THE BROOKINGS INSTITUTION

FREEDOM FROM OIL: HOW THE NEXT PRESIDENT CAN END THE UNITES STATES' OIL ADDICTION

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Opening Remarks:

JIM WOOLSEY
Vice President, Booz Allen Hamilton
Former Director, Central Intelligence Agency

Presentation:

DAVID SANDALOW
Senior Fellow, Brookings Institution

Commentary:

IAN BOWLES
Secretary of Energy and Environmental Affairs
Commonwealth of Massachusetts

KEITH COLE
Director, Legislative and Regulatory Affairs
General Motors

RAYOLA DOUGHER
Senior Economist
American Petroleum Institute

CHELSEA SEXTON
Executive Director
Plug-In America

PHIL SHARP
President
Resources for the Future

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P R O C E E D I N G S

AMB. PASCUAL: -- energy security initiative that we have started at the Institution. In working on this initiative, we felt that it was important to be able to address questions of geo-politics and how they effect the security of access of supply, that it's important to address critical issues of the economy and how both our economic policies can effect both the development of energy resources, but what kinds of opportunities we have in the formulation of economic policies to provide greater stability and access to resources.

And then there's obviously an environmental dimension to all of this, since, as we have now come to I think universally recognize that the use of fossil fuels has contributed to the greenhouse gas emissions that are at the center of driving climate change.

One of the things that is unique about Brookings is that we have the capacity in this Institution to bring together individuals with foreign policy, and international security, and economics, and governance, and environmental and energy skills that can look at all of these issues together and understand how they interrelate, because in the end, if we can't understand how these ties effect one another, we cannot come up with proposals and policy solutions that are going to be viable and sustainable. We might be able to do things that actually deal with aspects of the symptoms, but we need to understand all of these pieces to make the solutions that are proposed both lasting and politically and economically realistic. And there

probably is no better example of that than David Sandalow's book, Freedom from Oil, and I think the discussion that we're going to have this morning, that's provoked by the book.

Let me just give you a couple of examples of what has been said about the book. Bill Clinton says, "Freedom from Oil is a compelling analysis of one of the great challenges of our time. David Sandalow draws upon his extensive White House experience and offers a powerful vision of a clean energy future."

Dick Lugar says that, "David Sandalow's Freedom from Oil should be required reading for all concerned citizens and elected officials." And the most recent winner of the Nobel Peace Prize says, adding his voice to this, he says, "We're thrilled with David Sandalow's book", and says that, "When David Sandalow writes about energy in the environment, we should all pay close attention."

Today what we're going to do is to begin with a short presentation by former Director of Central Intelligence, Jim Woolsey, then David will talk about his book. David is going to introduce a number of discussants who will offer short comments and then engage in a question and answer period with one another, and then turn to questions and answers from the audience. And afterwards, for any of you that have a few moments, David will be available to sign copies of the book; thank you, David, for doing that.

And I will finish my part of this with an introduction of Jim Woolsey. Jim is currently a Vice President Officer of Booz Allen Hamilton and is a leader of

the firm's energy practice. Some of you may have seen him prominently portrayed not too long ago in a CNN documentary on alternative fuels, where he certainly educated me about much of the progress that has been made in Brazil and some of the lessons that we need to bring here to the United States.

During his career, Jim has served in the U.S. government on five different occasions, where he held presidential appointments in two Republican and two Democratic administrations. And these appointments have included Director of Central Intelligence, that was from 1993 to 1995, Ambassador to the Negotiation on Conventional Armed Forces in Europe Treaty, the Under Secretary of the Navy, General Council to the U.S. Senate Committee on Armed Services, and as delegate at large, the U.S. Soviet Strategic Arms Reduction talks and the Nuclear and Space Arms talks. We can go on a huge list of associations and groups that Jim is involved with now. One of these is as Chairman of the Advisory Board of the Clean Fuels Foundation and the New Uses Council. And so you might wonder, what is it that this cold warrior has to tell us and why he is so engaged on issues related to energy.

But, in effect, it's because he has come to recognize something which I am sure will come across passionately in his presentation, is that energy and the environment and the struggle to save this planet has become, in effect, our new cold war.

It is something that has to be elevated to that level of significance because it really has become an existential question. And to Jim, we are very much

indebted that he brings his passion, his knowledge, his political instincts to taking on that battle and being such a leader on it both in the United States and internationally; Jim.

MR. WOOLSEY: Thank you. I was, of course, quite honored to be asked to be here this morning with David and at Brookings, but to tell you the truth, since I spent 22 years as a Washington lawyer, and then I spent some time out at the CIA in the Clinton Administration, I'm actually honored to be invited into any polite company for any purposes whatsoever.

I want to say just a few words by way of introduction to David's fine book and this morning's discussion. Rachel Kleinfeld, who used to work with me at Booz Allen and now runs the Truman Project, came up with a wonderful formulation I think several years ago for the dilemma which we face in the presence of world-wide concern about climate change and world-wide, should be, concern about terrorism. She said there are two kinds of problems we have to deal with, the malignant and the malevolent. And a lot of people had just as soon not be reminded that there are two, but there really are.

We are doing the functional equivalent of smoking six packs a day as an earth, putting carbon into the environment, and creating circumstances such that can produce a much greater probability of catastrophe than would otherwise be the case.

We also have a terrorism problem, from Islamists to jihadi

movements around the world, and we are thus somewhat in the situation of someone who is smoking six packs a day, and having the last cigarette of the day, looks out his bedroom window and looks down and sees a burglar climbing into his basement in a ski mask, carrying a 45. Well, that gentleman has two problems, not one.

As a society, we have a serious problem from what we are doing to the planet, and we have now in place of the stodgy bureaucrats of the Soviet Union whose ideology at least by the 1950's was effectively dead, we have an Islamist movement with real committed fanatic terrorists who really would like to wreck maximum damage on us and allies and friends of Western Europe, Israel, the rest of the western society. We have to, I think, begin by understanding that, and we have to deal with it in such a way that we don't just become, as someone has recently said here in Washington, the sum of all lobbies. We can't handle this one the way we have tried to handle many problems in the past and just have individual interest groups, each get a bit of a niche for itself, and let it go at that. We have to understand I think something different needs to take place.

One of the truly fascinating aspects of David's book is that it starts by understanding that it is oil that is the problem here on both the malignant and malevolent fronts, not just foreign oil. You won't find anything in this book about how, if we would just drill in Anwar, or if we would just drill here or drill there, or just exploit this oil resource rather than that, then we wouldn't have to import from

the Middle East, nonsense.

That chain of logic that so many people have locked themselves into, that all we have is an import problem, starts, in my judgment, from the very wrong end of the issue, and it leads to such statements as in a recent council on foreign relations report, that those who are working for energy independence are doing, "a disservice to the nation", I also disagree with that. It's not a disservice to the nation for us to be independent of oil, and we shouldn't interpret that independence just as not importing things. Oil is a world-wide commodity; it will be a world-wide commodity for a long time. If we try to build a fence around the United States with terrorists and domestic production of oil and the rest, we won't change anything substantial, we'll simply add to the bureaucracy and the cost.

Independence doesn't mean autarchy, it doesn't mean never importing anything; it means people not having control over you. The best analogy, again, this time from Annie Coran, "Like many of us guys, I owe most of my good ideas to bright and abled women", Annie came up with an excellent analogy not long ago between oil and salt. Salt toward the end of the 19th century was a strategic commodity; it was the only way to preserve meat, so it had a lock on, a monopoly on a hugely important part of the human food chain.

As a result, it mattered up until the late 19th century whether your country had salt mines, it mattered whether you control salt, countries fought wars over salt, it seems very strange today, but they did.

In a very few years, in the late 19th century, the combination of the expansion of electricity grids and refrigeration effectively destroyed salt's dominance, its monopoly of meat preservation. And within a relatively few years, salt became what it is today, just a commodity. Are we salt independent in the sense of never importing any salt? Probably not. Do you know where the salt on your breakfast table came from? Probably not. Do you care? No. Does any of us? No, not unless we're in the salt business. It's just a commodity that has uses. We need to do that to oil. We need to do to oil what refrigeration did to salt, destroy it as a strategic commodity, destroy its monopoly.

Then, for those things that oil has a cost advantage for, and responding also, I would hope at some point, to a world in which there are carbon taxes or carbon cap and trade systems, it may be used for some things, for feed stocks, for chemical, for whatever. But the first and most important thing to do is to destroy its monopoly on transportation. That is what David's fine book is about, how to do that, and how the United States and the American President can take the lead in doing that.

And in striking out in this direction, I want to say I think both David and Brookings have done exactly what think tanks in this city ought to do and relatively rarely do, they put themselves in the position of a wise government and said, how would we function, how would we get the job done.

This is a very fine book. It heads us exactly, in my judgment, in the

right direction. And I really want to thank Brookings and David for coming forth with it. Thank you.

