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"SECURING THE NATION'S ENERGY SUPPLY"

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PANELISTS:

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WILLIAM MARTIN, FORMER DEPUTY SECRETARY OF THE DEPARTMENT OF ENERGY AND EXECUTIVE SECRETARY OF THE NATIONAL SECURITY COUNCIL

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MODERATED BY:

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Transcript by:
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SECURING THE NATION'S ENERGY SUPPLY

STEPHANIE SANDBERG: Hello, welcome. I'm Stephanie Sandberg, I'm the publisher of "The New Republic," I'm delighted to welcome you to today's symposium on securing the nation's energy supply. This is one of our series on public policy that the magazine started a couple of years ago. We have covered a range of topics, from privacy to health care. I think we will be hearing more and more about energy this year in the short and the long term.

I will make a couple of public announcements for the magazine, very short ones. We have other symposia coming up in the next few weeks, one here later this week. On Wednesday, we will be hosting a discussion with Jeff Rosen, our legal affairs editor, on spam, privacy, and e-commerce. I don't know if this is the spam, privacy, and e-commerce group, but it sounds interesting. Also energy, security, and the environment will be hosted on June 3, and these will all be held up here on the Hill.

We would like, especially, to thank our sponsor, the American Gas Association, for their support today; and here from the AGA, to say a few words, is Rick Shelby, its executive vice president. I will be back with a couple notes on format when he is finished. Thanks.

RICK SHELBY: Stephanie, thank you very much, and it's my pleasure to have an opportunity to welcome you all to today's symposium, "Securing the Nation's Energy Future." AGA is delighted, always, to have an opportunity to participate and sponsor any event that serves to lift the knowledge level relative to this particular issue, which, of course, as you would expect, we consider to be one of the two or three most important issues facing the country today.

I think that it goes without saying that this symposium couldn't come at a more timely point in our nation's history, not only because the Congress is in the midst of debating a comprehensive energy bill, but also because, as we have learned recently through world events, the country is probably even more vulnerable today than it has ever been before, in terms of our energy security. But again, we're delighted to have this opportunity to sponsor this event in conjunction with "The New Republic," which I know I don't have to tell you is truly one of the prestigious public policy documents in America today.

At this point, the one other thing that I had to do, and it is a pleasure, is to introduce Gregg Easterbrook, who is going to be facilitating the discussion. I know that all of you, at one time or another, have had an opportunity to read one of the very illuminating articles that he always writes. Gregg is the senior editor at "The New Republic," where he specializes in public policy issues. He obtained his masters' degree in 1977 from Northwestern University and very quickly gained an excellent reputation for the quality of his reporting and his analysis. He has many, many honors. But, to mention just a few, he has been recognized as a distinguished fellow by the Fulbright

Foundation; he is also a visiting fellow with the Brookings Institution. He was recently awarded the Investigative Reporters and Editors Award for a story dealing with the national energy supply. And one of the things that I have noted over a period of some time, and one of the reasons that I'm so delighted that he's going to be facilitating the discussion today, is that he has written extensively about what those of us at the American Gas Association consider to be the false perception that it is impossible to balance a quality environment with economic development.

But, with that, let me turn the podium over to Gregg, and we appreciate so much everyone taking time from your hectic schedules to come and join us today. I'm sure it will be a very constructive discussion. Thank you.

GREGG EASTERBROOK: An announcement about format – that requires me to create a format, doesn't it? The format will be whatever we make it. I tend to take a casual approach to these things, so I will just speak for a second. I will start throwing out questions and we will see where it goes, and I'm aware that you all have questions you want to ask as well. So, I will tend to get to audience questions soon, because my experience with sessions like this is they go better if the audience gets to speak.

I am inspired to be here in a hearing room, especially with a former member among us. I am tempted to just convene a hearing. I mean, we need a gavel, we need a fawning press corps, we need impatient television cameras – we may have some highly paid lobbyists, so we're all set there. We could do this as a hearing, it would be very exciting, but I guess we will be less formal instead.

We are meeting at a time where the energy bill is taking a long, long time, and I have a good joke about something that takes much longer than it should. This joke is set in present-day Holland, in the Netherlands, and it happens in a local Catholic parish. And an old man, who hasn't seen the inside of a church since he was a teenager, comes in to see the parish priest with, obviously, something weighing heavily on his conscience. And he tells the priest he hasn't confessed since he was a teenager, and his health is poor, he is about to meet God, and he wants to clear his conscience first. So they go into the confessional and they go through the normal litany of weaknesses to which the flesh is prone. And after a while, the old man scrunches up his face and says, "Well, father, this isn't what I really came here to tell you about." So the priest says, "Well, tell me what's really on your mind." So he says, "there's something I have to confess. During World – " -- this is in Holland, you remember – "when World War II broke out, my next-door neighbor was a Jewish man, and throughout World War II, I concealed him in my attic." And there's this hush, where the priest says – is amazed, and says "But my son, this is a blessing before God – this is wonderful. This means that when you die, your soul will ascend directly to heaven." And the old man says, "Well, I haven't told you everything yet. The reason that I took him in is that he was very wealthy, and I charged him $1,000 a week to conceal him."

So the priest thinks for a while, and he says, "Well, you know, conceptually, all you did was charge a very high rent, and certainly the church doesn't view rent as a sin. So, I absolve you of anything having to do with the money. We're very proud of you, go with God." And the old man is immensely relieved. And he gets up, with a big smile on his face, to leave. And, as he leaves, he turns back and says, "Oh, father, one more thing: do I have to tell him the war is over?" (Laughter.)

Well, to me, the energy bill feels a little bit like this. And I would ask you, remember, in the winter of – well, actually, it was in May of 2001, wasn't it? It was approximately two years ago today when the Bush administration energy policy came out. At that time, energy was said to be the number one issue facing the United States. Remember the aftermath of the September 11 attacks, when it dawned on us that Osama bin Laden was a Saudi and most of the hijackers were Saudis; and yet the United States buys nearly a quarter of its imported petroleum from the Persian Gulf, transferring at least $20 billion annually to the Saudi princes who support Islamic fanaticism?

