

AMERICAN JEWISH COMMITTEE

Reducing U.S. Dependence on Imported Oil

A Vital Issue for the Security
of the United States and Israel

Based on Presentations
at AJC's Annual Meeting
Tuesday, May 3, 2005
Session Chair: Stuart Sloame



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REDUCING U.S. DEPENDENCE ON IMPORTED OIL:

*A vital issue for the security
of the United States and Israel*

Introductory Remarks:

Stuart Sloame,

Chair of Washington Chapter Energy Committee

Why is it vital that there be a discussion of reducing U.S. dependence on imported oil at the American Jewish Committee's Annual Meeting? Mr. Stuart Sloame, chair of the Washington Chapter of AJC's Energy Committee, cited two reasons: strategic and economic.¹

The strategic reason is geopolitical: The United States imports twelve million barrels of petroleum each day, out of a total of twenty million barrels that the country consumes. That is, at least 60 percent of the U.S. daily consumption is imported, and consequently the country is exporting well over a half billion dollars a day for energy needs, largely for automobiles. About a third of this dollar outflow goes to oil producers in the Middle East.

Oil prices today [May 2005] stand at \$50 a barrel [after Hurricane Katrina, up to \$64.50 a barrel]. This has created a transfer of wealth of historic proportions from the U.S. to countries that, to paraphrase President George W. Bush, don't particularly like us—"us" being the U.S., Israel, and the Jewish people. Many of the petrodollars sent abroad find their way into the bank accounts of terrorist groups, radical clerics, and scientists who are trying to develop weapons of mass destruction.

The second reason for our concern is economic. Our dependence on foreign sources of oil makes the U.S. economy highly vul-

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nerable to any instability in the world that affects price or supply, placing the United States at grave risk, and acting as a potential threat to Israel. The drop in the GNP in the first quarter of 2005 by almost a full point was attributed to the spike in oil prices, almost 60 percent in a year. Money spent on more expensive gasoline is not available to purchase other items; thus consumer spending drops.

The American Jewish Committee has long been an outspoken proponent of the development of a comprehensive energy policy aimed at a substantial reduction in U.S. dependence on imported oil. Twenty-five years ago, prompted by an earlier Arab oil embargo, AJC adopted its first policy statement on energy. Over the succeeding years, as the nation coped with the 1979 collapse of the Shah's regime in Iran, the 1989 Exxon-Valdez oil spill, and other shocks, AJC promulgated several additional statements on energy policy², led by AJC's National Energy Committee, whose current chairman is Henry Dubinsky.

Addressing the Disparity of Supply and Demand

Over the past two years demand has further increased, driven by the burgeoning economies of Asia, without a corresponding increase in new supply. How can the disparity of supply and demand be addressed? One can wait for OPEC and the oil-producing countries to ramp up production over the next twenty years, which will cost the world economy some \$3 trillion. Or one can anticipate the arrival of the so-called "hydrogen economy," based on hydrogen fuel cells to power millions of vehicles.

Alternatively, this program will examine two sets of recommendations that have received bipartisan support in Congress, as well as from a very broad range of interest groups. The recommendations seek to reduce the consumption of oil substantially over the next five-to-ten years by what is the largest source of oil consumption—the transportation industry. The recommendations are contained in a document entitled *Set America Free: A Blueprint for U.S. Energy Security*³ and also in the Report of the National Commission on Energy Policy.⁴

To discuss these reports and their recommendations, Mr. Sloane introduced the three panelists:

Jim Woolsey, former director of the Central Intelligence Agency, was one of the authors of the *Blueprint* and involved in the Set America Free Coalition. He also participated in the deliberations of the National Commission on Energy Policy.

Dr. Joseph Romm, an expert in advanced vehicles and clean energy technologies, served as an adviser to the Commission. His topic is the technical feasibility of the various recommendations.

Congressman Jim Saxton is co-chair of the bipartisan House Energy Security Caucus.

Finally, Dr. Ben Schlesinger, a member of AJC's Washington Chapter Energy Committee and an independent energy consultant and analyst, was asked to summarize and suggest possible American Jewish Committee actions.

Henry Dubinsky

Chair of AJC National Energy Commission

The topic of the program, "Reducing U.S. Dependence on Imported Oil," is an issue that virtually everyone agrees must be solved, but there are major differences of opinion about how to do so. The first speaker, James Woolsey, former director of the Central Intelligence Agency, was graduated from Stanford University, was a Rhodes Scholar at Oxford, and holds an LL.B. from Yale Law School; he worked in many branches of government before coming to the CIA.

James Woolsey

James Woolsey noted that he prefers to use the term "oil dependence" rather than "energy dependence" or "imported oil dependence." That is because electricity production is a separate issue. There are many clean and unclean ways to generate electricity; there are renewable energy technologies and nuclear energy tech-

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nologies. Different issues are associated with each technology, and the security of the electricity grid is certainly an important subject. However, only two percent of the country's electricity is created by using oil. If an advocate of nuclear power or of renewable sources of energy states, "We can get away from using imported oil for generating electricity if we use"—fill in the blank with "nuclear reactors, windmills on every hill," etc.—that person would be ignorant of the fact that only 2 percent of the country's electricity is generated from oil.

The crisis vis-à-vis oil exists because of its widespread use for transportation. While petroleum is used to some extent for heating fuel, it has substitutes. Oil is used, to some extent, in the chemical industry, but it has substitutes, often natural gas. However, for transportation, oil products are the essence, and our transportation system is virtually entirely geared to oil. A significant portion of the oil-producing infrastructure is in the Middle East, as two-thirds of the world's proven reserves are there, as is all the low-cost production. The infrastructure in the Middle East is particularly vulnerable.

Robert Baer, a former CIA officer, wrote a book called *Sleeping with the Devil: How Washington Sold Our Soul for Saudi Crude*, which highlights the danger to Saudi Arabia's refineries, pipelines, and terminals. It imagines what would happen if terrorists crashed a 747 airplane into the sulfur cleaning towers near Ras Tanura, the Saudi refinery in the northeastern corner of the country. (Saudi crude oil is very sulfurous and must be cleaned of its sulfur to use.) Such an act of terrorism could take six million barrels a day offline for a year or more and would send oil prices up to over \$100 a barrel, sending the world economies into a tailspin.