MR. SANDALOW: Well, thanks, Jim, thanks for being here, thanks for those kind words, and thanks for your record of leadership on this, and thanks to Carlos, too, for all the things, and for your fine leadership of the Brookings Foreign Policy section. I've learned that when compliments flow, criticism can't be far behind, but I am still grateful for those kind words.

There are a lot of people here, too, who I want to thank very deeply. There are people who really put some time and effort into helping me with this project, including, I see John Elkind is here, P.J. Simmons, Amy Christensen, Rick Carp is here, who gave me a great idea which is reflected in the book. He may not want to own other parts of it, but he gave me one good piece.

Two people who really put extraordinary effort into reviewing the manuscript, I see Ellen Mabien and Redutchen, both extraordinary thinkers who helped a lot, so many thanks to them. I believe she's still here, special thanks for my research assistant, Anu Prasad, who worked long hours and put lots of devotion to this and many thanks to her.

And then, most of all, many thanks to my remarkable wife, Holly Hammonds, who is here somewhere, and nobody deserves more thanks than her. So many thanks to all those people. Please, a round of applause. Thanks also to one person who wasn't here, Senator Richard Lugar, whose introduction I commend you

very strongly. It's a very interesting analysis of the problems associated with oil.

So, if you're thirsty and you don't want water, you can drink orange juice, or you can drink soda. And if you're hungry and you don't feel like a hamburger, you can have fish or vegetables. And if you feel like relaxing and you don't want to watch TV, you can spend time with friends or go to a movie or read a book. If you would like to leave this room today and go a fair distance and don't want to use oil, you are out of luck. We have a transportation system that is utterly dependent on the use of oil. Maybe if you're not going too far, you can ride a bicycle or walk. There's some electric trains around which take you a little bit of distance, but essentially, you need oil.

Now, we all grew up with this, our parents grew up with this, our grandparents grew up with this, it does not seem strange to us, but it is deeply abnormal. What other commodity that is essential to the fabric of our lives has absolutely no substitutes? And as Jim was just saying, I think this is the fundamental problem when it comes to oil.

If you spend time in this business, you will get lots of statistics thrown at you. I think the most important one is that 96 percent of the energy in our cars and trucks comes from oil – 96 percent. It's when that fact changes that we will have fundamentally disrupted many of the problems created by oil. We need to replace that oil with clean substitutes and give consumers a choice. And that is the first of five points in my book that I want to briefly highlight today. The second

point is that in order to change that, nothing would do more good more quickly than making cars that can connect to the electric grid.

Plug-in hybrids are key; they're the fundamental game changing technology. You all saw one on the way in from the door. Les Goldman and I -- Les Goldman is in the back of the room and I want to introduce him. He's with A123 Systems representing -- representing A123 Systems, and can answer your questions on the technology here.

We went out driving, and we went seven miles, the gauge did not register one-tenth of a gallon of gas, and the gauge showed 343 miles per gallon as we did this. Well, actually, let me make clear what I mean when I say we went out driving. Les was in the driver's seat, I was in the passenger seat. Once Les relinquished the wheel and I started driving, it went down to a 115 miles per gallon. I'm still learning how to drive the thing.

But it's an extraordinary technology, plug-in hybrids, and nothing would do more good more quickly for getting us off of oil than making cars that can connect to an electric grid. Studies estimate that about 40 to 60 percent savings could be achieve fleet-wide if we use plug-in hybrids. And as I talk about plug-in hybrids, I often get two questions; one of them is, don't we need a lot more electric generation in order to do it, and the answer interestingly is you don't. There's some good studies. And there are two reasons for that; one of them is the efficiency of the electric motors compared to the internal combustion engine, and the second is all the

extra generating capacity that we have at night.

And since we go way down in our electric generating at night, if we plugged in our cars at night, we really wouldn't need to build a lot more in the way of extra generation facilities. One study said you could get half of the fleet of plug-in hybrids and only increase total generating needs by about four to seven percent.

The other question I get all the time is, doesn't it create more pollution, after all, our electricity is generated with fossil fuel, and it's true, about half of our electricity is coal. But here's the key point, if you plug a car directly into a coal plant, you are doing better from a global warming standpoint than if you run it on oil with an internal combustion engine.

And that conclusion astonishes many people, but it is true, and the fundamental reason is because of the thermal efficiency of -- the lack of thermal efficiency of an internal combustion engine. An internal combustion engine generates astonishing amounts of waste energy in the form of heat. And as a result of that, it generates a lot of excess greenhouse gases when you drive. If you plugged a car directly into a coal plant, you're still doing better than driving a car on oil. Now, our electricity nation-wide is only about 50 percent coal. So if you converted our fleet to plug-in hybrids, you'd be doing much better than you do today running cars on oil.

And by the way, the real win here is to plug cars into windmills, and it doesn't have to be figuratively, you know, literally. But if you -- wind power has

tremendous resource. One of the problems with it is, it blows mainly at night in a lot of places in the country. But if you used windmills to recharge batteries and plug-in hybrids, you could get astonishing amounts of clean energy to power our fleet.

So the second point I make in the book that I talk about at some length is the importance of plug-in hybrids, it's the single most important technology.

A third thing I talk about are other solutions, and the ones I would point to are biofuels, fuel efficiency, and mass transit, as the most important pieces. For time, I won't get into a lot of details on these.

One interesting observation about biofuels, and I'm a believer in ethanol and its potential, I'm a believer in the -- in other types of biofuels also. When I started writing this book about two years ago, interestingly, almost everybody was talking in favorable ways about ethanol. The pendulum has swung, and as we started to ramp up ethanol production and biodiesel production in different parts of the world, concerns have been raised, and very legitimate concerns about whether we could do this in environmentally sustainable ways and whether we could do it in ways that help to end world poverty and not exacerbate poverty.

But I believe, and I talk some in the book, about how there are ways to do this right, and what we need to do is, promote environmentally sustainable forms of biofuels.

We have tremendous opportunities with fuel efficiency. Mass transit is -- well, one thing that just hit me as I was doing some research here is, the data on

telecommuting related to mass transit, the data is so compelling about the increase in worker productivity, increase in worker happiness from companies that institute aggressive telecommuting plans, and by the way, it saves oil, too. And with those types of solutions all wrapped together, we can make a big difference in terms of getting us off of oil.

A fourth point I make in the book is the following: oil's dominance as the transportation fuel is the result of decades of help from big government. And that's so important, I just want to state it again, that oil's dominance as the transportation fuel is the result of decades of help from big government. Now, in making this -- I don't want to make any value judgments, I just am simply stating a fact. And one often finds in this town ideological debates about whether government should have a big role or a small role and is big government a good thing. Putting all that aside, it is simply the case that oil has prospered with the help of enormous assistance from the U.S. federal government.

There have been tax benefits for many, many years, production tax credits that have mostly been phased out. Oil has been produced on public lands with beneficial rates for many years. But most fundamentally, the U.S. federal government has guaranteed the safe transit of oil around the world for many, many years, and this has been a priority of presidents, of secretaries of state, you know, going back to World War II and even a bit before. And it seems to me that benefit is absolutely incalculable.

And if oil consumers, businesses and others, did not have the reasonable confidence that U.S. government would be in there helping to secure the safe transit of oil, investment and alternatives would have been far, far greater.

If we were really intent on removing big government from the oil business, it seems to me we would renounce the Carter doctrine, which dates back to Jimmy Carter saying that we -- that the Persian Gulf was a vital interest, we would redefine Centcom's mission, we would redefine our relationship with Saudi Arabia, which has multiple cross currents, but needless to say, is dominated by our priority of protecting world supplies of oil. And there are some people who think that we should do all those things. But I think most people think that the short term costs of all of that would be too great. And so the point is that oil's dominance is really the result of decades of help from big government.

So a final point that I make in the book is that this is an issue that unites Americans. And about 18 months ago now, right here in this room, I had lunch with Newt Gingrich, which I've never been in a room with Newt Gingrich before, I'm sure other people here have. He is a brilliant and fascinating man.
And there were about several dozen scholars from Brookings here asking him questions.

And about -- within a few weeks I had dinner with Howard Dean, also a brilliant and fascinating man, with several dozen people asking him questions. And I asked both of them the same question, which is, what should the United States

do about its dependence on oil. And both basically gave me the same answer.

I mean both Newt Gingrich and Howard Dean--and I don't have to tell this crowd that those two men are not identical twins--both Newt Gingrich and Howard Dean said this is an enormous national security problem that we must address as a matter of priority. Both Gingrich and Dean said ethanol is a huge part of the solution. Both men said we need a Manhattan Project in order to solve this problem. Both men said the fuel efficiency of our fleet must improve.

And I think, you know, if those two guys are saying basically the same thing, there is an opportunity for progress here. The polling data is compelling. More than 90 percent of Americans think that we are too dependent on oil.

