water supply due to changes in the snow pack levels in the Sierra Nevada Mountains and the timing of spring run-off; adverse health impacts from increases in air pollution caused by higher temperatures; adverse impacts upon agriculture and food production as a result of projected changes in the amount and consistency of water supplies; potential damage to the state's extensive coastline and ocean ecosystems due to the increase in storms and rise in sea level.

Supporters state that the United States is home to four percent of the world's population and 25 percent of the greenhouse gasses.

California is the fifth largest economy in the world. Passenger vehicles and light-duty trucks are responsible for approximately 40 percent of the total greenhouse gas pollution in the state. More than twice the amount of greenhouse gas pollution from motor vehicles in other parts of the country. California has a long history of being the first in the nation to take action to protect public health and the environment with respect to motor vehicles and federal law recognizes the authority of California to take such actions. Finally, the supporters note that they have gone to great pains to amend the bill to address most of the opponents stated concerns.

The purpose of this measure is to direct the ARB to adopt standards to address greenhouse gas emissions from motor vehicles.

ARGUMENTS IN OPPOSITION: Opponents to this measure state that the provisions of the bill “offers no California emissions benefits, are bad for consumers, and are pre-empted by federal law.” They note that regulation of vehicular fuel economy is a federal issue into which the states may not intrude, and that enactment of the measure will almost certainly lead to litigation in the federal courts over its effect. The opponents also state that the bill will limit consumer choice and increase the costs of vehicles in the state while potentially making vehicles less safe due to presumed reductions in their weight to increase fuel efficiency and reduce emissions. Opponents further state that, unlike standards for criteria air pollutants, greenhouse gas emission standards will not assist in improving public health since greenhouse gas emissions disperse evenly in the atmosphere. They state that California’s contribution to greenhouse gas emissions is less than one tenth of one percent and that adoption of the standards will have a “negligible effect” on climate change worldwide. Finally, opponents state that California voters rejected greenhouse gas emission controls in 1990 when they defeated Proposition 128, the so-called “Big Green” Initiative.

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THIRD READING**Bill No: AB 1493**

Author: Keeley (D)

Amended: 5/3/01 in Assembly

Vote: 21

SENATE GOVERNMENTAL ORG. COMMITTEE: 13-0, 7/10/
01

ASSEMBLY FLOOR: 75-0, 6/6/01

SUBJECT: Bureau of State Audits

SOURCE: State Auditor

DIGEST: This bill clarifies the duties of the State Auditor and the Bureau of State Audits (BSA), by cleaning up statutory references. The bill deletes obsolete references to the Auditor General and, where the duty has been assumed by the State Auditor, corrects the reference. This bill also makes various other technical and non-substantive changes.

ANALYSIS: Existing law establishes the Bureau of State Audits under the Direction of the Milton Marks Commission on California State Government Organization and Economy, and generally provides that all references to the Auditor General or the office of the Auditor General concerning the conducting of audits will be deemed to refer directly to these two parties.

Background

In 1955, the Legislature created the Joint Legislative Audit Committee (JLAC) and the Office of the Auditor General. The Auditor General and his/her staff held exempt positions and were

classified as employees of the State Legislature. It was the duty of the Auditor General to examine and report upon the financial statements of state funds prepared by the executive branch of the state so the Legislature would be informed independently as to whether such statements presented fairly, the financial position of state funds and the results of their operations. In addition, it was the duty of the Auditor General to make such special audits and investigations of any agency, whether created by Constitution or otherwise, as may be requested by the Legislature or any committee of the Legislature through JLAC.

As of December 4, 1992, the Office of Auditor General became nonexistent. In Addition, the Office of Auditor General and the Legislative Analyst's Office were both severely reduced due to Proposition 140 (legislative term limits).

AB 1944 (Chapter 1, Statutes of 1992) provided monetary relief to the Auditor General's office for the 1991-92 fiscal year. SCA 34 by former Senator Maddy, which would have established the Office of the Auditor General, was defeated at the 1992 November General Election.

In 1993, Senators Maddy and Roberti authored SB 37 (Chapter 12, Statutes of 1993), which created BSA under the Little Hoover Commission, headed by the State Auditor who would be appointed by the Governor to a four-year term from a list of three qualified individuals submitted by JLAC, by a vote of at least a majority of the committee membership from each house of the Legislature. SB 37 provided that BSA must examine and report annually upon the financial statements prepared by the executive branch of the state; perform other related assignments, including performance audits, that are mandated by statute; and administer the Reporting of Improper Governmental Activities Act. It further required BSA to conduct audits and investigations of public entities requested by JLAC to the extent that funding is available.

While SB 37 retained much of the law concerning the duties and powers of the Auditor General, it did not change all references in code from Auditor General to State Auditor.

The author is carrying this bill to delete obsolete references to the Auditor General and, where the duty has been assumed by the State Auditor, correct the reference. The bill also makes other technical and non-substantive changes.

Prior legislation

SB 37 (Maddy) Chapter 12, Statutes of 1993. Essentially, this measure created the Bureau of State Audits in state government under the Milton Marks Commission on California State Government Organization and Economy (the Little Hoover Commission). Transferred all functions of the then existing State Auditor General to the new Bureau of State Audits as specified.

FISCAL EFFECT: Appropriation: No Fiscal Com.: No Local: No

SUPPORT: (Verified 7/11/01): State Auditor (source)