Remember when you read that U.S. domestic petroleum production continues to decline; meaning that, unless something changes, this country will grow ever more dependent on Persian Gulf oil? Remember when you read that SUVs and the misnamed light pickup trucks are exempt from fuel economy standards that apply to regular cars, and this special favor is a primary reason why United States petroleum consumption, crude oil imports from the Gulf, and greenhouse gas emissions are all trending in the wrong direction? And remember when you read that power from uranium, which requires no fossil fuels and produces no pollutants, is in such a poor state that a new nuclear power station has not been commissioned in the United States since – I don't know, my search engine doesn't go back that far?

In the aftermath of September 11, you all know what has been done about these things: nothing has been done about these things. Since the September 11th attacks, the United States has taken no meaningful action on any aspect of petroleum policy. Oil imports from Saudi Arabia and the other Gulf nations continue unabated. Close to one-third of Saudi government funding currently comes from American oil sales, meaning that a large share of the financing of anti-American Saudi clerics and of the anti-American Saudi-backed religious schools throughout the world – and surely at least some of the funding for anti-American terrorism in Saudi Arabia -- this money originates with the United States.

Since September 11th, the fuel efficiency of new vehicles has shrunk to a 22-year low, while no action has been taken to spur the 35 percent mileage improvements in automobiles that the National Academy of Sciences has said is practical using current technology with no sacrifice of safety or comfort. The White House has proposed a modest 7 percent mile-per-gallon increase for SUVs, but the best case for that increase, assuming it's enacted – would be that it would offset added petroleum use, used from the higher percentage every year of the vehicle fleet that is SUVs. The SUV fad, which is an

exercise of national selfishness, is in any case – in almost any event, grown worse since September 11, and fanatics throughout the world smile whenever an SUV leaves any United States showroom.

Domestic crude oil production continues falling. Drilling remains highly unlikely in the Arctic National Wildlife Refuge, the one best hope of finding a new elephant oil field in the United States. Greenhouse gas emissions continue to rise; the figure is a 14 percent increase in the United States in the last decade. Almost all the increase has come from SUVs, pickup trucks, and residential energy use; industrial greenhouse gas production has been negative during that period – the trend has been negative, not the production, sorry.

No concrete action against the greenhouse effect was taken by the Bush 41 administration, none was taken by the Clinton-Gore administration, none has been taken or is contemplated by the Bush 43 administration. Energy policy has reached such an impasse that it has been two years since we put energy on the table as a national concern, and we still don't have an energy bill, despite the fact that the energy bill that is now standing before the Senate – or perhaps, one should say that it is now staggering before the Senate – has been stripped of all politically controversial positions. There are still important things in there, but there's nothing that is of interest to the average voter, nothing that large voting blocks are upset about one way or the other. ANWAR is out, SUV mileage is out, encouragement of nuclear power is out -- all the lightning-rod issues are all gone. It's now a bill mainly of interest – of course, of great interest to a natural gas constituency, owing mainly to the accelerated depreciation provisions. But it is really a bill mainly of interest to specialists, and the world may be better off with it passed than not passed, but all the controversial stuff is out and we still can't seem to enact the piece of paper.

That's the little introduction I want to give on the energy bill. I think we would like to talk mainly about the bill, at least for the first few minutes. I think it's on everybody's minds. We have a distinguished panel, as you know. For those of you who can't – we have very small name tags -- an optometrist designed our name tags here, as an eye test – from my left to your right, it's David Montogmery, Armond Cohen, Robert Ebel, Phil Sharp, Bill Martin, and Andrew Lundquist. You all have their vitaes, I tend to think less is more when it comes to introductions, so, they're all distinguished panelists, or they wouldn't be here.

I would like to just start by discussing this issue, but since we have six people, I could call on you – we could make this like junior high – but since there's six, I would like to just start off to see who wants to talk. Now, if someone doesn't talk, I will call on you and force you to speak in class, but let's start and try to do this conversationally. The first subject of discussion would be the energy bill: should we be happy, disappointed, will we need a second energy bill after this one is enacted? Let's start with opinions on the energy bill. Robert?

ROBERT EBEL: One problem I have with the energy bill: that it looks at our energy problems in isolation; that, you know, we forget, in this town, there's a lot going on in the energy world outside the United States. And let me throw a couple of ideas out here. Failure to recognize what's going on outside the United States means that we will never be able to resolve our energy problem correctly.

Fifteen years ago, who was leading the world, in terms of oil production? It wasn't Saudi Arabia; it was Russia. If I were OPEC, I wouldn't be worrying about Iraq today, I would be worrying about Russia. You look at Iraq – Iraq is thinking in terms of six million barrels of oil a day. What impact is that going to have on the world oil market, and, in turn, on world oil prices, impact on the U.S., if they are successful in reaching that goal as quickly as they would like, which is five to six years?

Is China growing appetite for oil? The IEA, the International Energy Agency in Paris, recently estimated that China's demand for imported oil in the year 2030 is such that if I added in the U.S. demand for imported oil, just in the year 2025, I will come up with a demand for imported oil that exceeds the current producing capacity of all of OPEC. Think of the implications of that. If that estimate of Chinese demand is reasonably correct, is OPEC dead or alive? Will they be able to manage oil prices successfully in the coming years?

Saudi Arabia, today the leader in terms of world oil production and exports. We know so little about that country. Here's the number one leader in the world; doesn't tell us how much they produce, we have to make our own estimate. They don't tell us how much they export; we have to make our own estimate. But the oil future is going to be determined not by current production levels, but by reserves in the ground. And where are those reserves today, they are in Saudi Arabia. Comparing transparency in Saudi Arabia versus Russia, we know a lot more about Russia than we do about Saudi Arabia. But Saudi Arabia has one thing that Russia will never have, and that's spare producing capacity. And it was that spare producing capacity that got us through the loss of Iraqi oil, Venezuelan oil, and Nigerian oil, all at the same time.

Finally, we all recognize our growing reliance on oil imports and we seek security of supply, then, through diversity of supply. That's our only recourse. We get oil from about 60 different countries, but we don't operate in isolation from the world oil market. We are vulnerable to any event, anywhere, anytime, that impacts on oil supply or demand. So does that vulnerability -- because we don't stand in isolation -- does that vulnerability overwhelm any advantages that may accrue to us because we try to import oil from as many sources as we can?