Furthermore, the possibility of coups is great in that part of the world. There was almost a coup in Saudi Arabia in 1979, when the Great Mosque in Mecca was taken over, and there have been assassination attempts against a number of Saudi Arabian leaders. There has been fighting of some intensity recently in the northern part of Saudi Arabia. A coup by Al-Qaeda would mean putting people who

want to live in the eighth century in charge of 25 percent of the world's oil. Osama bin Laden talks about massive cutbacks in oil production.

Thus oil is a product very different from cotton, in that it does not have an easy substitute, at least not in the short run. If somebody cut off the supply of cotton, we could use synthetic fabrics or other fibers for clothing. Not so with oil. It was important to ensure that the market itself would largely take care of these problems. One could use incentives in the marketplace, but the government should not be in the business of picking winners and losers among technologies, because government is not good at it.

Second, we want energy technology to be compatible with the existing infrastructure. For this reason, Mr. Woolsey did not favor the president's proposal that focused heavily on hydrogen fuel cells. The National Commission on Energy Policy found that hydrogen fuel cells were twenty years in the future in terms of any significant impact on the oil market. It would require changing the whole energy infrastructure in order to use them. One would need a means of turning natural gas into hydrogen at every filling station. Which would come first, the energy companies supplying the stations, or Detroit creating the fuel cell cars? He preferred that the system be compatible with the existing infrastructure.

Third, any new energy technology ought to be reliable and affordable, so as not to be vulnerable, as when the Saudis dropped the price of oil in 1985, wiping out all their competitors. This requires a system that relies on localized production and on feed stocks that are widely available.

The Energy Policy Commission proposed that CAFE standards (Corporate Average Fuel Economy Standards) be resuscitated. How? This could be accomplished by increasing the fuel economy requirements, but with a much more flexible system than the CAFE standards previously mandated. From the late '70s to the mid-'80s, over about an eight-year period, cars went from an average of 15 MPG for new vehicles to an average of 26 MPG—an improvement of over ten miles a gallon in an eight-year period. Since 1985, we

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have gone down from 26 MPG to 24 MPG on average, while we've gone way up on other key measures: 93 percent in horsepower and about 20 percent in weight. Detroit has been made many improvements, but all have gone into added weight, size, and horsepower—all of which have diminished, at the bottom line, fuel economy.

On the other hand, given that there were certain rigidities in the existing fuel economy standards, the recommendations tried to make them more flexible. They recommended a safety valve so that the auto industry could purchase credits for fuel economy from the government at a certain price. That is, the auto manufacturers would have the ability to trade credits among car types.

Three Technologies

Where should we be headed? Mr. Woolsey touched on three technologies: diesel technology, hybrids and plug-in hybrids, and alternative fuels.

One of the reasons that European countries have 40 MPG fuel standards for their new vehicles and we in the U.S. have 24 is that over half of their passenger vehicles use diesel technology. Diesels aren't yet as clean as gasoline engines, but the Europeans have relaxed their standards on that point. The U.S. is implementing some very demanding standards, which, by next year, modern diesels ought to be able to meet in terms of emissions. That development will open up the possibility of getting 30 percent-40 percent improvement, in some cases, in mileage from diesel passenger cars or light trucks.

Whether one uses diesel or gasoline technology, the members of the Energy Policy Commission felt that the direction that held the most promise was the development of the hybrid. The Toyota Prius, a five-passenger hybrid car, gets about 50 MPG and was named car-of-the-year by *Motor Trend* magazine last year. The Prius gets about 60 MPG in town, and about 40 on the road; hybrids do better in town because they work well with stop-and-go driving.

Hybrids are not all-electric vehicles. You don't have to plug them in, and you are not in danger of running out of electricity in

the middle of the Mohave Desert for lack of a long enough extension cord. They use gasoline, and the gasoline engine, during different times of acceleration and deceleration, charges a battery; the battery drives a large electric motor which allows the car to run on electric power a substantial share of the time.

What makes hybrids attractive? First, people stayed away from fuel-efficient vehicles in the past because they were lighter and smaller, and many people need or want larger vehicles. The Energy Policy Commission found that all five hybrids now on the market, from Toyota, Ford, and Honda, also have models with standard gas motors—the same models, same weight, etc. The hybrids not only got substantially better gasoline mileage, but they had higher horsepower. Thus if Detroit wanted to advertise the hybrids as “hot,” rather than advertise them for fuel efficiency, they could do so. After all, a hybrid SUV that gets 30 MPG is better than an SUV that gets 15 MPG. So if you need an SUV, for some purposes, get an SUV; just be sure it’s a fuel-efficient one.

Hybrids today cost about \$3,000 more than cars with a conventional engine, even when a dealer isn’t charging extra because he knows how popular they are. Thus, tax credits are going to be necessary to create a level playing field. If customers walk in to a car dealership looking for a Honda Civic or a Toyota Highlander or a Ford Escape, and they are presented with two cars that look alike, except that one gets much better fuel mileage, accelerates a bit faster, and is, yes, \$2,000-\$3,000 more expensive, but they will be getting a \$2,000-\$3,000 tax credit, then what is there to worry about?

The other interesting feature of hybrids is that they can be adapted. (To learn how, go to www.calcars.org.) They can be adapted by adding a plug-in extension cord. Using the extension cord, one can top off the batteries overnight. With today’s lead batteries, by plugging in overnight, you may be able to drive perhaps ten miles before the hybrid gasoline/electric feature kicks in, and with lithium batteries coming onto the market, up to thirty miles. Since most trips, particularly in a two-car family, are relatively short, this

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means one can go for long periods of time running only on overnight power, never having to buy gasoline. Still, the car has the possibility of running on gasoline, so that for a long trip on the weekend, the driver doesn't have to worry about finding a place to plug it in.

Plug-in hybrids have two very attractive characteristics: First, they could get cumulatively 100 MPG-200 MPG, because for half or more of the time, they are driving on plug-in overnight power. The other feature is the low cost of plug-in power. On the electricity grid, the average residential cost of electricity at homes across this country is \$.085 per kilowatt hour, which is the equivalent of \$.50 a gallon for gasoline. Furthermore, in many parts of the country, the rate for off-peak power at night is \$.02-to-\$.04 a kilowatt hour. That is the equivalent of \$.12 to \$.25 a gallon gasoline.

If you present today's gasoline prices to consumers who know that they are a minor modification and an extension cord away from being able to drive on \$.12 to \$.50 a gallon and still have good horsepower, the hybrid has very great appeal. Thus, the government might listen if told that tax credits for hybrids were worth exploring.