Now, I mean I don't want -- I do not mean to suggest that there is total consensus on this, there certainly is not, but I think that the areas of agreement are more significant than the areas of disagreement, and there are huge opportunities for progress, and the next president has an enormous opportunity to lead the nation in an effort in this area.

One of the things I had the pleasure of doing in the course of this book was talking to Americans all over about what they're doing, and the diversity of people I spoke with who are working on this oil issue, one of whom you're going to meet today, is really quite astonishing.

A quick word about the structure of the book, the book starts with a memo, a notional memo from the president, the next president, which says to his or

her staff, "I'm going to give a speech in a month on the topic of oil dependence, what should it say." And then during the rest of the book, memos flow in to the president saying this is what you should say, and people will respond saying, "but you forgot the most important issue." And interspersed throughout this are the stories of really some extraordinary people.

The Commander of American Forces in Western Iraq, General Zilmer, who made a priority one request for renewable energy resources at the front lines because his troops were dying as a result of the need to get fuel back and forth to the front lines; a grandmother in Northern Alaska whose entire way of life is being altered by the melting of the Arctic; electric car entrepreneur; the winner of the 2004 Indy 500, who has a fantastic story to tell.

Some people here may not know that the entire Indy Racing League is being run on ethanol this year. When I went down to the Richmond International Raceway a couple months ago, you don't smell gasoline at all. I mean it's a deafening sound, as those of you who have been at race tracks know, but it smells like sugar, it smells like burning sugar. And the entire Indy Racing League is being run on this stuff.

So let me just -- well, by the way, I am encouraged by some of the early reactions to this book, including from some of the folks in the racing league who are very excited about it. And we have two people, I'm very grateful, have decided to buy books for every member of Congress, so we're going to get books

going up to every member of Congress this week, and it's going out in other directions, as well. So I just want to close by telling the story of my visit to Reynolds, Indiana, which is a wonderful town I visited about six months ago.

Reynolds is in between Gary and Indianapolis, and I flew into Indianapolis about six months ago, and this is kind of the heart of ethanol country, and I tell this story in the book, and I ask for a flex fuel car, I said could I rent one, and the woman -- the rental counter kind of looked with me with a blank face, had no idea what I was talking about, they don't have flex fuel cars available in any of the rental car outlets, and that's part of the problem here that we need to solve. We have infrastructure problems in the United States in this area.

And so I drove up to Reynolds and met with the town president there, who's a man named Charlie Vanborst, and some folks from state government who were working with him, and they are committed to making the entire energy usage of Reynolds bio-renewable within as short a period of time as they can.

And there are two parts to this project; they have a transportation sector project and an electricity section, and with the help of General Motors and others, they've got flex fuel cars there, they've got an ethanol plant, and they're trying to convert entirely to ethanol to use in their transportation fleet. And they've also got an electricity section, too. They have a lot of hogs and cows, and they're using hog manure to generate electricity, eventually they'll be able to plug their cars into this, and that's their goal. And the whole town is excited about this.

The town president told me something which has stuck with me, which is, it's hard to get people to believe in something that's never happened before, and I thought that was, you know, kind of wonderful words or wisdom and very important in this whole area.

So while I was there, I rented a, for the first time, a little -- one of the little black boxes, a GPS, Global Positioning System Satellite. Hertz was offering it for $10 a day, and it's -- I actually -- I had to go back through Gary and out through Chicago, and I was getting lost, and I turned this thing on, and it was giving me guidance as I went through South Chicago, telling me, in 100 yards you should turn here, and in 50 feet you should turn here, and I was thinking as I did this, you know, when I was a kid, I never would have imagined a box that would talk to me and tell me to turn in 50 feet in order to get to the airport.

And, you know, I got back home and I told my teenage kids about this, all excited, and they said, you know, yeah, dad, I mean our friends have had that in their cars for a couple years now. But I was thinking, you know, what is it that my kids 30 years from now will look back on and say, I never would have imagined when I was a kid this technology. With all the energy and dynamism and money going into the clean energy world, I believe that there will be transformational energy technologies in here. And I believe that with a lot of commitment and with the political world that's available, that we will be able to achieve freedom from oil. Thank you.

So for the rest of the program, I'm going to be a bit of an emcee, I'm going to introduce our five extraordinary discussants here who are going to tell you what's right and wrong about what's been said.

And the first person I am delighted to introduce is Ian Bowles, who is somebody whose career and life I've watched with admiration for about a decade now. He combines commitment, intelligence, and good sheer in quantities that are rare. He is now the Secretary of Energy and Environment of the state of Massachusetts, where he has already, in a few short months, done some really impressive things.

For those of you who have followed the Cape Wind Debate, Ian gave Cape Wind its final environmental review and approval at the state level. He was -- under Ian's leadership, Massachusetts has become the first state to put greenhouse gas analysis into environmental review procedures. He has worked with Harvard on its Austin Project, and they have the first legally binding greenhouse gas cap per real estate project in the country. And he's launched something on plug-in hybrids, which I'm sure he's going to tell you about. So, ladies and gentlemen, Ian Bowles.

MR. BOWLES: Thank you, David, I appreciate it very much. Let me just begin with a bit of praise for David. I reviewed the book in draft, and I have to say, I really loved it and learned a lot from it. I think he's produced a realistic, readable, and engaging blueprint to tackle a challenge that's vexed this nation for generations literally, the question of dependence on oil.

And he presents a really clear and cold assessment of the national security economic, as well as the environmental reasons why we need to change course. And true to form, trained like a good National Security Council staffer, David really treats all the different perspectives carefully and lays out the alternatives, and he gives us a lot of different lenses, and he also addresses the reasons that lie behind the status quo as we find it today.

So it's a fair and balanced book that I found very compelling. It's also very timely and important if you think of where we stand today. We're mired in Iraq, we are in a nation that is deeply out of step with the rest of the world on global climate change, and we're also in the process of picking a new president who's going to clean up the mess that the current one has left us. In short, we're a nation that is accustomed to leadership, and we find ourselves as a laggard, and I think David makes a compelling case that our relationship with oil has a great deal to do with it.

His organizing concept in the book, as David said, is about memos to the president. As a former White House staffer myself, I followed David when he was -- went from the National Security Council over to the State Department. I found it very credible as someone who was there and looked at it, but I also think someone who hasn't will find it engaging, and the general public will enjoy reading this book. So I think anyone who cares about the future of our country should pick it up and read it.

Let me say a few quick words about my perspective from outside of

Washington. Those in the audience who know me, I see several former colleagues here, I retreated from this great city in the loss of the Gore election, back to the safety of the Commonwealth of Massachusetts, where we care about the environment and global warming and other things that are good for our state and our nation, and I've been back seldom since then.

In January we took off with Governor Duval Patrick. And I think what you see and I see -- first of all, by the way, if you ever go work in the state government and you've been in Washington before, you will love it. We have no OMB, we have no Senate confirmation, we have no written record of our legislative hearings, and we have a line item veto, it's a good deal, I commend it to you highly. But my larger point is that states are leading, and we in Massachusetts are doing several things differently.

David mentioned a couple that we've done. We also put energy and environment together; we're the first state in the nation to do that. I appoint and oversee eight commissioners and six departments that go from Public Utilities in our Energy Office over to Agriculture, Parks, Environmental Protection, and Fisheries and Wildlife, and we asked all six of these agencies to align themselves together and work together, typically Energy and Environment tend to fight with each other, we said let's get in the same room and pull in the same direction and start aligning all of our incentives and regulations to promote clean energy and environmental protection.

And what we're seeing quickly is, there are a lot of areas of overlap, how we regulate utilities in terms of a rate design, how much efficiency we allow in the system, these are things that we can do that will save both cost and encourage our liability, but also dramatically reduce our mission, so we're working hard on things like that. And our Agriculture Department is beginning to focus on biofuels, as well, and the list goes on. I won't spend this time advertising what we're up to in Massachusetts. But let me say another thing that is happening in our state apart from state government is the presence of a great deal of entrepreneurial activity and capital in venture capital on clean energy.

We have $250 million invested in clean energy technology in the Commonwealth of Massachusetts alone just last year, second only to California. And you'll see more and hear more about Massachusetts companies as they emerge and many of them go public.

So we've got one, for example, Internock, this is a company that has today 800 megawatts for medium sized power plants worth of power under management. This is not actual power generation, but this is load management demand response on the other side, so they can go around to every Shaw Supermarket in New England, sign them up and say, we'll pay you money if you dim your lights a little bit on those hot summer days when there's peak power available. This is just one company, there's dozens, a hundred, 550 in Massachusetts that are innovating in this area, and you'll hear a lot more about them in the years to come.

One example, you saw A123 Systems, the fine company that Les is representing today that is giving David his car while he goes around on his book tour. By coincidence, and this is a moment where this book is already influencing policy-makers, Dave View, the CEO of that great company based in Watertown, Massachusetts, was on my calendar to come and talk to me about potential expansion of the company, something we should all like, we in Massachusetts would particularly like it if it was in Massachusetts and we're doing everything we can to encourage that, but he was coming to talk to me about expansion, and I was just finishing reviewing David's book for him this summer, I said, I've got to get into this plug-in hybrid thing.