MR. EASTERBROOK: Robert, let me ask you a follow-up. If the big thing going on on the international sphere is that Russian production will increase but Chinese demand will also increase, won't these two factors roughly neutralize each other?

MR. EBEL: Well, there are plans on the drawing board to move oil from eastern Siberia into China by the latter part of this decade. So, yes, Russia will have an outlet for its oil to the east. China will be able to diversify, in part, away from the Persian Gulf. But pipelines, you know, are almost like steel umbilical cords. They would bring Russia and China closer together, not only economically, but politically. And is that in the best national interest of the United States?

MR. EASTERBROOK: (Inaudible.)

PHIL SHARP: Gregg, one of the problems is, we have been obsessed in this country to try to measure our success in energy by how much we import in oil, and it's just a bad measurement. It's not that it's irrelevant; it's just not the right one. The issue here is what happens to the world oil market as a whole because it is a very integrated operation.

And the thing that some of us who fought the world oil market for 30 years have to appreciate is, in fact, it has been highly, highly successful over the last 30 years in terms of meeting a huge growth in energy demand, in meeting that -- in meeting a whole host of military and political incidents that have happened. Indeed, 10 years ago, we would have been stunned if there was any way to get through what we have just been through, with Nigeria, Venezuela, and Iraq in limited production. People would have thought that was an absolute blowout, and yet -- admittedly with a high cost, but not nearly as high as many people speculated would happen – it solved it.

And the third big event that it adjusted to was the fact that we in the United States, and in Europe, and in several other countries engaged in considerable regulation on an environmental front, as we should have, in order to clean up the mess that this and other industries that use energy make. And yet, despite that, the prices remain reasonably low – in fact, historically, some would argue, lower than they used to be.

Now, I think one of the things that tells you is the first order of business is that we have a huge stake in an effective, resilient international oil market, like it or not. And the notion that we don't is just absurd: we do. Part of that is diversification of where it comes from, but one of the most important things that happened over the last 30 years was the industry itself changed so that the market is more resilient, more able to be flexible -- both on the demand side because we got rid of price controls in the United States; and on the supply side because a number of these countries, like in Venezuela -- where PDVSA became much more of a corporate, more disciplined by the market instead of just by politics, which Mexico Pemex may get there, are working on it. But that happened in the industry around the world, and they got a futures market.

The point is, a lot of things changed to make this to liberalization in the market. And one of the central things that we have got to get across to people at home and abroad

is, we have security, oil, economic, environmental stakes in keeping this market functioning. Now, that's not the only thing that has to happen because there has got to be tough environmental regulation, but we always talk as if the whole game in the United States ought to be to transform that oil market. Well, I certainly wish we could, but even if we reduce imports by two million barrels -- the growth of imports by two or three million barrels a day, that may be a useful thing to do, but it in no way changes our dependence on the world oil market, the world economy's dependence on it, our position as a world leader. We will have major international stakes, not because of oil but partially because of oil, in the Middle East and elsewhere.

MR. EASTERBROOK: Phil, let me ask a follow-up. If the market's that resilient and Venezuela and Nigeria, Iraq all having problems and gas price is still low, does that mean I shouldn't worry so much about my neighbor who bought the Hummer, I should just shrug?

MR. SHARP: No, I think there's lots of reasons why we shouldn't allow the deterioration of the American auto fleet. It's just absurd that -- this past year, I was on the National Academy's thing that looked at this issue – that we would allow backsliding of the general efficiency of our fleet.

But what I am saying is, the notion that we can solve the problem of Saudi money going to finance the terrorists or the other kind of problems associated with foreign policy through an aggressive oil policy – the connection isn't there. Much as I don't want people driving high fuel efficiency things, is cutting back will not cut off funds, it will not do the kinds of things that one would hope it would do.

MR. EASTERBROOK: Andrew?

ANDREW LUNDQUIST: I agree with Phil that, you know, oftentimes the center of the discussion already has been on it, is on oil. But I would suggest -- and I do believe we should decrease our imports of oil, and we could talk about that, we probably will during this discussion. And there's things in an energy bill, you can do that, you know; ANWAR is one of those, the Senate actually rejected but the House has it in their part of the bill.

But I would suggest that there's many other things in this legislation that are important. And, you know, if you looked at the oil markets, I think they're one of the most stable markets. I mean, we have more issue right now with the natural gas market, for example. The electricity market, and also coal has a lot of uncertainty facing it. Those are the kind of things we need to put behind us, both regulatorally and legislatively. I think that is a basic and very general view that I have is that we need to put some legislation and regulation behind us and provide some stability. I mean, the capital markets are just running from this industry right now. They say $300 billion has walked out of the industry in the last few years.

MR. EASTERBROOK: Do you mean the industry generally?

MR. LUNDQUIST: Yes, the industry generally, the energy industry. So, you know, right now, with the economy the way it has been, it hasn't been too sharp of a problem. But, I would suggest, as we start growing again, that we're facing a real problem here. If you look at natural gas prices, we're at almost $6 today, this is a shoulder season, typically the lowest point in the year. Last year was somewhere in the $3.40 range, and we're headed into a summer here. So, you know, I would suggest, you know, we should focus a little bit on that, and there's provisions in the energy bill that would help. But even more than that, I think that there is an impression that Congress and the regulators aren't doing their job, by putting some of this stuff behind us so we can stabilize this market and people can start investing with some understanding of what the future holds.

And I would apply that as well to coal; in other words, emissions. If there isn't some rational regulation and legislating on that issue, the instability going into the future is going to cause some terrible problems in that industry.

MR. EASTERBROOK: For coal, instability is a potential greenhouse regulation, right?

MR. SHARP: Well, I think that it's not only greenhouse, but it also applies to emissions of – the other emissions: mercury, SOXs, and ONs.

MR. EASTERBROOK: Okay, thanks. We will get you next, David.