Two alternative fuels meet the criteria Mr. Woolsey described: being compatible with the infrastructure, and reliable and affordable. He became interested in one alternative fuel through an article Joseph Romm wrote in the *Atlantic*, some eight or nine years ago, before Woolsey testified before Senator Richard Lugar's Committee on Energy and National Security. Senator Lugar became interested in it, and together they wrote an article in *Foreign Affairs* called "The New Petroleum."

The first alternative fuel is called cellulosic ethanol, which is ethanol that is not made from grain (like vodka), but from cellulose, i.e., grasses or kudzu or waste paper. Thus the feed stocks for cellulosic ethanol are much larger than the feed stocks that can be used to produce corn-based ethanol or any other grain- or sugar-based ethanol. The grain and sugar-based ethanol industry has advanced to the state where it now knows how to make ethanol

rather well in facilities. Using the corncobs as well as the corn drives down the costs. The secret here is genetically modified biocatalysts that ferment some of the sugars in hemi-cellulose, which are not fermentable by baker's yeast, and can also secrete enzymes that break down the cellulose, much like what happens in a cow's stomach. A cow eats grass. Enzymes in its stomach break the grass cellulose down into sugar. It digests the sugar. This industry uses genetically modified biocatalysts in your backyard breaking down the grass of the cellulose into sugar and being fermented and distilled.

Since grass, corn cobs, and agricultural waste are very widely distributed around the country, cellulosic ethanol can be produced in a variety of places and at a cost lower than the cost of refining oil or producing starch-based ethanol, like corn. Because you're dealing with large volumes of waste products, what is expensive is shipping. To avoid shipping costs, it is best to process them where they are needed.

Facilities could be relatively small. In Oklahoma, during the speaker's childhood, some people in the hills had stills that weren't very big. In principle, there's no difference between a still that uses grass and one that uses corn. Thus distributed processing of cellulosic ethanol means jobs in rural and small-town America. It also means jobs in rural and small-town Chad, and rural and small-town India, and rural and small-town Egypt. This is a good thing from the point of view of agricultural development and people in all parts of the world who are interested in the health of agricultural and rural economies.

The final technology is biodiesel. Today it seems like a something of a gimmick, until very recently, using McDonald's grease or some material from soybeans. But ConAgra, the big food processing company, and a small company are in joint venture with it in Carthage, Missouri, where they are making 300 barrels a day of high-grade fine diesel. It can be mixed with other diesel fuels and made from turkey offal (the waste from a turkey slaughtering plant). That waste costs \$30 or \$40 a ton because it has an alterna-

tive use. Renderers can use it to produce soap and other products.

If you make biodiesel fuel from dead animal carcasses in Europe, where removing animal carcasses has huge negative costs associated with it, because of concern about mad cow disease, you can get over \$100 a ton from "tipping fees." That means that in a plant to make biodiesel, you will be paid \$100 a ton for the feedstock you're using to produce the diesel. All new technologies need some sort of step-up financially for people to take risks and go with them, rather than to stay with the tried and true.

Both biodiesel and cellulosic ethanol were, in the view of the commission, extraordinarily promising, and, because of their distributive processing and production, held a great deal of possibility.

These are the technologies of the future: modern diesel, hybrid gasoline/electric or diesel/electric, particularly with the plug-in feature, and cellulosic ethanol and biodiesel, which give you an opportunity to use waste products with the existing infrastructure, distributed processing, and production to have an impact soon, not decades from now, on our ability to replace oil.

Dr. Joseph Romm

Mr. Dubinsky introduced Dr. Joseph Romm, a former official at the Department of Energy, and an adviser to the Commission on Advanced Vehicles and Clean Energy Technologies. A Ph.D. in physics from MIT, Dr. Romm has written two reports in the last two years, one on *The Car and Fuel of the Future: A Technology and Policy Overview* and a second, *The Hype about Hydrogen: Fact and Fiction in the Race to Save the Climate*.

In the 1990s, Dr. Romm helped run the Office of Energy Efficiency and Renewable Energy, a billion-dollar program that works on hybrid vehicles, fuel cell, hydrogen, alternative fuels, renewables, and energy efficiency efforts. He is also on the board of Securing America's Future Energy, a group headed by Robbie Diamond.

Biggest Worry: Global Warming

Dr. Romm observed that the more we fail to act proactively, the easier it becomes to predict the future. He recalled a cover story of the April 1996 issue of the *Atlantic Monthly*, predicting that OPEC would regain pricing control for oil within ten years—not a very difficult prediction, given that the United States had decided it wasn't going to do anything about fuel economy or make the necessary investments in alternatives.

Looking toward 2020, Dr. Romm said that he was somewhat worried about oil peaking, but not a lot. He worried about oil running out, but not anytime soon. What worried him the most was climate change, or global warming.

In the realm of technology, he felt that hybrids are hard to beat, and for alternatives, the plug-in hybrid—now being called the e-hybrid—is the vehicle of the future. E-hybrids, plug-in hybrids, run on a mixture of gasoline and biofuels. On the other hand, he thought that the chances of anyone in the room ever driving a hydrogen fuel cell car were quite remote.

An interesting, and unfortunate, feature of oil was that, while we are running out of conventional oil, there were lots of pollution-intensive ways of making liquid fossil fuels; the Tar Sands in Canada, for example, require a lot of natural gas to be made. You can turn coal into oil, and in World War II, the Germans got half of their liquid fossil fuels from coal through a very old process. At these prices, you start hearing about people in China and the United States building coal gasification to diesel plants; it's a Fischer-Tropsch process (a method for the synthesis of hydrocarbons and other aliphatic compounds). You can even turn Colorado into West Virginia and get a lot of shale out there. There is more oil in the Tar Sands of Canada than there is in Saudi Arabia, and more shale oil in the Western U.S. than oil in the Tar Sands.

But it would be an environmental calamity if we actually did this. In the speaker's view, it will not be possible in the coming years to separate the energy security issue from the global warming issue.

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He warned that anybody who cares about the State of Israel has to worry a lot about global warming, because there was a very real prospect of a sea-level rise of several meters, potentially tens of feet over the next 100-200 years. Where it is dry, it will probably get drier. Where there is a shortage of water, there will be a greater shortage—as a result of climate changes and the greater evaporation of water.