So to make a long story short, about a month later, and again, this is the lack of OMB, it's a wonderful thing, about one month later we announced that we're procuring the first ten cars in our state hybrid fleet to be plug-in hybrids, and after they go through the crash testing, we're planning next year to make a much larger purchase, several hundred, and get our state out there leading.

I think I'll be the first cabinet official around the nation driving around in a plug-in hybrid. I have currently an unmarked state police Taurus flex fuel, Taurus that I'm going to trade in and be driving a plug-in hybrid, so this is freedom from oil in action already influencing policy, and it hasn't even been released at that time.

Let me just wrap up with three points that I found particularly

compelling that I encourage you all to take away from this book, and I'd be happy to talk more about it during the discussion period. First, David already mentioned this, but I'll drive it home again, this fundamental point about lack of alternatives. This is what I really took away from the book. This is not, as Jim Woolsey said, about foreign oil, this is about oil, and the fact that we are attached to oil and that we need to change that.

The second is this role of federal purchasing. If you look back over so many areas of innovation in our nation, the role of the federal government and state governments in purchasing. In Massachusetts, as Camp Edwards on Cape Cod, I toured the other day, they've got a remarkable number of things going on in the military today on clean energy, a lot of innovation and a lot of capital being deployed, something I don't think I could have said five years ago.

But we've got a great deal that we can do through our purchasing power. And as David suggests in his book, we can make a tremendous difference through marshalling federal purchasing power.

The third point I'd make is something that I think is important for everyone to understand, that all choices in clean energy or clean energy or energy technology are not created equal. So if we invest our time and effort in things like coal gasification, while it may make some incremental progress in some areas, it pays no where near the types of dividends of other choices, like cellulosic ethanol that David talks about in the book. We've got Massachusetts companies that are on

the forefront of cellulosic ethanol, it's an important technology that we need to pull in, and some people I think should understand that all energy technology solutions are not created equal when it comes to the environment.

So to sum up, I found this book to be fabulous. It's realism, it's got realism, readability, and ambition, and I think it should be mandatory reading for all of you, for presidential candidates, foreign policy mavens, environmentalists, and citizens alike, it's great work. Thank you for having me today. I look forward to the Q and A. Thank you.

MR. SANDALOW: Ian leaving no doubt why I invited him to come speak. We're going in alphabetical order, by the way, through our speakers here. We started with Ian Bowles, now we're going to go to Keith Cole, who is Director of Legislative and Regulatory Affairs at General Motors. I have known and really liked Keith for many years, as well.

Keith is -- we don't always agree, but Keith is a great thinker and he's been a partner at the law firm of Beveridge and Diamond and Swidler Berlin, and correct me, Keith, I think I've got this right, you're a lawyer and an engineer both, so he actually knows what he practices law about. Keith, to tell a quick story, called me the middle of last week and said, David, I need to withdraw from you program, and I was distressed, to say the least, that he said that, and I said why, and he said, because I read your book and I don't agree with everything in it, and I said, well, Keith, that is not a reason to withdraw. This is not intended to be a hallelujah chorus; this is

intended to be a critical analysis. So with that, we got Keith back on stage, he's going to tell you whatever he thinks about the book. Thanks.

MR. COLE: Well, thank you, David. And I have to say, it's really out of my respect for David and his thinking that I do have a few nits with the book, because Dave has a very compelling perspective, a very sharp mind, and I expect -- I have a really high standard for what I think David is going to come up with, and by and large, he's met that standard.

But I won't make this a complete hallelujah chorus today. But it's really only out of my great respect for you, David, that I do bring up a couple things. First off, want to get a flex fuel car, go to Avis or Enterprise. They sell lots of GM products, you can definitely get a GM car, and if you push the GM on star button, you can always find the nearest ethanol station, so just --

You know, it's a little -- it was a bit of a challenge, because I found the focus on oil and oil security once refreshing, and the way you've kind of reinterpreted it from the '70's perspective, as Jim Woolsey described. But secondly, I -- we've gone through the process internally at GM of the focus from energy security to probably at least an equal focus on greenhouse gas emissions. And you mention that in a couple places in the book, but the -- as I read through it, one of the things I had to do in my own mind was, balance what we're doing on oil with the other efforts to address greenhouse gases.

We certainly don't like being 96 percent dependent on oil for our

customers fueling their vehicles. Like Dave, we like choice, probably for a different reason. It's not so much national security, but it's two things, one, it's our business case, where we suffer from volatile oil markets, and lack of choice, in our view, leads to those -- a lot of that volatility; and secondly, our customers like choice. So we like to give our customers choices.

There are a lot of valuable suggestions in the book. The federal commitment to buy plug-in vehicles and pay more for them. And one of the things that you mention is, it is going to cost more initially.

And one thing that we've been struggling with is, it's very hard to get agencies to pay a dime more than the least cost of vehicle out there. And we've had requirements for them to do -- and purchase advance technology vehicles for some years, but it's a real implementation struggle to get them to actually do it. Also the commitment to buy flex-fuel vehicles; surprised not to have a requirement to buy the fuel. Ethanol is out there in increasing amounts, the 85 is out there in increasing amounts with additional stations. No, it's not everywhere, but with federal fleets, there's no excuse why federal vehicles aren't buying and using ethanol today.

Consumer tax credits, both the scope and the size I think are very appropriate in the book. You mentioned going after the first two million plug-ins, that is -- that's beginning to get at the level.

But one of the things we face when we're coming down the -- when we're going up the volume curve and coming down the cost curve, and the

automobile business is all about volume, is, it's really at the level of half a million of year that you get to automotive scale volumes.

So two million is certainly better than I guess we're dealing with, you know, 60,000 -- 100,000 vehicles per company in the existing hybrid tax credits, but two million vehicles total is just beginning to get at those economies of scale, where you can start to come down the volume curve.

A lot of other things, 85 pumps, low carbon fuel standards, enhanced R&D, a lot to look forward to. I found the battery guarantee corporation very intriguing. It's an idea that may reduce risk from new technologies and kind of whatever you can do in that area can help bring those technologies to market. The variable ethanol credit is intriguing. The tax and rebate, it sounds like Chairman Dingle read your book in draft and put in his tax bill. Let me turn to what I found a little surprising in the book, because what I -- one of the things -- and Jim Woolsey, you mentioned this, the change in perspective from -- this isn't about reducing oil in some absolute sense, but about giving people choices and changing the nature of oil, because I think our view certainly is, we're not going to get away from oil entirely, but that choice aspect changes the nature of oil as a commodity and leads to a whole number of other things.

You mention in the book that a lot of people are stuck in a '70's mind set. And what surprised me was, I felt the proposals on a new Cafe System, even though it has a neat name, and I like the new name, was still stuck in that '70's mind

set, it still focused on a liquid fuel paradigm, and it's focused on that reducing oil consumption in some absolute sense.

We're increasing efficiency even under the vehicle standards for say trucks that have been static for years. Consumers' choice to use that efficiency often for larger vehicles. But going forward, we have a choice, do you want us to put our effort towards using gasoline more efficiently, that's what I would call the '70's model, or do you want us to use our, you know, put our chips on the place that's going to change from one fuel to another. Now, you can say, well, yes, but you can have -- you can alter the Cafe System to incorporate non either ethanol or non-liquid fuels, and it's true, but it's always a choice. And so the fundamental metric of the existing system is built around an oil paradigm. Electricity, hydrogen, bio-fuels all are kind of a tough fit into that system.

And secondly, the rates and dates that you're proposing for this really get us focused on efficiency. We have to focus more than anything on the efficiency of the vehicle, the size of the vehicle, getting to those numbers.

We're not -- we don't advocate abandoning the quest for greater efficiency, but what we do think is that it needs to be balanced with a quest towards different fuels, and that the -- so I guess if I had my one critique, it was really that from your initial perspective on the change from the '70's perspective mentality that you mended to a new way of looking at oil and what are the challenges and what are the difficulties that oil poses today.

I would have expected an even bolder approach on changing Cafe to a new program, continue efficiency, but really get the auto companies working as much as, or even more on changing the fuels that work in the vehicles while maintaining efficiency in those vehicles and increased efficiency for gasoline vehicles. And I'll stop there and look forward to the question section.

MR. SANDALOW: I won't abuse the privilege of being an emcee to also respond and we'll save that for later. Our next panelist, going in alphabetical order, is Ray Dougher from the American Petroleum Institute. I called a friend of mine in the -- one of the big oil companies a week or two ago to see whether he would be interested in coming to talk. I said, you're not going to like the title of this book, but there might be some things that you agree with.

He read it, he said, there are some things in both categories, alas, I can't be in Washington, can I recommend Ray Dougher to you as a panelist, so I'm thrilled that Ray could be here.