BILL MARTIN: Just to follow on and get back to your original question about the legislation, I think the comments have set the global environment, which is very important. I think there is -- in a way, if you take the original Lundquist-(Cheney ?) report, and you look at what are the elements of that proposal, and you take the good work Phil Sharp did in his many years in the House, it's too bad that we couldn't just combine them as opposed to start to eliminate different parts because, in many ways, I agree with your initial point, that we are not hitting the high ground here, we're hitting the low ground. I wish, for example, there was a way we could get ANWAR and greater efficiency -- make a deal like that, as opposed to taking both off the table.

With regards to gas, everybody loves gas. It's very interesting, but all of a sudden we hear we're going to have price spikes. And it's a very curious thing, if gas is a panacea for us, in many ways we need to find more gas. Clearly, we have uses for it. A study we did recently showed, for example, that we just can't always add gas turbines to solve our electricity problem. We actually could use those BTUs of gas much more efficiently closer to the consumer, in fuel cells or distributive generation. The closer you

use it to the consumer in these new technologies, you actually save energy, you reduce emissions.

And some of our numbers show, for example, that if we do increase natural gas by a significant amount, if nuclear power can be steady at 20 percent – nuclear power is not deteriorating, nuclear power is actually making a bit of a comeback. Now, a new plant hasn't been built, but basically they haven't been retired either. So, again, a lot of this is a matter of price and competitiveness in the market. Coal is doing very well. Coal is very important: it's cheap. It makes us very competitive in electricity compared to our economic partners.

But, just going back to the gas issue a minute, if gas can increase by 50 (percent) or 60 percent in the in the next 12 (years) or 15 years, my numbers show that we actually achieve President Bush's Kyoto objective. If you recall, he has tied improvements in the economy and environment together. That's really quite remarkable, and if you look at where Kyoto is today -- just to take a bit of a stab at that -- the Japanese are retreating from it, because they have got 17 nuclear power plants closed. The Russians, they're not going to put it before the Duma for approval. Ten or fifteen European countries are out of compliance. India and China haven't even joined yet. And, if I were one, I think one of the things is to go back and look at the Bush proposal where you tie it to economic improvement. Get all of these countries gearing their environmental quality to improvements in their economy, and maybe we can actually restore that. I think that's a very important issue. And, yes, Kyoto is dead; but maybe it can be revived under more of a Bush-like policy.

MR. EASTERBROOK: Bill, I'm glad you mentioned the possibility of a compromise between ANWAR and mileage standards because that's one of my personal hobbyhorses; so that the political compromise would be Democrats permit ANWAR drilling, Republicans permit higher fuel economy standards; each side gets a little bit of what it wants. There was a proposed amendment to last year's energy bill specifying that, and it drew a grand total of three votes in the United States Senate. And one of the House staffers who was out here – I'm sorry, I can't see through the light – was telling me that, at the '92 go round of the energy bill, Bennett Johnston himself favored that compromise. And he was the main power in the '92 energy bill, and even Bennett Johnston couldn't get people to accept that seemingly reasonable middle ground.

(Cross talk.)

MR. LUNDQUIST: That has to do not with partisan politics, that has to do with the much more regional issues. In fact, ANWAR does attract some Democrat votes. And the fact is that the auto industry is in a number of states, and the amendment, last time, was sponsored by Levin. Of course, that would have prevented Congress from lifting the CAFE standards. So, you know, if you nix the combination, it seems like a great compromise, and it may be, actually, for our energy pictures. But within Congress, it's

very difficult. You get a big overlap, and you start getting more votes against both of them than you pick up.

MR. SHARP: I might say, good, just, it goes back to the point we started out with though, is why are we doing this? And I think what is missing is clearly any strong consensus or belief about how critical it is to actually reduce imports. If that, in fact – and I'm not sure it is – ought to be our goal – I mean, I would like to see us reduce imports, but I mean, significantly reduce imports.

If you really believe that's interest in our national security, then there's no question this is a compromise we should make; and there's a whole bunch of additional things we should do, all of which, generally, are higher cost to the economy, by the way. None of this comes free. ANWAR may, depending on how you count costs, is a (freer ?). But it's because we are not agreed, by a long shot in this country – not among economists, politicians, or anybody else – that it is, in fact, a critical goal of this country for its security's sake. If we were agreed on that goal, I think these compromises would happen.

MR. EASTERBROOK: David?

W. DAVID MONTGOMERY: I think there are a lot of larger issues that are interesting, that I would like to talk about. But let me jump in on CAFE standards at this time, and fuel economy standards; because there's far too many nice things that have been said about them so far. And I think that Phil actually had, and Bob had it exactly right, in describing what the problem is, that kind of defines energy security, which is the amount of oil that's being produced, or the share of the world's oil production that's being produced in places that either hate us, are full of people that hate us, or that are politically unstable for other reasons. That's the insecurity that we're dealing with.

The solution to that insecurity does not come from reducing U.S. oil imports. First of all, because it doesn't matter whether we're writing the check or somebody else is writing the check to the Saudis; what matters is that they're getting the check. It's actually not so much that they're getting the check, but the fact that we are dependent on supplies that are coming from places where they can be easily interrupted. What happens if we impose CAFE standards? What we have to ask, in looking at this policy, is what can we actually change in the United States that would produce what we would like to see in the world oil market, which is more oil being produced in places that are stable and secure, and less of the world's oil where it's not?

CAFE standards just don't do that. First of all, fuel economy standards change the fuel economy of the new fleet of vehicles that's sold every year. Typically, in a good year, the auto industry sells 15 million new cars. There are 150 million cars on the road, so it takes, at best, 10 years to turn that over. A marginal improvement in the new car fleet takes a very, very long time to make a difference in the fleet as a whole. So that's

the first point. If we're concerned about energy security over the next five years, we buy nothing by arguing about fuel economy standards.

The second problem is they're really badly designed public policy, and it doesn't strike me that trading a policy that I think makes economic sense, which is taking a look at ANWAR to figure out what's there, for a policy that makes no economic sense for trying to get at the fundamental issue – is not a good deal. I think it's – I'm pleased there are only three members of Congress who are interested in making that kind of bad trade.