Notwithstanding what the federal government might say, there was no doubt whatsoever in the scientific community that climate change was happening. (See www.realclimate.org.) By the end of this century the United States will likely be about eight degrees Fahrenheit warmer. James Hanson, director of NASA's Goddard Institute, published an article in *Science*, called "The Smoking Gun," which discussed global energy imbalance. The earth is now absorbing about .85 watts per meter squared, and, as Hanson pointed out, there can no longer be genuine doubt that human-made gasses are the dominant cause of this observed warming.

He felt that you can't separate what needs to be done about oil from what is needed in other realms. For instance, there will be about 1,400 coal plants built around the world by the year 2030. These plants will, over their lifetime, emit 500 billion metric tons of carbon dioxide—half of all the carbon dioxide emitted by all fossil fuel combustion since the dawn of the industrial revolution. So whatever you do to reduce oil consumption, you don't want to do it by encouraging coal production.

Four Strategies for Reducing Oil

The four basic strategies for reducing oil and pollution from oil are energy efficiency, hydrogen, electricity, and biofuels. The improvements in the realm of vehicles are the centerpiece for reducing oil.

However, hydrogen-fueled cars are a long way off. Bill Reinert, U.S. manager of Toyota's Advanced Technologies Group, when asked when fuel cell cars would replace gasoline-powered cars, said, "If I told you never, would you be upset?" In the mainstream technical community, independent analysts have concluded that a pure

alternative-fuel vehicle doesn't make sense. After thirty years of intensive effort by the federal government, no one drives a car that doesn't run on liquid fossil fuels.

It is hard to build such a vehicle without it costing a great deal more than other cars and having a limited range, because it's hard to store the fuel onboard. Furthermore, there is the issue of who is going to build the fueling stations. Also, most alternative fuels don't reduce pollution very cost-effectively. The last issue is that competition just gets tougher and tougher.

Another significant reason that no one drives alternative-fuel vehicles is that regular gasoline-powered cars running on reformulated gasoline are considerably cleaner than they were twenty years ago. Every alternative-fuel vehicle put on the drawing board or built has at least some of these problems, and hydrogen has all of them, much worse than any other alternative fuel vehicle to date.

He doubted that anyone would be able to sell a hydrogen car for less than twice the price of an existing vehicle or to build a hydrogen car that would have the range desired. Hydrogen is the most diffuse gas known to humankind—one that is very hard to get enough of onboard a car to give the range wanted, very hard to transport over long distances without spending a huge amount of money and using a tremendous amount of energy, and therefore he thought it very unlikely that anybody would build fueling stations for hydrogen vehicles.

Furthermore, to compete in the automobile marketplace, hydrogen cars have to compete with the best vehicles in the marketplace. Sometimes hydrogen advocates say that hybrid cars are a transition vehicle to hydrogen cars. In fact, what hybrids do is to raise the bar, as they are the best vehicles in the marketplace. They reduce oil consumption, greenhouse gas emissions, and tailpipe emissions. They don't cost a lot more, and the difference is made up in fuel savings. While doubling one's range between fill-ups, they can be fueled everywhere.

By the year 2020, possibly by the year 2015, every vehicle on the road will be offered in a hybrid model, in his view. Certainly,

Toyota has said that is its intention. General Motors is quite far behind the eight-ball in this respect, but there's no escape from the hybrid trend because you get higher performance, greater fuel savings, and, fundamentally, everywhere else in life we are electrifying.

Homes and workplaces are both becoming more electronic. If you've been in a factory, they are getting more electronically run; your car is the last platform to be electrified, and that means you will want to have a large battery onboard to provide all the amenities.

Hybrids, in Dr. Romm's view, have come past the tipping point. One point that has to be repeated over and over again is that we've had better automotive technology with steady improvements over the entire last two decades, but fuel economy has gotten worse because every last drop of that technology has gone into supporting heavier vehicles and much higher horsepower.

If one cares about the State of Israel, our dependence on imported oil, and our competition with China for scarce oil resources, then one has to push the government to regulate fuel economy standards. Subsidizing hybrid vehicles won't help if auto manufacturers use the hybrid technology to increase weight and horsepower. Having run the largest program in the federal government for clean energy technology, he felt that most of the basic R&D had been done in cellulosic ethanol, energy efficiency, and hybrid vehicles. Now what was needed was for the federal government to insist, through regulation, that the average vehicle become more fuel efficient. Anybody pushing technology without regulation is not presenting a solution to either our oil import problem or our global warming problem.

On the subject of biofuels, he strongly supported cellulosic ethanol. There is a plant that's coming online in Canada, and in his view, it would not take too much effort by the federal government to launch the first half-dozen plants in the United States.

On the subject of electric hybrids, there was no question that once the hybrid platform takes over the marketplace, the next logical step, after every car on the road has a battery that can hold a charge, is to allow the battery to be charged on the electric grid.

Fundamentally, a hybrid that can be charged on the electric grid can use electricity three to four times more efficiently than a hydrogen car. As you start seeing more hybrids plugged into the grid, people will start to lose interest in hydrogen. The good news is that Chrysler is introducing a hybrid plug-in van to the marketplace this year. As noted by the previous speaker, electricity is considerably cheaper than gasoline as a transportation fuel. Plug-in hybrids are also much less polluting than gasoline-powered cars.

Looking to the Future

What will the future bring? He suggested that oil prices would fluctuate around current levels, plus or minus \$15. There is somewhat more upside risk than downside risk, but we are unlikely to attain and stay below \$30 for any length of time.

By the year 2020, our inaction on global warming guarantees that there will be desperation in the United States and around the planet to avoid the very worst catastrophes of global warming, including a sea-level rise of several meters. This issue will become the dominant force in energy policy.

In his view, our leadership in the federal government has decided to put their heads in the sand on this threat, which means that when we do get around to acting, (a) we'll have to take much more onerous steps, and (b) we may be importing the technology from other countries rather than exporting it.

Hybrids will be the dominant platform of the next few decades. I think it is critical that we put in place (a) fuel-economy regulations and (b) as many incentives as possible to get U.S. and foreign manufacturers to build the hybrids, and then make the transition to plug-in hybrids or e-hybrids and to push biofuels as much as possible.

Congressman Jim Saxton

Mr. Dubinsky introduced Congressman Jim Saxton of New Jersey, currently in his eleventh term, who is chairman of the Bipartisan Caucus on Energy Security.