Ray is a Senior Economic Analyst for the American Petroleum Institute. She has been there since 1985. She has appeared on many, many broadcast outlets, including The Today Show and Nightly News, Jim Lehrer. She is trained as an economist and has a bachelor's degree in History and Political Science; Ray Dougher.

MS. DOUGHER: I'm really happy to have the opportunity to represent the oil industry's view on a topic that's very near and dear to our hearts.

And I want to start by congratulating David on this really fine book. The title does give me heartburn, however, but I love the way it's structured, I love the way you used the template of the cabinet post and senior aids in laying out all the pros and cons of many of the policy options facing us. And I think at the heart of this book are some really good questions; how do we secure our nation's energy future, how do we fuel our growth while protecting our environment.

And that's why I think the topic could be a little broader than this, securing our nation's energy future, something like that, because I don't think that we can look at oil in isolation from other fuels, I don't think we can talk about energy policy without embracing all of the fuels and all of the technologies, and I don't think that we can just focus only on the transportation sector when we think about conservation, we have to look at all of the sectors.

Also, we have a terrific challenge ahead of us in terms of trying to fuel our nation's growth, trying to do this in an environmentally sound manner as we move forward. And I don't think we can afford to take any options off the table, and that's why this book is such a nice exercise in looking at some of these key options.

The truth is, some day we are going to transition to other types of energy and other technologies for using it. And it might be that biofuels will replace oil as the primary transportation fuel. But right now we're many years away from that future, so in the meantime, to me, it makes sense to explore all the avenues to conserve energy, and to use energy wisely, to invest as much as possible, encourage

new technologies, and a portfolio of fuels and vehicles going into the future, without picking the winners and losers right now, but encouraging that growth and development, but also continue to explore and develop our own resources, it just makes sense to continue to do that.

And now I just want to address just a couple of ideas in the book. I agree with the Chair of the National Economic Council when he says the U.S. economy has absorbed these price shocks remarkable well in the past few years, however, that's no guarantee for our future.

You can envision these scenarios, as you mentioned in the book, a nuclear attack on Saudi oil fields, for example, what would happen in that situation. I think the recommendation of the Secretary of Energy, that we expand the International Energy Agency to include other -- the Strategic Petroleum Reserve Agreement with them to include other countries like China and India and other developing countries is a good idea.

The idea, however, to expand our own Strategic Petroleum Reserve to include refined products doesn't make as much sense to me, primarily because I think it's -- the cost would outweigh any benefit you would get from it. I can't envision a scenario worse than what happened with Hurricanes Rita and Katrina, where we had a third of U.S. refining capacity taken off line literally overnight. And the extraordinary thing about that disaster from a market perspective and the oil's perspective was how well it really worked. We had imports pouring in from around

the world. The prices did go up, that's what attracted the imports, but then they came back down again.

And we have 18 different formulations of gasoline. One of the key things in that Hurricane Rita and Katrina event was the fact that there were government waivers put in place very quickly which enabled us to move different kinds of formulations all over the country, that was a help. So I just don't -- I can't envision a scenario where we need it, and it would be an added cost to consumers.

I was very gratified to see the Secretary of Energy talk about this idea of energy independence, and it's not realistic, realizable, or even desirable; I have to agree with that. It tests beautifully in focus groups, and every politician is using it, but it's not realistic.

In terms of securing our nation's energy future, I think the department of -- the Secretary of Energy should have reminded the President that we're going to need about 28 percent more oil, 19 percent more natural gas between now and 2030. That's even with an assumption of the 70 percent increase in biofuels and 90 percent increase in other renewables. We're starting from a low base, so I think that's important, too, and that we still have resources that the oil and natural gas industry would like to develop here at home. And it's not going to make us independent; it's going to be a bridge to our energy future. We're going to need all the energy we can get. If we can develop it here at home, we keep the jobs and the money here.

The idea from your Secretary of Agriculture that all major oil

companies convert half of their gasoline stations to using E85 pump is just putting the cart before the horse right now. Only three percent of the cars on the road today can use an E85. So you're not going to convert 75,000 stations for that three percent.

Plus, the cost of conversion is any -- and I've triple and double checked this figure, is anywhere from 20,000 to $200,000 a station. Ninety-five percent of these stations are owned and operated by small business men and women. They make a couple of pennies on every gallon of sales. So you really have to be able to realize a return on that investment to make it worthwhile.

I think if we want more ethanol, we should expand the existing system we have. There's a lot of room for growth in it. This year we're at about seven billion gallons. And most of the -- all of the cars in the United States can take a ten percent blend, so you can -- and we're consuming about 145 billion gallons. So you can see your way right away into 15 billion gallons, and at that point, you're bumping up against food cost and other things, too. So we have the vehicles in place, and as they turn over, as the vehicle fleet turns over, there will be a demand. The big break through is going to come with cellulosic technology. With that break through, you're going to see these service station owners and operators killing themselves to get the pumps in, but right now it's just not economical.

And the Secretary of Energy's suggestion to switch the ethanol credit to 51 cents to the domestic producers instead of the blenders might actually -- what it would do is discourage the blenders from using the ethanol because they have other

cheaper alternatives right now.

Ethanol is within about 40 percent of the gasoline we use right today. So that would give them a disincentive a little bit. So if you want more, I think he's going to have to rethink that.

The Secretary of Agriculture's suggestion of a credit, that ethanol will be adjusted to help farmers. So, for example, when crude goes down to $40 a barrel, the credit would be 70 cents; when it goes over $75 a barrel, it would be nothing.

It's been at over $75 a barrel for six weeks now, and Pride had closed near $84 a barrel. And I checked the Triple A's web site, they keep a count of the cost of ethanol, E85, and it was selling last week for 22 cents more a gallon than regular. So if you took that 51 cents away from that 22 cents, you're already 71 cents a gallon more expensive. So when you get in the -- I don't know how that would work. I think that would be a difficult thing to have that rolling difference, but -- and right now consumers wouldn't buy any ethanol with that -- with the lack of that incentive.

The other thing is, I think the tax rebate scheme is kind of complicated, especially since the only folks paying for it would be those making over $78,000 a year, and they just have less incentive to change their behavior.

And the poor actually drive a lot more than wealthy Americans. They live further away from their -- where, you know, where they work. And I think the elderly would benefit from a nice rebate check in the mail. But I just have a hard

time thinking how this would really change demand significantly.

And, of course, as you know, it would be very difficult to implement because of all the different, you know, regional, world versus urban areas, and politically it would be very difficult. It might be easier to go after the federal tax and add valorem or something rather than this scheme.

And on a final note, I would encourage your President to take the Secretary of State's advice, that we should avoid vilifying oil producers. It's not in our country's best interest to encourage this metaphoric isolation behavior, it's just not. And finally, you know, a plug for oil, please remember what a fantastic fuel it really has been in our lives. There are many challenges with using this fuel, and I don't think anybody knows that better than the men and women that work in this industry. So as we move forward to try to address some of these challenges, it's really important that we get it right and we do it right. So -- and David's book is a great start in that direction. Thank you very much.

MR. SANDALOW: Thanks, Ray. One of the points I make in the book is that the oil companies are filled with thousands of good and hard working people and I think it's really important we don't vilify anyone in the course of doing this transition.

There was a lot of content there, and it really points to the need for a lot more time for discussion than we're going to have right now, so we'll try to figure out some forums in which to do that.

I am really thrilled to be able to introduce Chelsea Sexton. One of the fun things about writing this book was getting to know some fantastic people around the country who are working on this issue, and nobody brings more dynamism and enthusiasm to this than Chelsea.

When I first met Chelsea, she told me about something that I only experienced yesterday. And yesterday Les Goldman and I went driving, as I said, and we, you know, got 343 miles per gallon as we drove around in that car out there. It was from Chelsea that I first heard about this possibility. Chelsea is right now the Executive Director of Plug-In America. She is the star of the movie, Who Killed The Electric Car, which is a -- if you haven't seen it, I highly recommend.

You know, I mean by the way, the enthusiasm for this agenda is just fantastic. Just in driving this car around town, I meet people. People stop me in parking lots, in big crowds to ask about it. Somebody who stopped me in a parking lot the other day is here at this event, which I'm very grateful for them coming down for this.

Chelsea Sexton started her career in a dealership for General Motors, and went from there to become one of the leading advocates for plug-in hybrids in the country. Ladies and gentlemen, Chelsea Sexton.

MS. SEXTON: Gosh, I like this alphabetical thing. It's not often I get to have the last word after both oil and auto. So David sort of called me up and he said, you know, come on to this event, you can say anything you want about plug-

in cars, and then he got up here and so eloquently absolutely did it himself.

But I do have a little bit of personal experience with it and it is far more well known than I would have guessed even a year ago. I did start in the auto industry before I was old enough to vote and have basically never left, and spent most of that time working with plug-in vehicles, most notably on the GM EV1 program, so yes, there's a little bit of irony. And I know firsthand, you know, sort of the absolute palpable potential of what it's like to experience a technology that will change the world.