The reason that the CAFE – there are two reasons why I said the CAFE standards – two big reasons why the CAFE standards are a bad economic deal. The first one is, if we look at energy security, there is very little that the U.S. can do to reduce the percentage of the world's oil supplies that are produced in the Persian Gulf by reducing U.S. energy consumption or imports, because the reason that oil is produced there is not only there's a lot of oil, but it's cheap. It costs a tenth what it costs to produce in the expensive parts of the world. So, if the U.S. reduces its oil imports and oil consumption, who is going to cut back on production? Well, the Saudis don't have to: they're making a profit of $12 a barrel when they're selling oil at $13 a barrel. But in the North Sea, or in the U.S. Gulf coast, we may be paying $13 a barrel to produce that $13 oil. That's where the oil production is going to be cut. So we're going to see oil production fall in the secure parts of the world. Our only hope is that Saudi Arabia will decide that it wants to prop up the price by restricting its output a little bit more. But we kind of have a tradeoff there: we can win on the price or we can win on energy security, but we can't win on both when we try to reduce oil imports.

And finally, fuel economy standards are just a very expensive way of accomplishing even what you accomplish. They create perverse incentives, they create an increased demand for new cars, they create an increased demand for driving, they create perverse incentives in the way that they're set up. They don't, in fact, exempt SUVs; they treat SUVs with a different cap than automobiles. And there's a lot of distortions that come internally in the design for doing that, some of which could be fixed, some of which can't be. But every time I have done a calculation with CAFE standards, I come up with it costing 10 times as much per gallon of gasoline that we save compared to what we could do with the gasoline tax that saved exactly the same amount of fuel.

And, I think – here's where I get to what I find incredibly frustrating about energy policy, which is Congress is perfectly happy to impose costly solutions on the economy as long as they can hide the cost in a regulatory program where you have to go out and argue with OMB about what it's costing the U.S. economy, and won't bite the bullet of saying, we think it's worth doing something about energy security and we will add 50 cents to the gasoline tax to do it. That effort to conceal the costs of policies, I think, is a major factor that has kept us from adopting the kind of broad-scale economic incentives that actually could make a difference.

MR. EASTERBROOK: So, I guess I missed the end of your statement. Would you prefer a gasoline tax or a carbon tax? I mean, most economists, certainly, would prefer that.

MR. MONTGOMERY: Most economists argue amongst themselves about whether a gasoline tax, or carbon tax, or carbon cap with trade system is a better way of doing it, but it's kind of within that debate. Those are different kinds of economic incentives. But there's two levels to it, one of is asking the question, like about the Kyoto Protocol, how much should we limit our carbon emissions? And then the second question is, given that we have decided that we want to limit our carbon emissions, what's the best policy to adopt for going about it? I don't know of any economists that disagree that within the U.S., emission trading or carbon tax is the best way to limit our carbon emissions. There's a lot of disagreement, for example, about whether even McCain-Lieberman isn't too much too soon, and not worth doing. But if you're going to do it, then a comprehensive trading system is probably what most economists would agree was the best way.

MR. EASTERBROOK: Yeah, I would think so. Martin Feldstein, of Harvard, former Reagan CEA chair, has been carrying a torch for that now for almost 20 years. Armond?

ARMOND COHEN: Gregg, I wanted to jump in and express my frustration with the energy policy debate right now; in that I think as much as ANWAR and CAFE are certainly emotionally charged issues and there's a lot of heat on them, I still would submit that, in terms of what we really need to do, they're about the margins and really not about the center.

Let's just take the greenhouse problem for a second. If you take the predictions of the Intergovernmental Panel on Climate Change seriously, what they're saying is that, just to limit global climate change to, say, one or two degrees over the next hundred years, we're going to need to reduce total CO_2 or CO_2-equivalent emissions -- not by 10 percent, not by 20 percent -- by about 80 percent to limit ourselves to 450 parts per million in the atmosphere. Now, that's a huge lift, and I don't care what you say, no matter how deep you make the CAFE cuts, it's a drop in the bucket.

What that suggests to me is that, from an environmental standpoint, we need to be thinking outside the box. Coal gasification, interestingly, may be one place where we can do that, and maybe should be the focus of some attention here in town. The administration deserves credit for putting the concept of coal gasification and carbon sequestration on the table, which, by the way, would reduce, in total, greenhouse emissions from coal by about 90 percent, when you include the sequestration. That's actually better than a natural gas combined cycle unit built today.

Very, very potentially powerful technology, yet one not widely deployed -- and, from an environmental standpoint alone, in addition to greenhouse gases and a very small footprint, these plants emit virtually no sulfur, very low levels of nitrogen oxides, and a very containable and manageable level of air toxics. And yet, the only thing on the table is the future-gen concept, which is essentially a R&D project, whereas we have got 60,000 megawatts of coal gasification deployed – or coal-like gasification deployed all around the globe right now. This is a technology that is ready to be commercial, could make a huge difference in terms of getting us on that downward path for both greenhouse gases and for conventional pollutants.

By the way, if we're talking about energy security, one of the very significant byproducts of coal gasification could be a relatively low-cost stream of hydrogen for hydrogen fuel cells. You know, Gregg, some of your writings have been a little bit skeptical of the hydrogen fuel cell, sort of transportation vision, but one of the big hang-ups in that vision has been, where are you going to get a low-cost source of centralized hydrogen. Electrolysis from nuclear and from renewables don't seem to quite cut it, physically or economically. But again, it's been demonstrated that coal gasification is a very feasible way to produce a very large-scale hydrogen stream for transportation, which, again, is what we're going to need to really get on that steep downward path.

So I'm a little frustrated that potentially really breakthrough technologies like that -- that are really commercially on the cusp, they really aren't matters of R&D – are not receiving more attention, and we're focusing on these politically sexier issues at the margin. I also want to agree with what Andrew said, which is that probably one of the best things we could do from an energy policy standpoint is get the environmental regulation right. I was on a panel in front of the House Commerce Committee about a year and a half ago with Dick Abdoo of Wisconsin Electric, and we were essentially in agreement that if Congress could do a modest start on carbon regulation, that would be the best thing, from the standpoint of his desire to develop new coal plants, because he could figure out what his liabilities were going to be in the carbon dimension, at least for a decade, decade and a half. And he could get on with it and cost it and figure out what made sense, whereas right now it's anyone's guess.