The Importance of National Security

Congressman Saxton, who was elected to Congress in 1984, recalled an incident that happened in 1984, which had a long-lasting influence on him and his views throughout his career. President Ronald Reagan invited all of the freshman members of Congress to the White House to get to know each other. The president said, "What I'd like to do is to go around the table and have each of you tell me what you think is important and what your constituents think is important," and they did. It took an hour and a half for all to express themselves, and Ronald Reagan sat and patiently listened to each. Some people talked about the economy. Some people talked about transportation. Some talked about education. Some talked about environmental protection. Thirty-one Republicans, all with different ideas.

Ronald Reagan leaned forward in his chair when all were finished and said, "Let me tell you something. All of those things are really important, but if we don't have a good system to provide for our national security, none of it means a whit." The speaker said he is still influenced by that point of view.

As a member of the House Armed Services Committee, he went to Israel in 1987 and got a dose of what terrorism was like. Consequently, he came back and worked with Jim Woolsey and others to promote a concept that would provide readiness for our country to deal with terrorism. As a member of the Armed Services Committee and chairman of the Terrorism Subcommittee, he was obviously deeply concerned with how to promote and protect the national security of the United States of America, and of Israel as well.

He worked to provide national security during the Cold War,

and before the Cold War was over, was one of the few talking about how to provide for our national security in what became known as the "War on Terror." Dick Cheney came to the Armed Services Committee in 1991 and said, "I've got good news and bad news. The good news is the Soviet Union's going to go away. The bad news is the threat isn't. It's just going to change." We continue to see it change.

When we think of the threats we face today, we think of 9/11, of the bombings that occur in Iraq and Israel, and we think we've seen the change. But it is obvious that our national security involves other things that we didn't contemplate on 9/11; it involves energy security. That's why he volunteered to co-chair the Energy Caucus, to help bring about policies that would help to protect us with regard to energy policy.

In recent years, there have been several pieces of legislation introduced into Congress that include tax breaks to promote the future exploration of alternative forms of energy, which, in his view, is extremely important. What is needed today is a comprehensive program that would send us in a different direction, and the previous speaker was talking about some of the possible different directions on which we may embark.

When thinking about our dependence on imported petroleum, one must think in terms of supply and demand. He referred to the term "peak theory." Peak theory says that as you use more petroleum, it's like a bell curve; you go up one side of the bell curve when you're producing more, and then you reach a peak. Once you reach the peak, you start down the other side of the bell curve. It becomes more and more difficult to increase the supply; and according to the theory, we have reached the peak. Those who assumed that we were going to have a constant supply and only had to worry about demand were wrong. If we have reached the peak, we can't depend on our supply to provide us with the kinds of energy that we're going to need going forward. If peak theory is right, demand is the only option that we have to work with.

He and Jim Woolsey have both talked with Frank Gaffney, the

founder and president of the Center for Security Policy, who also believes strongly in national security, about these issues.

He thought that what we need to do is to work on the demand side, by finding ways to take care of ourselves and providing electricity for ourselves in a variety of ways other than petroleum, keeping in mind the environmental aspect.

Recently in Copenhagen on his way back from Iraq, he noticed the many bicycles. He thought, "Well, isn't that romantic?" He asked the gentleman who met him at the airport, "What's with all the bicycles?" He responded, "What kind of a car do you drive back home?" He said, "A Chevrolet." He asked, "How big?" He replied, "A full-size Chevrolet." The Dane said, "Here that would cost \$80,000." He asked, "Why?" The man explained that the government taxes cars heavily because they don't want people to consume too much energy.

The Danish gentleman told him that a small-sized car, which in the United States would cost \$18,000 to \$20,000, in Denmark would cost \$40,000, for the same reason. They have "gotten it," in terms of how to curb demand.

He was not suggesting "going into a big tax program to solve this problem, but that's how the folks in Denmark have done it." Of course, a liter of gas costs as much in Denmark as a gallon of gas does in the States, for the same reasons.

One of the things we can do is to use the technologies that Joe Romm was talking about. If we can make cars that today get 20 miles to the gallon, through the technologies Joe described, get 140 miles to the gallon, then we will significantly cut demand for oil. He believed that the technology exists to help us do this, if we make the right kinds of investments. Frank Gaffney told him recently that the hybrid technology developers have figured that the average American driver drives about 25 miles a day. If that's true, and we have developed hybrid cars that can run on electricity for 25 or a little bit better than 25 miles a day, that's "pretty neat" as a reduction of our oil use. But we have to make those investments, and he was hopeful that the federal government would be a partner or a

leader in helping us, as a society, to make those investments.

He ended by saying, as Ronald Reagan had said in 1985, that national security is the most important thing we have to do, and energy security going forward is a large part of that. If one thinks about us not changing the way we do business, then think about Osama bin Laden finding ripe targets to curb our supply of fuel from the Middle East and other parts of the world. As Dick Cheney said, our national security is important; the Soviet Union has disappeared, but the threat hasn't, and energy creates a great target for someone who wants to bring down our economy.

Question and Answer

Alan SILVERBERG of St. Louis: Why Alaska? Do we really need this oil, considering the environmental dangers?

Mr. SAXTON: I agree with you. I'm a Republican, and the Republicans passed an energy bill two weeks ago and a budget last week, and I voted against them because of ANWR [the Arctic National Wildlife Refuge]. But there was another reason. The reason that pushed me over the edge in deciding how to go was, as I said just moments ago, that it is my belief that we have to find different ways to do business with regard to energy. Giving the American people the impression that we have worked toward solving this problem by opening ANWR is to me the wrong thing to do.

Mr. WOOLSEY: I want to commend the congressman on his vote, and add that in twenty years ANWR would take us, if all works out superbly from the point of view of production, from importing 68 percent of our oil to importing 65 percent of our oil. It is basically a drop in the bucket compared to the sorts of things that we were talking about—the hybrids, plug-in hybrids, diesels and biodiesel, and cellulosic ethanol.

Also, the trans-Alaska pipeline is extremely vulnerable and has been disrupted by terrorists and crazy people attacking it several times. You have there a 400-mile-long piece of Chapstick, and if you blow it up in winter, you get congealed oil all over Alaska.