And it sounds really trite until you experience it. And I know, Les, smiling in the back of the room, knows what I mean, and I think David does, too, now. But to be able to power a vehicle on clean, cheap, domestic electricity, and to put that electricity in a car that is quiet, and smooth, and for those of us who care about those things, fast, is really fun.

I mean to be able to transform your every day driving experience with no compromises simply by making a different choice in what you buy, you know, you make one change instead of every day changes. And so the people who drive the EV1 loved them. Our experience was not that they were sort of skittish about it, but they really whole heartedly embraced it, and in some ways, brought culture back to the automobile.

You know, you don't get all that excited necessarily of your Honda Civic, but you know, these people are forming car clubs, and you know, forming,

you know, all kinds of different things, exchanging email lists and videos and what not. And unfortunately, at the turn of the century, the cars were taken back and the programs were ended and the cars were destroyed and we sort of couldn't get anyone to pay attention, and so we did what you do when you're from Los Angeles and you're frustrated and no one will tell your story, we made a movie, and it had its desired effect, which much as Keith might argue, was not to get anyone to think of, you know, any of the suspects in the film as villains, but to get people talking.

And, you know, the most poignant moment came for me not when, you know, even to have someone say I want a plug-in car, as cool as that is, it was to have a 17 year old in a Virginia high school say, I saw your movie, I think I could take my country back, that is what's important here. And just like that, you know, the point of David's book is to get people talking, to think they, too, could take their country back.

So the other very cool thing that our little movie did is that it -- aside from getting people talking, the best people it got talking was the auto industry, the policy-makers, these cars are coming back. We have OEM's that are now talking about building pure electric vehicles in addition to plug-in hybrids. It brought attention to plug-in hybrids that are already being made by companies like A123, who are going to do it tomorrow. You know, you no longer have to sort of wait for Goliath to return, there are ways for the David's, no pun intended, to go ahead and do it, and all of that is incredibly exciting. And everyone got up here and

they talked a lot about the details of the book, and we'll have conversation later, so I won't do that, but I will remark on a few things that we learned as lessons along the way. And I was really pleased to see that they are captured in David's book, as well.

You know, as the grass roots person, I sort of feel obligated to comment a little bit on the spirit of all of this. And, you know, the few things that you captured were, this is a really complicated story, both how we got into it and how we're going to get out of it.

And as trite as it sounds, what that means is, we are all in this together, and we have managed, in trying to tackle this huge problem, to create a great number of circular firing squads. We are fantastic at it, unprecedented. But it's not going to serve us going forward.

So it will take a variety of solutions, many of which were outlined, and many of them are going to be delivered by really average people, and that was one of the coolest things to see, was that a lot of the people profiled were, you know, people I'd find next door, or you know, people you've never heard of.

And it said that people are most fascinating when they're caught in the act of being themselves, and that's what these people are, they are very quietly and mostly humbly -- may be excepted, going about doing what they're doing without a lot of fan fare, and are in their own quiet way transforming how we're addressing this problem. And lastly, you know, there is absolutely a role of government. And I'm a

California native, so I come from a place where, especially in the last decade, we question any president that's not Martin Sheen, and I think we actually believe that Oscar night plays a role in picking our next president.

But it's true, I mean recently we have gotten into this notion of, you know, consumers leading the industry, and you know, particularly in the industry I deal with, we hear that a lot, you know, we want to build cars people want to buy, we want to build what consumers demand, and that's wonderful, and I'm really encouraged to see it's finally happening.

I think the Chevy Volt actually, and I'll just say now, I want one in my driveway, so I'm still a GM fan, it's the first example I know of of a car program that is in direct response to people asking for better cars and asking for what they want and refusing to settle for less.

But what's interesting is that recently policy-makers haven't gone that direction. You know, people cannot ask for what they don't know exists. And yet right now consumers are leaving this, and states are leaving this, which I love, but we still need some stuff on the federal level going on, and traditionally that has not been the case. And so however cynical we all are, and whichever side we fall on, it is really important for policy-makers to take this leave again and show people what's possible so that they can get involved and they can ask for it. So thank you, David, for writing this book. It's an honor to be here and an honor to have been included, and congratulations on a fine piece of work.

MR. SANDALOW: So we're running a little bit late. Let me just, before I introduce our last speaker, say what we're going to do. Phil Sharp is going to talk, then we're all going to come up on stage. I'm bursting to respond to some of the comments, but I promised the opportunity for questions, so we're going to take questions, go about ten minutes over until about ten after 11:00 and then call it a day. If you need to leave at 11:00, please do it.

Phil Sharp is, quite simply, one of the most respected people in this town. He spent 20 years as a member of Congress, serving in the course of doing so in the House Energy and Commerce Committee, where he played a central role in the Clean Air Act and many other important pieces of legislation, left Congress, and went to Harvard, spent a number of years at Harvard, and is now the President of the very distinguished think tank, Resources for the Future. We're thrilled to have here Phil Sharp.

MR. SHARP: David, thank you very much for that extremely generous and overly generous introduction. You've obviously been living in Washington for quite some time. That is the mode, and it usually means you're totally ready for burial by the time those kinds of comments come. And I particularly thank you for inviting me because it meant that I read most of the book, and I know there's a library in hell for those of us that paved the way with intentions of books not read, and this one is well worth reading.

I also believe there's a cell down there for those who claim they're

rushing out to buy your book and will do so and read it immediately. That's another -- there's a lot of Washingtonians that will be serving time in that venue.

Let me suggest that -- I'm at that point where about everything has been said, but not everybody has said it. And so I wanted, though, quickly just to say how valuable I think this book is in its substance, its fascinating presentation and insight into a government for those people who have not been associated with government agencies and the kind of interplay that goes on, and it's certainly well worth it, and I certainly applaud the focus on trying to advance this main technology of plug-in hybrids and trying to see what we can do about the biofuels.

Let me say, however, I think you can tell from that introduction that I was invited as a relic from the 1970's, who's hoping that his thinking is not trapped in the 1970's. But it does cause me to think back a little bit because we don't want to make -- we want to recognize some of what happened in the 1970's. And I just want to focus very briefly for a moment on, so why didn't the dream come true. And David identifies that in several ways, and he's not wrong about the things that his Secretary of Energy says to the President about why we didn't manage to get a hold of the oil situation in this country, but I think what's missing is very significant there.

And let me just say, we are at a time now when we are seen actively and will see horrendous changes in technology, in energy markets, and in government intervention into those markets. There's no question in my mind that's happening now and will happen then.

We are also at a time when there are big dreams about transformation of the energy industry and the environmental consequences of it, and those are noble dreams, and the question is whether they can come true or not. They're often motivated by nightmares of disasters that are on the horizon economically, environmentally, or from the security things.

I believe there are major risks that we are confronting on those three fronts, and we do need to dream broadly, but why not the dream in the 1970's, and why not a sustained effort as a relic from those times? Let me just mention a couple very quickly to keep in mind because they are not irrelevant today. The first is, the world oil market was wildly successful, contrary to most peoples' predictions, over the last 30 years. Many limitations and down sides, but it managed to give us on almost all occasions reasonably priced fuels on a very broad basis here and around the world and as demand radically increased over those 30 years.

Many of us thought that was not going to be the future in 1970, the prices would either go through the roof, or it would not be available, or we would see some kind of -- transformation that did not happen.

It not only met demand growth, it met enormous imposition by the U.S. government, European governments, and a few others, and more needs to be done in terms of environmental standards. By the way, the industry often said they're too costly; there's double hulls on the tankers, or whether it's the Clean Act of 1990, but frankly, the industry met them when imposed and when enforced.

Thirdly, they managed to overcome continually political turmoil that many of us predicted they couldn't manage at the same time. When Venezuela and Nigeria and Iraq were all going wrong at the same time, we still managed to have oil supply with higher prices, admittedly. And finally, what's already been alluded to and what David is very clear in the book about is, this last round of very dramatic oil prices for several years has had minimal impact so far on world economic growth contrary to what many of us said would necessarily be the case. Now, that doesn't mean there aren't costs in real world problems there, but the point is, the nightmare scenarios did not come through.

But that's the question of the past and so far. And I won't go into the risks that Jim and others have identified here because I think those are real risks that cause us to act. And I would just say, this book, which comes at a very good time, actually missed one source that would reinforce some of what it's saying, that's the National Petroleum Council's own study, this is primarily the oil industry, but they reached out in an unusual way and stressed the importance of beginning to address nationally and internationally to the fundamental changes in the world oil market that are underway now.

And even though they don't buy the immediate -- eminent peaking of oil, they do argue for strongly, for much more efficiency, much more development of alternative fuels, and I think that would reinforce a portion of what David is saying.