Happily, there is a debate moving on the environmental side of the House, so to speak, and there does appear to be convergence on general targets, but for carbon. I think if we can get past that, find a practical way for it on carbon, we're going to see a lot of capital flow in the energy industry, and also dealing with other pollutants will help that as well. So I would say let's think outside the box, look more at radical solutions, if you will -- although they're not really that radical, they have been around for 70, 80 years on the coal side – and let's think about getting our electric power sector environmental policy right. And I think if we did those two things, I think we would do a lot more than we would accomplish with the kinds of things that are getting most of the attention and debate right now.

MR. EASTERBROOK: Let me give you a couple of follow-ups, Armond. First, if it's really true that we have to cut greenhouse gases by 80 percent in the United States, it's simply not going to occur in your lifetime or mine. You and I should run out and invest in a sunscreen manufacturer, because we're just going to have to learn to live with it if 80 percent is the number that's really required.

MR. COHEN: Well, Gregg, maybe not over the next 30 years; but over a 60- to 80-year time frame if coal gasification, carbon sequestration was fully commercialized and you had a hydrogen stream. I don't think it's Buck Rogers to think you could be running on about 20 percent of the carbon that we are now 100 years from now. Look at the technological transformation in the last 100 –

MR. EASTERBROOK: One hundred years? Yes, if you're willing to look 100 years it's possible, and my skepticism about hydrogen is skepticism over the next decade, not the next 100 years. I'm sure that my descendents will ride around in hydrogen cars. I'm sure that my descendents will fly around at warp speed. But that doesn't have any relevance to my vacation planning this year, and my worries about hydrogen are still the same. Suppose you're right about coal gasification and combined cycle and the advanced coal technologies. Why aren't utilities doing this of their own accord, then, if it's already cost-effective?

MR. COHEN: I wasn't saying that today you can build a green field coal gasification and carbon sequestration array and have it compete head-to-head with a new natural gas combined cycle plant. The truth is the natural gas plant will win right now on the straight economics. My point was, let's look at that. What is that gap? By the way, a new green field coal gasification plant is probably within striking range of a new pulverized coal plant, so if a utility – and there are some that are building new pulverized coal plants – that's a place where it really doesn't take much tweak. But assuming that the bogey here is really a new combined cycle plant, there is a price differential – I think the Congress should look at that price differential, figure out what it would need to get enough of this stuff built and operating to close that price differential. This is my beef with the administration's future-gen project, which seems to be more focused on the technology than on sort of buying down the cost of what we already have on the shelf. But, Gregg, I didn't mean to imply that this stuff is ready to bolt into the ground and will beat a natural gas combined cycle plant today: that's the problem. But the gap may not be that large if we get going.

MR. EASTERBROOK: Phil?

MR. SHARP: Yeah, I was going to say that I think, increasingly, the rest of the world and in the United States understand that there is going to be a carbon-restrained path that we are going to ultimately be on. The question is is how soon and now much. And I think it behooves us in this country to get onto that path more quickly than we're,

at the moment, willing to do. This is where I agree with Armond; I might disagree about levels and things like that.

But we are, right now, spending tons of money at the federal level in R&D and yet we have trouble knowing where to focus that. The private sector, both in R&D and all kinds of other investments are being made which might be made differently, or on different time frames, if they had some sense as to what are going to be the constraints. Now, I don't think we will ever be able just to resolve that all at once, but I think that the sooner we can say, yes, it is going to be carbon-constrained, it's not going to be Kyoto targets and timetables, we know that it shouldn't be -- we are going to have something less than -- but decide now where we're going to be in 2015, in some degree, if we can, and then give the marketplace the drive to go find that.

I partially agree with Armond and partially not, I'm not sure how much -- I would not take a chance of betting on one technology over another in terms of commanding the marketplace has to use that technology. I do think it's well worth us risking the waste of some public dollars and private dollars on a variety of technologies and demonstrations to see if they're the ones that pay off. If anything we have learned over the last 30 years is, it's tough for either the marketplace or the government to actually know how which things are going to develop. The hybrid was nowhere on the scene in 1992 -- people were talking a little bit about it but it wasn't really anything relevant – to -- as a way to gain fuel economy, and yet it's a key possibility today. So I think setting that path is the most fundamental long-term thing we have to do.

By the way, I agree with Andrew that the immediate thing is really electricity. There is no policy in this country that is so up in the air as what are the basic rules of the road. This is one market that we have at risk because we do not have settled the basic rules of the road. And I have a strong vision of what we ought to do about that, but I will save it.

MR. EASTERBROOK: Phil, if you don't want government to pick winners and losers, does that mean you favor a carbon tax, because most economists would say that the revenue-neutral carbon tax would be the way to avoid government making the choices?

MR. SHARP: I would either have a carbon tax or I – I think politically, we're headed toward a cap-and-trade, and that is a fine way to do it. Now, this isn't to say that the government shouldn't intervene in any other ways, but I'm just saying that the presumption that we know that it's going to be sequestration with coal, or the presumption that we know that the fuel cell is going to bail us out and somehow we're going to get hydrogen, besides out of natural gas. By the way, the second priority, besides electricity, is we need to get more on the path of, where is the gas going to come from? And we could have serious problems this winter, there's nothing even Congress can do about that, but – if you want to talk more about that –

MR. EASTERBROOK: Natural gas, how nice of you to mention that, Phil. We have a gas-interested audience. Let me throw out a couple gas questions first, but let me also tell the audience it's almost 2:00, so in a few minutes we will start taking your questions. So put your thinking caps on, all right?

Gas, currently plentiful; prices spiked up recently, but affordable. If you look at world consumption figures in the last decade, coal has gone up 4 percent globally, petroleum has gone up 11 percent globally, gas has gone up 23 percent globally. It's the big gorilla figure in all kinds of energy statistics, and we're all totally confident that there will be plenty of gas. I'm certainly totally confident, because I'm in the process, Rick, of installing the single most important thing an American suburbanite can possess: a gas grill. (Laughter.) And I want that gas grill to work 10 years from now, darn it.

So I would like to turn to the panel and ask you questions of, can we trust gas supply? Should policy encourage people to shift to gas, as it has at various points in recent American history?