Mr. ROMM: I would add that the threat to this country is from someone cutting off a very large amount of oil. That would mean a large impact on the U.S. economy, determined principally by the amount of oil we consume per dollar of GDP. Producing some extra oil up in Alaska is totally irrelevant to that. The way you protect yourself from an oil shock is (a) by reducing the amount of oil consumed by the economy per dollar of GDP, and (b) by developing alternatives that, in fact, discourage people from jacking up the price of oil, because they know if they do, your alternatives will replace their product. That was, in fact, Saudi Arabia's biggest fear since the second oil shock in 1979. It's the reason they crashed the price of oil in the '80s and have kept the price of oil low.

It has been, in my view, only in the last few months that the Saudis have been stunned that the United States government has done nothing whatsoever to curb U.S. oil demand in response to this crisis. That convinced Saudi Arabia, which has no interest in reducing oil prices, that they should take the revenue from the oil they sell to the market price. Why would anybody consciously reduce the price of the product they sell at the demand price, unless they were afraid that the person purchasing that product would go to a different product? Since the United States has unilaterally disarmed, by refusing to take any action whatsoever on demand, it has convinced the Saudis, "Let's keep the price of oil high."

UNIDENTIFIED SPEAKER: Thank you for coming, Mr. Saxton. Mr. Romm made it very clear that global warming is a problem. Why is it that from the Republican side, there are still questions about global warming? I read a speech by Senator James Inhofe [R/OK], saying that global warming doesn't exist and quoting people like Prof. Richard Lindzen, who is considered by many to be a junk scientist. Why the attitude among many members of Congress that global warming isn't a problem or a threat?

Mr. SAXTON: You are asking the wrong guy, because I'm one of those Republicans who continually gets endorsed by the Sierra Club because I have an outlook that is very much like yours. I think that all people in Congress and all of us are products of our back-

grounds. I happen to live in New Jersey, which is the most densely populated state in the country. We in New Jersey have had to be environmentally conscious because there are so many of us to mess up the environment by just doing little things. In the summer of 1987 and 1988, the New Jersey shore became very ecologically damaged. Dolphins were washing up on the shore. Medical waste was washing up—blue tides, green tides, algae blooms of all kinds. The ocean was dirty. We had to take steps to straighten it out, and those were the experiences I've lived through.

I have a great friend, Barbara Cubin, who is a [Republican] congresswoman from Wyoming, a state many times the size of New Jersey with 400,000 people residing there. They would have to work all day and all night, individually, to damage their environment, and that's where she comes from. That is where Jimmy Inhofe comes from, a district like that. We are all products of our own environment, and we represent a constituency of people who think as we do, or we wouldn't be here. That is where the Republicans, for the most part, come from, as best I can explain it.

Philip WOLF of Denver: The congressman mentioned electricity and security. I'd like to tie those together. What is currently being done to protect our electrical grid?

Harris KEMPNER, JR., of Galveston, Texas: We have an energy policy at the American Jewish Committee that calls for, among other things, CAFE standards to be implemented again, and Congressman, my question to you is: What is it that seems to block your side of the aisle, particularly, from accepting the concept of increasing CAFE standards in the United States?

Secondly, Mr. Woolsey, Mr. Romm, your solutions have a tendency to rely, to a greater or lesser extent, on electricity and therefore on the electrical grid. My question to you is whether the grid is capable of doing what you think it can, with all these new demands, and whether you think that appliance standards might affect the demand side of electricity. Would those be appropriate government policies for somebody to be pushing?

One of our stances in our policy statement is that government

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needs to set standards and then let technology take over, but government isn't even setting standards these days in any way, and is relying entirely on the market, as a matter of theology, which I think probably is a failure as far as present-day outcomes are concerned.

Dani SILBERMAN of Boston: I have a question for Prof. Romm: Where are we in terms of research in implementing hybrid technology on commercial airplanes and ships?

Mr. WOOLSEY: I served on the National Academy of Science's study of using technology to combat terrorism three years ago. Our report, *Making the Nation Safer*, is available on the National Academy's Web site. With respect to security for the electricity grid, there are two things that badly need to be done and done soon: One is making it possible for transformers to be produced in a modular way. The way that transformers work now, you have to have an exact fit for a transformer that is blown up or damaged. Unfortunately, they are very easy to damage and destroy. Then you have to ship a whole transformer in to replace it. It has to be an exact fit, and sometimes these are too huge even to go on railroad cars or trucks. It's a very, very serious problem. How the electricity industry got itself into this, I'll never know, but that is what it is. If you have modular transformers that can replace a damaged one, you can stick two, three, or four together, to be roughly right with respect to what you need. It is like having the little spare tire in the back of your car that will get you 100 miles until you get the real replacement. That is one thing that needs to be done.

The other thing is the SCADA systems, the so-called Secure Access and Control Systems, for the control of the grid, which operates over the Internet over unprotected links. They are a mess and need to be protected. We have hackers trying to get in, sometimes successfully, all the time.

Those are the two things that need to be done soonest with regard to the electricity grid, and I believe the House bill has increased authority for FERC [Federal Energy Regulatory Commission] to give it some responsibility for improving the reliability or

the resilience of the grid.

Of the solutions that Joe and I talked about, only one relies on increased electricity, and that is the plug-in hybrid; the alternative fuels really don't. But the plug-in hybrid, for most people, would be done in the first instance at night, when there is off-peak power. What drives putting in new electricity capability is peak power. Thus, if you have peak power available at noon on a hot weekday in the summer, and then you have this excess power at night, even in the summer, which you are not selling, electric utilities will sell it to you for two to four cents a kilowatt hour, instead of your average eight cents a kilowatt hour of electricity, if they can sell it to you at night.

One of the nice things about plug-in hybrids is, in the first instance, that you can use off-peak power to top up the batteries; and then, in time, we will need to move toward increased generation capacity for the electricity grid. We need to do that anyway, and there is a whole other debate about what kind of power to use.

Mr. SAXTON: There is one element of the current situation that, while painful, may be beneficial. Over the last decade or so, we have not been able to convince ourselves as a society that we need to make environmental policy that recognizes the potential dangers of global warming. While the Clinton administration may have been a little more favorable to it, we really didn't accomplish much then, and, of course, we haven't in the last four years, either. With regard to energy policy, the price of gasoline has gotten people's attention because we're all dependent on it. This relates to the question because, over the past couple of decades, we as a society have chosen to buy bigger cars and also have chosen not to engage seriously in environmental policy that addresses the problem of global warming.

Thus the direct answer is that we, as Congress, have done that which in some respects we're supposed to—reflect the desires and wants of the American people. While there are many, or at least some, who agree with me, there are others in Congress, perhaps most, who wouldn't agree with what I'm saying.