But the first reason I give is, the market actually performed despite

our predictions in ways that, by and large, we like. One can find many things that one doesn't like about it, but there -- the second argument is, the enormous difficulty in Washington and nationally, and this is irrespective of party and time, and I don't think it's going to go away anytime future, and that is the colliding of goals. There is a competition for goals. First, just in what you do about energy policy. It's very difficult to get agreement at any given moment and to sustain that agreement, whether it's whether you believe we've got to make sure we've got supplies at a reasonable cost, the economic argument, whether you believe we've got to take action on the environmental front, as I strongly believe we must now in climate change, for example, whether you believe the security argument, that we've got to do something about dependence on oil and the reduction of its importance and the admitted capture that it has on our transportation sector.

But the colliding of goals goes farther over those 30 years, and of course, it collides with all the other societal goals that we want to accomplish, whether it's health care or doing something for Brittany Spears, that one I don't understand, but I guess Anna Nicole Smith, I can comprehend slightly better, but that's where much of our attention resides too many times. Those wonderful people that Chelsea, right on, is talking about do also have a habit of buying SUV's, turning on the television to watch Anna Nicole Smith, and liking their oil prices cheap, and liking their politicians not to impose cost. So I think they're motivated for change now, I think the leadership is motivated for change, but the

work will be serious and ongoing. Let me add in addition to colliding the goals that oil prices and their fluctuation in the international market have been one of the most significant motivators in our economy and in our politics. When the prices have gone up, investors have rushed over the last 30 years, as have consumers, as have government policy to support alternative fuels, to support fuel efficiency cars, and what not.

When those prices have gone down, government has withdrawn, the consumer has withdrawn, and the investor has withdrawn. Now, I think we are in an era when those prices are going to remain higher. But an illusion to the $40 floor was here precisely because all it takes is a good, solid recession in China, which means a recession, by the way, in lots of other places at the same time, and you will watch oil prices drop.

You will watch the goals in Congress change radically and the budgetary problems become very, very significant. Which leads me to my sort of final comment of: we want and need to stay on a sustainable policy in this business. And we have serious work to do to continue to work through how we most effectively and sustain way we intervene in the economy.

What David has done is provided some very thoughtful ways to do that. But it does rely highly on the politics of subsidy, as did the 2005 Energy Act. And that, by the way, is saying, we can tax, and we can get the money, and we can put it out there, and we can change behavior, a noble way to go. Let me suggest to

you, we need to remember one of the lessons we've talked about over the last 30 years, which is to try to internalize in the pricing of fuels, vehicles and everything else the actual costs, meaning their security costs, meaning their climate costs.

So I would suggest we really need to get to, in addition to these as a part of our grand scheme, we have got to get in place either a good carbon tax that works over time, or a cap and trade system in which we generate income by selling a number of those credits, and using that money then in the subsidy. But that begins to internalize these costs in a way that we get the most bang for our buck, we are most likely, in my view, politically to be able to sustain if we can get there, and I think we must. Thank you.

MR. SANDALOW: I'll start talking because I can speak loud. I am, as I said, bursting to respond, but we only have a few minutes, and I think I'm going to throw it open to questions, and we're going to create other opportunities for dialogue -- So any questions? Sir.

SPEAKER: You do not seem to have addressed why -- oil -- assume -- but I haven't heard anything from you anyway about why we should.

MR. SANDALOW: I didn't do it today. I do in the book, and I welcome you reading it. I'll give the quick answer, in my view, and then let Jim Woolsey offer his thoughts, as well. In my view, there are three reasons to do it, the first is national security, the second is environmental, and the third is economic. On the national security front, in the book I point to several reasons.

The first is the way that oil dependence strengthens Al Qaeda and Islamic jihadists. And if you look at -- if you trace the roots of Islamic jihadism, oil dependence is at the very root of that. And I think in order to gain strategic strength in our fight against Islamic jihadism, we must reduce our dependence on oil.

By the way, I think that is becoming an increasingly non-controversial position in the national security establishment. I've heard this from right and left. Oil dependence strengthens oil exporting nations. Today the biggest threat is Iran, but there are others.

Oil dependence threatens our men and women in uniform, as I talked about on stage. And oil dependence also threatens democracy and good governance around the world. Tom Friedman has written interesting pieces on this. It's also central to environmental degradation, in particular global warming. We have 800 million cars today; it's going to increase up to two billion over the course of the next several decades. Predictions say if those cars run on oil, we are in trouble from a global warming standpoint. And then it hurts family budgets and strains family budgets, as well. So that's my quick summary. Jim.

MR. WOOLSEY: I think David is right, but he understates oil's problem from the point of view of national security. The chaos of the Middle East -- was out from several -- urging Al Qaeda to attack the oil infrastructure, a Shi nuclear weapon under construction within the next couple of years in Iran, and now six Sunni countries announcing that they are also going to have nuclear programs.

If you believe those are going to be for electricity and solely for electricity, since those countries have large reserves of oil and gas, then I've got a bridge in Brooklyn I'd be delighted to sell you.

We borrow close to a billion dollars a day, over $300 billion a year, ship IOU's abroad, weakening the dollar, and a big share of ours and of the world's goes to Saudi Arabia, 170, 180, $190 billion a year. They take a chunk of that, give it to the Wahabis, the Wahabis set up madrassas in Pakistan, elsewhere, in order to teach little Pakistani boys to hate Jews, to hate Shiites, to hate homosexuals, to hate apostates, and become suicide bombers.

If you want to know who's paying for those little Pakistani boys to become -- be taught to become suicide bombers, the next time you are in a filling station, before you pull out your charge card, turn the rear view mirror a couple of inches and look into your own eyes, now you know who's financing those maddrassas, and that's just a start with what's wrong with oil from the point of view of national security. Ma'am.

MS. SHELL: Helen Shell, associated with Resources for the Future. I realize that a carbon tax would hit the coal industry and perhaps raise the price of electricity, but I'd like to hear your comments about carbon tax. I only looked through your book rather quickly and I didn't see much about carbon tax.

MR. SANDALOW: I only talk a little bit about it, and you're exactly right, a carbon tax would mainly hit coal, and a carbon tax alone would not provide

the incentive to move off of oil dependence that some of the other policies in my book talk about. So in my book I talk about some subsidy measures, as Phil Sharp referred to.

I also talk about a gasoline tax and rebate program. And the program would increase gasoline taxes by ten cents a year and rebate most of that money back to poor families, so that the net impact for a poor family would be awash, actually some people would do better.

I also quote Phil Sharp in the book saying, "A lot of people make proposals like that, but few people who need to face the voter for their job make proposals like that." So I recognize that it is a politically challenging proposal, but I think from a purely policy standpoint, it's one that live analysts think make sense.

MR. FINNER: Kevin Finner with Issues in Science and Technology. I heard the Chairman of Toyota last week say that Toyota he thinks is three years away from introducing a plug-in hybrid commercial model. I would like to hear from several people on the panel where they think the market is for these cars, and what would it take to make that market successful, what policies might be needed to implement it?

MR. WOOLSEY: I'm going to turn to Chelsea on this, and then Les Goldman, as well, in the back of the room, if he wants to add anything after Chelsea has spoken, he knows a lot about this topic.

MS. SEXTON: Well, I think it's fair to say that Toyota has

apparently not talked to every other major auto maker in the world lately. You know, General Motors has been the only one to actually announce two plug-in cars for production, but most of the others have actually unveiled something and have announced some plan, particularly at the Frankfurt auto show a couple of weeks ago.

So I think it's a mistake to assume that because Toyota hasn't publicly gotten on board that it's not ready, but it also is very much, so far, consumer driven. So the market is clearly there, I mean I won't pretend that it's a mass market tomorrow, but it is definitely there, and it's growing. And, you know, the fact that there are people trying to do conversions to meet that demand now speak to that. It's not necessarily -- it didn't start as a cheap proposition, and so it actually took some demand to get people to be willing to do it.

So in terms of what it takes to go forward, the same thing it takes to support everything. I mean technology is expensive initially, and in California, we tend to favor mandates. There are some that will disagree whether that's a good idea or not. But either way, I mean it takes a combination of industry, policy, and in grass roots in the market to drive all of the different angles of the triangle toward each other.

MR. COLE: David -- here, because we have announced two vehicles that we're working on, the Saturn View, which is in a hybrid form today, but will be in a stronger hybrid form in 2009, we're designing that from the ground up to accept batteries, and in 2009 it will be a standard hybrid, today's version, but we're

designing the vehicle to accept the larger battery pack that will make it a plug-in hybrid with a range of approximately ten miles.

And then you've all heard of the Chevy Volt, we're designing that from the ground up around a system that is -- we don't consider it a plug-in hybrid, we consider it a pure electric vehicle with a range extender, and that range extender can be driven by gasoline, ethanol, diesel, biodiesel, or hydrogen fuel cells. And we're -- our plan is -- actually, I should say our Head of Vehicle Development, Bob Lutz, has said he'd like to do this by 2010. What I can tell you is, we don't have a production date that depends on being able to source the battery. A123 is one of the companies we're working with on a battery. We're moving as fast as we can to get that vehicle into production, and work with A123 to be able to make the vehicle a reality.