MR. MONTGOMERY: I'm really concerned about gas supply at this point, and up until, I would say, a year ago, I'm not sure that I could think of a good policy rationale for encouraging people to shift to gas as opposed to dealing directly with our environmental problems and seeing what falls out from that.

But in the past year, we have not seen encouraging results anywhere on the gas supply side in the U.S. We have had a number of years of, at least sporadically, high gas prices; of a great deal of activity in drilling for gas throughout the United States; and we have not succeeded in replacing reserves. We're not getting gas in anywhere near the quantities we expected to for the amount of effort that we're putting in. And as we go and look at – (audio break) – as fast as possible, the Canadian arctic gas is going to be needed, too. But it's, you know, in the, you know, 10 (percent) to 15 percent of total supply range, and it's not going to get a whole of a lot bigger in terms of flows unless we get really lucky.

As we look other places in the U.S., alternatives like coal-bed methane are working in the Rocky Mountains, but it's not clear the Canadians really have anything there. Their forecasts of coal-bed methane are kind of a plug between what they know they can produce and what they want to export.

And we're seeing prices that I would not have thought could have been sustained at these – could have come back again at these levels. So I think there's a real question. I mean, I'm not yet prepared to forecast that gas prices would reach, you know, $5 an MCF by 2010, but it's hard for me to believe a forecast that says they're going to stay between $2 and $3 anymore; and I think we're seeing all of the forecasts edge up. And I think what we're facing in gas markets now is there's a great deal of price volatility right

now. And it's hard for people to deal with that price volatility because in the aftermath of Enron, all of the derivatives and financial market trading that people used to be able to do has really dried up because you can't find creditworthy counterparties to take the other side of the bet if you say, I want to bet on prices going up or going down.

So we have volatility issues for people today, and then we just have this long-run uncertainty: are we ever going to get to a 30-TCF economy? Can we ever find those supplies in the U.S.? It's not clear. Are prices going to be somewhere between $3 and $5 an MCF? They probably are going to be between $3 and $5, but that's a big enough difference that makes a huge difference in decisions about whether you want to build coal or build natural gas, where you want to extend gas in competition with other fuels.

And, I guess, the final thought on that is that it brings us back to the energy security issue, because what comes out of all of this potential mismatch between how much we can produce domestically and what our demand might be at that price is LNG imports. We could see two, three, four, five, six TCF of LNG imports into the United States. The supply is there worldwide, but I think there are two issues. One of them is, will we ever build that much regasification capacity to come into the U.S.? And, will we just create an OGEC to replace OPEC because an awful lot of that gas that would go into LNG comes from places that I would describe exactly the same way that I describe our sources of oil.

MR. EASTERBROOK: Well now, David, my follow-up on that would be that, if we can generally trust the market to be smart about these things and gas prices enter a phase of long-term rises, isn't this going to draw in the capital that will solve these problems, especially the pipeline capital?

MR. MONTGOMERY: Yes, it will draw in the capital to solve the problems. I'm certain it will draw in the pipeline capital. In fact, we're going to see a number of links that have to be built in the pipeline system. It will draw capital into the Alaskan production, it will draw capital into exploration in the U.S.; but that capital is not going to change the fundamental resource economics of what's in the ground here versus what's in the ground somewhere else. And so that capital may well decide – there are going to be a lot of LNG imports to bridge the gap.

(Cross talk.)

MR. SHARP: We do have -- the practical problem of the Alaskan natural gas pipeline is such a huge capital investment that the volatility we have seen in prices tends to deter anybody from ever making the final decision to go after it. And this is a place where we have got to come to a judgment of whether or not it's in our collective interest to say that we will – as the energy bill in part anticipates – whether we will take some of the risks out of that marketplace. And, you know, as I have become increasingly, over my life, a more proponent of the market making many of these decisions, and when we

passed that legislation despite the criticism we all got on the Alaskan legislation -- claiming that we were dictating that it would be built and therefore jammed down the throats of consumers – we left it with a market test and the market test it failed, so it never got built.

And I don't think that's been a wrong decision for the last 25 years. But the issue now is that maybe we are at the tip of a point, and it is worth us paying that premium margin, just as a security – not international security, but in a reliability market risk to get that thing built.

MR. EASTERBROOK: Andrew, you would probably know, are there any kind of price guarantees for the pipeline in the current bill?

MR. LUNDQUIST: There is a provision in the Senate energy tax provisions that provides a production tax credit --

MR. EASTERBROOK: There is.

MR. LUNDQUIST: -- along with other provisions that would provide loan guarantee, I guess it is. And the fact is, it's an effort to try and reduce the risk, right, just like Phil said. And, to me, it also makes sense because the problem here is you're dealing with a $20 billion project; it's a hefty project. When these companies are looking at the construction of those kinds of projects, you compete with worldwide projects. I think it's in the U.S. interest to make sure that pipeline's built sooner rather than later, because if you leave it up to the capital markets alone and natural gas prices, I think that we're looking at many more years before it is built.

And even then, it doesn't fulfill the requirements that we're going to have for natural gas. I mean, we're using natural gas for industrial, we're using it for heating, now we're using for electricity, and now there's this, you know, interest in using it to create hydrogen for transportation as well. I don't think that, frankly, it can fulfill that. Even the world production can't fulfill all of that for very long, even though we have a lot of natural gas in the world.

But I couldn't agree with David more, you know, that I don't think we're going to build, probably, that much LNG. I mean, that's a huge ramp-up of LNG, there's going to be a lot of opposition to permitting those projects around the country. I think we are headed into a bit of a crunch here, and we have to make some decisions as to whether the U.S. government is going to reduce the risk on some of these capital projects.

MR. EASTERBROOK: Let me just ask you a question, Rick Shelby. From the capital standpoint, you were telling me beforehand that you estimate, what, $150 billion for infrastructure needed in the next 10 years?

MR. SHELBY: The next 20 years.

MR. EASTERBROOK: Next 20 years.

MR. SHELBY: We need to predict growth and demand – (inaudible) – based upon EIA study – (off mike).

MR. EASTERBROOK: The Gas Association is estimating $150 billion capital required over the next 20 years. That's for pipelines and distribution lines. Not to find the gas, but just to get the gas that's found to you -- so a not impossible figure, but certainly a big money number. Yeah, Bill?