Mr. ROMM: To follow up on Jim's point about making enough electricity, I think that the transition to electrified hybrids is going to take quite some time. We first need to transition to hybrids, which I think will take ten or more years. We will have time to build the electric capacity we need, and, as Jim said, people will be charging up mainly at night.

As to the question about hybrid technology in planes and ships, I think the thing to realize about hybrids is that you have a gasoline engine or an internal combustion engine and an electric motor. In order to make an electric motor make sense, you need to have a source of electricity. In cars, the hybrid's source of electricity is that when you slow down the car and then regenerate, you run your motor backwards and generate the electricity.

In a plane or a boat, you're not going to have that opportunity. People are starting to put hybrid engines on trains, and you're hearing a lot more about them on buses, and that is where I would expect you will see them. I think you'll also see them on farm equipment. John Deere is putting them in a lot of farm equipment, and I think you'll see them in those types of equipment where there is a good opportunity to regenerate power.

Then there was a question about appliance standards; I ran the office that made appliance standards, and they're certainly one of the most important ways of saving electricity. I don't think anyone thinks very much about the fact that their refrigerator uses maybe a third of the electricity that it did in the mid-'70s. Obviously, the technology for refrigerators has gotten a lot better, so the government can put in place standards that save energy while delivering the products that people want.

That's the point that Jim and I have been making about cars, too. Particularly with hybrid technology, we can build the cars we want without sacrificing size, weight, or acceleration.

Mr. DUBINSKY: We have time for three more questions.

Michael ROSENBAUM of Chicago: In 1974 we knew that energy was a security issue. In 1979, when things were worse than they are now, we were talking about energy as a security issue, and

President Bush is the first president in a while to really address it, and the silence is deafening from both sides of the aisle. Exactly what is it going to take for this country and its government to address this as a security issue and come up with a cohesive, long-term energy independence policy?

Gary HAUPTMAN of Washington, D.C.: You touched quite a bit on one of my questions, which is the awful rule of unintended consequences. If we shift more to plug-in electric cars, what is the downside? What do we have to look forward to as the problems that come up—such as the disposal of used batteries.

The other question I'd like to ask is the ultimate question that an organization like AJC always asks: What role can and should we be playing to help move this process along?

Andy MILNER, of New Jersey: I sat on similar panels thirty years ago. The difference was that then supply was the constraint; now it is demand. Over those thirty years, the U.S. has become less energy dependent per dollar of GDP by 50 percent. The cost of gasoline is half the peak it was thirty years ago or whatever the period of time. If it were at the peak that it was previously, it would be \$4 a gallon. So a lot of change has occurred to reduce energy dependence.

I agree with Mr. Woolsey that the key issue is the car. But my question is what can we do, given that we can't change China's demand or India's demand. If it weren't for Osama bin Laden, would energy security mean anything? Having said that, I ask what is going to change thirty years from today, if it hasn't changed in the last thirty years?

Mr. WOOLSEY: Let me take the last question first. There are more differences than you mention from thirty years ago. Thirty years ago recombinant DNA and genetically modified biocatalysts were not even a dream in anybody's mind. Biodiesel, thermodepolymerization—the people who invented them hadn't been born yet. Hybrid gasoline-electrical engines were not even on the drawing board. Nobody had dreamt of plug-in hybrids. Somebody might have thought of an electric car because they had seen golf

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carts, but none of this technology was anywhere thirty years ago, or even four to five years ago. One problem with the Bush administration energy program is that, whether or not it made sense four years ago, it's the program that was here four years ago, and a lot has happened technologically since then. This is a very vibrant area of technology, and trying to make decisions based on four-year-old studies would be like Silicon Valley trying to make decisions based on four-year-old studies.

Yes, the economy is less energy dependent. As a whole, we have reduced our need for energy, but not for oil, which has been the focus of this discussion. Oil is what is rigid. The oil infrastructure is what we can't substitute for. Oil drives transportation needs. If coal gets too expensive, we'll switch to gas. If gas gets too expensive, we'll switch to coal for electricity production. We have become less oil intensive in electricity production. Twenty years ago 20 percent of our electricity came from oil. Today, 2 percent does.

But other than these electricity grid fixes described earlier, the problem, from a security point of view, is oil, oil, oil. Yes, oil is cheaper in constant terms than it was twenty years ago, but that doesn't matter as far as the threat of a terrorist interruption of supply. Saying everything is the same as it was thirty years ago except for Osama Bin Laden is like saying that the play without the Prince of Denmark in it is the same as the one with the Prince of Denmark.

The terrorist threat of disruption, coups, and chaos in the Middle East is at the heart of most people's current concerns. It is true that a lot of us would be worried about oil, as well as other fossil fuels, because of global warming. The congressman would, I would, Joe would, but it is not something that has driven most of the population to be really concerned. What people keep focusing on is national security, and that is also in a very, very different, and, frankly, much more vulnerable posture than it was thirty years ago.

Mr. ROMM: I would add a couple of other differences. Thirty years ago we were unbelievably inefficient. We initiated CAFE standards and doubled the efficiency of our vehicles, and we bought

thirty years. The thirty years that we bought we can't do again unless we double the efficiency of our vehicles again and come up with the equivalent in alternative fuels and the other sources of energy.

INAUDIBLE QUESTION about whether the federal government should be proactive or reactive.

Mr. ROMM: It depends on how you look at the world, but if you're saying that the federal government should not act proactively but wait until things get out of hand, then gasoline will reach \$4. I think if the federal government waits for oil to get as bad as it could get, that would be a mistake of epic proportions. In thirty years, if we haven't taken action, no one will be caring one whit about energy security. They're going to care about the fact that the United States is warming up one degree Fahrenheit per decade. But, historically, it has been very difficult to get the federal government to take action proactively.

People ask what role AJC can play; it is a matter of how important the issue is to you. You clearly have a lot of very important issues, such as justice and anti-Semitism, that remain as important as they ever have been. Nonetheless, I think the energy issue is going to become the central issue of this century. One can state categorically that, vis-à-vis the United States and Israel, there will be no single greater regret in anyone's lifetime than if we fail to take intelligent action on energy.

Thirty years from now, nobody will be thinking about Osama bin Laden. But they will be thinking, "Why didn't we take action on global warming, and why have we left ourselves so vulnerable on energy issues?" That may be hard to see today, but I would spend some time studying the science, because if we do not, our children are going to suffer the consequences.