I think the big thing that excites us about this, and we are a technology driven company in this respect, that we've seen the development of battery technology to the point where we think we can make a no compromises vehicle.

It's not a vehicle that would be limited in range to 100 miles or 150 miles, it's not a vehicle that would have no trunk space, it's not a vehicle that would be a two-seater. These are vehicles that could give you 600 mile range, have room for four or more passengers, full trunk space, in other words, a zero compromised vehicle, great performance, and that's just the function of battery technology, and the

-- well, it's a function of battery technology, it's also a function of the price of gasoline, because the consumers have to make a choice, the technology will cost more initially and probably over an extended period of time, and that works much better, you know, if you ask $70 or $80 a barrel, excuse me, petroleum is $70 or $80 a barrel, you have a lot more room for advanced technology to come into the market and the customer to see value in that when gas is 30 to 40 -- petroleum is $30 to $40 a barrel.

So we see this, we see the plug-in vehicle as the potential for a no compromises vehicle, and that's important because you can have the best technology you want, but if you don't sell it in the millions, it has no effect on the oil equation; it has no effect on greenhouse gases.

So the fact that you can buy a $200,000 work car that's pure electric, it's a neat vehicle, it's a wonderful experiment, it is not going to do anything for our oil dependency, nor is it going to do anything for greenhouse gas. You have to find a way of making a no compromises vehicle in the $20 -- $30,000 range before you're going to get mass market appeal, mass market sales in millions a year, and then you can start to move the needle.

But we absolutely see that as coming. We sometimes say that we're waiting on Les to -- at A123 to develop the batteries, but I know you're -- Les, you're very bullish on that; I'll give you a chance to talk about your development phase.

MR. GOLDMAN: Thanks, Keith. We are right now working very

closely with GM and can attest from the inside aspects of it, the level of their commitment and the kind of vehicles in a relatively shorter period of time that will be on the road as original equipment vehicles. The car that you can all look at, if you haven't, it sits out front, which, interestingly enough, based on the initial question, is a Prius, which turns out to be a very good car from an efficiency perspective, with a relatively weak battery, that's the bottom line on what the Prius is, and that car is the equivalent, if you will, of the first bulky cell phones that we all encountered before we have the real small, you know, blackberries that do everything including washing your dishes.

But those first cell phones, even though they were bulky, were a whole lot better than anything else around before them, and that's what A123 is interested in, this continuum of the batteries that are basically being sold to Black and Decker and to Walt.

I've been driving a car like the one out front for seven months; it's gone about 1,400 miles and used less than ten gallons of gasoline. I can tell you that the technology works; that the batteries that will be in the GM Volt and in the View are even another generation beyond the car out front.

But the idea that the folks who have been the first out there and done the very, very best, but have a weak battery, and want everybody else to wait until the battery gets -- they can get their own battery better, that's just not right, that car out there proves it, GM is proving it, other manufacturers are getting in and doing it,

and so I think the most exciting thing, as Chelsea indicated, and Keith is working on, is that this is not something that we're looking at way, way out into the future. I can tell you personally, David can tell you personally, he's driving one of them now, in the spring, these conversions will be out there, you have to start somewhere, it'll start with a couple thousand, and by 2010, we'll have five million conventional hybrids on the road, which Wally OEM's are beginning to come out, are also eligible for 80 percent fuel savings and 60 percent emission savings. It gets the public involved, it's very exciting to work on, and bottom line, I think Toyota is just wrong.

MR. SANDALOW: Jim -- his question, and then we have time for one or two more questions.

SPEAKER: One quick point about whether there will be consumer interest, in most of the country, off peak overnight power goes for about five cents a kilowatt hour, that translates into a pentium mile, double it for California because energy is more expensive out there, two cents a mile, okay, a penny to two cents a mile. On gasoline now, you're driving it 12 -- 14 cents a mile.

So the first thing, even the initial ones of these are going to be a few thousand dollars more. If you go into a dealer showroom and you realize you're going to be able to drive at something on the order of a tenth the cost for most of your driving that you're driving at now, and furthermore, leaving the car plugged back into the grid, so called vehicle to grid hook-ups will come along in the future, Commissioner Wellinghoff says that should be worth something on the order of a

couple of thousand dollars per year per consumer, to leave the car plugged in so it can be used for reserves and for regulating the grid.

Is anybody interested in a car that you drive at a tenth the cost of what you're driving at now and your local utility pays for about a third of your car payments? Hello. Do you think there's going to be a consumer interest in these? I kind of think so.

SPEAKER: If I could just add, there's going to be tremendous consumer interest and this is a valuable thing. But what you've just also heard from several people is, the number of political and institutional players that have to adjust to this and change, and that's where the rubber meets the road.

The electric utility commissioners have to change, the federal -- utilities have to alter their thing. I don't know what to do about this neighborhood where I live, but we're not going to run extension cords out to the -- across the street to the cars parked wherever they're parked, so it's not going to work perfectly everywhere, but those will be solved by the market place, but it will take a sustained effort to cause all of these institutions to make the adjustments that are necessary to get the most rapidly out of this technology.

MR. CAFORD: My name is Carter Caford, I'm interested in science, and I'm a real estate developer. But David and I met each other the other day just going into a shopping center, I, of course, looking forward to having one of these cars and being able to drive one.

When we talked about gas today, I'm amazed how we talk about how cheap gas is in terms of its relative price. I'm trying to turn this around a question, but two parts of the question. The first question is, when you bring up the price of gas, aren't we adding then to the price of this war? So gas is not a bargain today. We have a huge expense with this war going on.

Number two, I want to talk about what might be our answer in the future. We should take NASA, I think, and I'm going to turn this around into a question. Shouldn't NASA's purpose be to focus not on going to Mars and the moon, but going to explore technologies out in space, bring those things that we don't understand, bring them to earth, and be able to explore those as new forms of energy?

We have very few alternatives today which would begin to explore radical approaches, spend the money, and bring those things down to earth. Now, who would like to handle that as a question? I'd like to turn it around.

MR. SANDALOW: I'd be happy to. I mean, first, you're exactly right on your first point, that the full cost of gasoline is not paid at the pump. And a lot of the proposals in this area are about internalizing those costs in various different ways.

Second, on your NASA point, I'm not familiar with what opportunities there might be from outer space exploration in terms of alternative energy development in the United States, you know, back here on earth. It could

well be an area that's worth looking at. There is a lot of opportunity here on earth today to do this, and I think my first instinct would be that's where we should start.

In my book, I propose a major new research effort, and there's a lot of proposals out there like that. The people call for a new Apollo Project and people call for a new Manhattan Project after what happened in World War II, I call mine the Reynolds Project after what's going on in Reynolds, Indiana, and I say we need a new Reynolds Project to aggressively pursue new technologies in this area. We've got the last question right back here.

SPEAKER: Good morning. This question is related to consumer popular, making this product popular with the consumer here in the United States. Wouldn't it make sense if taxi organizations were given the tools to bring plug-in technology into their fleet? Mr. Bowles, maybe in Massachusetts, do you think that there would be any tax incentives for taxi organizations? Because here in Washington, we have the most fuel inefficient cars as our taxis, and it seems to be quite ironic.

MR. BOWLES: Yeah, I mean actually credit to New York, where Mayor Bloomberg is requiring that the whole New York taxi fleet go hybrid currently, it's a pretty exciting proposal, it's happening right now. Mayor Menino is, just for another example, in Boston, requiring all new buildings be lead certified going forward.

So we're seeing that type of thing happening at the municipal level,

and I think that would be a great way to inform the public and to make a sizeable change all at once, and it's an area we regulate highly, so I think it's a promising idea.

SPEAKER: You know, the focus on fleets is particularly useful when you have a new fuel, ethanol, hydrogen, natural gas. I mean those are custom made for vehicle fuel systems that require completely new fuel. Plug-ins, one of the attractions is, you don't need a new fueling infrastructure, you have a 110 volt outlet at your home, you don't have it in every apartment house, but you -- many people have it within an extension cord's reach of their car.

So I don't think that -- and I think that focusing on those fleet applications kind of misses the scale of the auto industry. I mean those are very small numbers in taxi fleets compared with the automobile market, 270 million vehicles on the road today, 16 roughly million vehicles sold every year. You know, there is a value of demonstration project in getting the public familiar with them, but really the prize that we need to keep our eye on is that 16 million vehicles that you need to excite the customer about, you know, kind of corporate or government or taxi fleet sales may not be the way to, you know, create that consumer excitement, especially with a vehicle that doesn't require any fueling infrastructure.

SPEAKER: I am sorry that we ran over, I'm sorry that even running over, we haven't been able to get everybody's questions. As the -- here, I want to thank everybody in the room for all of your help. Buy early and often. Thank you.

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