Mr. SAXTON: As this is the last question, let me end on a more optimistic note. The American system and the American people are fairly unique in the world in terms of how we solve problems. We invented electricity. After we invented electricity, we invented a mechanism to preserve food by keeping it cool called

refrigeration. We invented nuclear energy. We invented cars. We invented airplanes.

These products were mass-produced because our system provided an incentive to do so called profit. Government didn't invent any of those things. What we can do through government is encourage the process to move forward; we can pick among a mixture of things that we want the federal government to do: Provide subsidies, provide tax breaks, provide mandates. Whatever we do is going to encourage our system to work through this problem, and I think we'll do that because we have a record of being able to do both, on the national security front and on the economic front. So when my brothers and sisters on the Hill get serious about this problem, they will take an approach that does what Jim suggested, giving us the ability to use a fuel that will be competitive with gasoline.

When there is a competitor for gasoline, the prices of gasoline will moderate, and of course, it has to be something that can compete on a global basis, not just in this country. I'm optimistic that long-term, over the next twenty or thirty years, our system, given the ability to work through it, will create a solution to this problem.

Mr. DUBINSKY thanked the panel and called on Ben Schlesinger, the rapporteur and a member of the Washington Chapter Energy Committee. He is also a leading energy analyst and consultant, former principal in Booz, Allen, and Hamilton, Inc., and former vice president of the American Gas Association.

Ben Schlesinger

This afternoon's session has been a barrage of information. We have heard a great deal.

Energy is a multidimensional problem: Electricity, oil, and gas are really many different industries. Right now one of them is showing the most serious problems, and that is oil. To quote Llewellyn King, the senior energy reporter in Washington: "There is bad news from the global oil patch. It is drying up." Production on Alaska's

North Slope has gone into decline. Venezuela and Iran are close to their production peaks. Demand in China, India, and the United States is approaching potential oil supplies—hence Jim Woolsey's focus on oil. In his words, it is all about "oil, oil, oil." That is what to remember.

We heard again and again that the solution must be compatible with the existing infrastructure. We don't have the luxury of time to sit down and reinvent our entire energy and fuel infrastructure over this problem.

The energy security issue and the global warming issue are really the same. As Joe Romm pointed out, one of the amazing things about this panel is that it is hard to tell the Republicans from the Democrats unless they wear tags. The energy issue defies political classification, and that came through clearly on the panel. It's not only that Rep. Saxton opposed drilling in the Alaska National Wildlife Refuge, in contrast to some Republicans, but it was the overall tenor of his comments that seemed to lead away from politics.

The oil supply picture has become quite serious. Jim Woolsey commented that drilling in ANWR will reduce only very slightly our dependence on foreign oil. Jim Saxton pointed out that the Federal government has to lead the way toward the kinds of demand-side solutions that are necessary. Along this line, both Jim Woolsey and Joe Romm spoke about hybrid vehicles, and Joe recounted some of the difficulties with alternate fuel vehicles.

I've been a great fan of alternate fuel vehicles since the last energy crisis, in 1979, and to Joe Romm, I say yes, there was one guy who actually drove an alternate fuel vehicle—me. I drove two different compressed natural gas vehicles over a total of seven years. I have the only home in Maryland where you can fill a natural gas vehicle at home. Compressed natural gas vehicles were a transition that turned out to be fairly short-lived. Today I drive a Ford Escape hybrid. Joe's point about improving mileage is well taken; we traded our Land Rover SUV, which got about 11 MPG in town, for our hybrid SUV that gets 30 MPG in town.

What can AJC do? It comes down to three things: First, it's going to take Congressional action. The AJC favors stronger automobile efficiency standards, and everyone ought to demand this from Congress. This goes across party lines. As a Democrat living in Maryland, I was especially frustrated when my own senator, also a Democrat, voted against an amendment that would have required improved automobile efficiency standards. Stronger automobile efficiency standards are probably the most important program Congress can enact. Since automobile efficiency standards were dropped from this energy bill, maybe the energy bill itself should be dropped, and automobile efficiency standards ought to be the only thing passed, as well as incentives to move quickly to hybrid technologies, including plug-in hybrids, which show such promise.

Second, go to your new car dealer and demand a hybrid. Ask for one the next time you go to buy a car. I went to a Ford dealer and asked to see their hybrid SUV. When they showed me the waiting list, I asked, "How are you going to sell it to me now? I'll give you cash right now." And I got it. To whoever was on the waiting list for a hybrid SUV at this dealer, I apologize to you, but it was worth it. So go talk to your dealer about a hybrid, or a flexible fuel car to encourage ethanol, which we also heard a great deal about.

Third, and most important, was the need to depoliticize this issue. Our nation's rampant oil consumption is just too important an issue for politics as usual. In AJC's energy policy statement, which we worked hard on last year, we referred to the need for an effort on the scale of the Manhattan Project. (Go to www.ajc.org to read the statement.) The reference to the Manhattan Project suggests the level of intensity that we think we need to apply to this issue, for all the reasons that we've heard about. We must, as a nation, try to do so quickly. The security and environmental implications are simply too important.

Oil markets, in fact, have not budged all winter and spring because we haven't done anything except quarrel about it. Here is a panel of mixed Democrats and Republicans pointing us in the right direction. Let's move past the political quarrels, and fly over the

ocean of information and misinformation about energy, and cut straight to the chase—this is an oil problem. The problem defies political boundaries, just the way World War II defied political boundaries, and that's the importance we should place on solving it. Today's speakers spoke of solutions that were not twenty years away, but available now—and the problem of too great American reliance on oil has to be solved now, more than any other energy problem in the world.

Notes

1. Mr. Sloane began by thanking the members of his committee who had organized the program: Gary Hauptman, Maurice Axelrad, Robert Horn, Len Levine, Gal Luft, Ben Schlesinger, and Linda Silverman. He also thanked AJC staff members Richard Foltin, Amanda Katz, and Nate Rulf, for supporting the effort, as well as Shula Bahat, for approving a chapter-run program at the AJC Annual Meeting.

2. See <http://www.ajc.org/site/apps/nl/content3.asp?c=ijIT12PHKoG&b=839399&ct=1044283>.

3. This statement was produced by a coalition of scientific and strategic organizations and can be found at <http://www.iags.org/safn.pdf>.

4. Report of the National Commission on Energy Policy can be found at <http://www.energycommission.org/materials/>.



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