MR. MARTIN: To follow on the gas, all of these fuels have problems. I mean, oil has got the problem with imports and uncertainty in the Middle East. Although I must admit, going into Iraq and winning the Iraq war certainly enhances U.S. energy security, but that was not the reason, of course.

MR. EASTERBROOK: That was not the reason, no, that's not why we –

MR. MARTIN: But, you know, let's face the fact: it's a tremendous boon for our energy security. And if we can get production Caspian, Russia, Iran takes a different look, if Saudi Arabia wakes up, it could be a rather interesting period for the oil market, which again would bring about lower prices; and, of course, we know Americans love lower prices. So the oil price goes back to $15, $16. Well, then alternatives aren't developed – every alternative gets more expensive. But I think, if you look at it in the long-term future, everything becomes expensive, and the American public likes cheap energy. So we have a basic dilemma here, and David – best economist we have ever had at EIA, by the way. As you know, he looks at price issues and this and that.

But the real issue here is all these prices have externalities, and what is the real price of sequestration and the global climate problem, what's the real price of energy security if you look at how much it takes to wage the war in Iraq and so forth and so on? That's why gas becomes very interesting, I think, because at least we know many of the parameters. And if the Congress can do anything this time, maybe they can rationalize the gas situation: we need it. No one mentioned Canada; there's a fair amount of reserves in Canada too. They're a bit closer. LNG, even the Norwegians, Bob, you know, they told us recently this week they're looking at our market. They think it might be economic in our market because you have new technology in gas export, too. And gas is going to be flooded internationally, and all these producers are going to be competing with one another.

So, Alaska – I'm all for bringing that Alaska gas down with that Canadian, but I go back to a fundamental point I mentioned earlier. If we just use gas for electricity, we're using something that really is almost too good for electricity generation. We get

much more value from gas if we go use it closer, and we miss the transmission losses that way. There's a concept many of us think about sometimes: total energy efficiency. How do we get the best value for our BTUs? And there's no doubt in my mind that gas is much better used closer to market. Yes, it's important for electricity, too.

I chair the government's R&D work on nuclear power. Just to comment about that, I would actually like to see us produce more electricity from nuclear power and use gas closer to the market. But we're finding with nuclear energy that it's still very expensive, but it's not out of the question. It's looking more promising and this administration wants to be able to build, or encourage a plant being built, I think, by 2010, 2012. That is not out of the question, and we might see a bit of a bounce coming back. And clearly, nuclear is a very important source for climate change as well as energy security.

Never one to say a kind word about coal in this Congress because it's so heralded; that's a real important source too. We can't forget that, and clean coal technology and this sort of thing becomes important in the bills as well.

MR. EASTERBROOK: Bill, on natural gas, nearby you there are many energy analysts who will point out to anyone who listens that 100 years ago, heat was centrally produced and piped to people's homes, and it turned out to be far cheaper and more efficient to give everybody a furnace and let people make their own heat; and that the same may eventually be true of electricity in direct-site production.

But, since we have deregulated, you know, electricity, isn't that issue already more or less settled? If the economics permit, you could manufacture your own electricity in your own house today, couldn't you?

MR. MARTIN: (Cross talk) -- through fuel cells, and that might even be more reliable to you than reliance on the grid.

MR. EASTERBROOK: Well, but there's nothing –

MR. MARTIN: And you're already connected with gas. I mean, the gas infrastructure is enormous in the country.

MR. EASTERBROOK: Yeah, there's nothing stopping you from buying a gas generator and making your own power and kissing Pepco goodbye, right?

MR. SHARP: No, no, that's not quite true. The regulations are not that settled and all those rules are not that settled, that's what Andy and I were referring back to as those issues are very much –

MR. : Maybe that's something the Congress should do then?

MR. SHARP: Well, you don't want Congress setting all those rules. (Chuckles.) But they're very much in the air.

MR. MONTGOMERY: In fact, I think you're actually identifying that's the big hole in the restructuring of electric power. And it's almost what we sort of backed away from after the California energy crisis, which is, how do you deal with retail competition? You have got plenty of competition for wholesale power, as it's traded back and forth by the central generators. But the issue of whether you're going to allow alternative forms of delivery to retail customers, which is, Gregg, what you're talking about from electric – and how you're going to integrate that into the grid. You know, can you have it sold back to the – you know, can you have it sold back to the grid so that everyone is not dependent entirely on their own local generation of power?

Those are completely up in the air and, I mean, that whole area we have really backed away from in the aftermath of the -- you know, the California energy crisis, the debacle with Enron. And that's probably going to affect the pipeline construction as well, because it strikes me, at minimum, if regulators spend more of their time worrying about ill-gotten – if regulators continue worrying about ill-gotten gains in electricity and pipelines and back away from things like market-based rates for new pipeline construction, they're going to be making it very hard for private capital to get in there because they're going to be saying, you know, we will make sure that the consumers get the benefits when prices are low, but we're going to take the prices away from you whenever they're high.

And that means we're not going to have the incentives for those long-term investments. I think that probably applies to the Alaska pipeline as well, because the Alaska pipeline has got to figure out a way – you know, normally you would like to lock in lots of long-term contracts for a pipeline, you want subscribers. The Alaska pipeline people look around and they can't find anybody to subscribe enough money who is creditworthy enough to be worth betting on for building a pipeline.

MR. EASTERBROOK: Armond?

MR. COHEN: Gregg, of the many constraints in the gas area, I really don't think environmental limitations are going to be one of them, notwithstanding, I think, some of the rumblings that you get. We saw the Sierra Club and NRDC, for example, endorse the northern slope pipeline. You know, clearly, I mean, LNG is -- maybe some have argued, well, that's going to be an environmental donnybrook, you know. I live two miles from one of the four major LNG terminals and believe me, this is not a big deal. This is in Boston, and, you know, we're powering 20 percent of the New England grid out of that terminal right now and it's not an issue.

In terms of the broader – I agree with your comment earlier. You know, widespread hydrogen production from coal gasification, it ain't going to happen in eight years. I think it might happen in 15 (years) on a large-scale basis if we got going. But there is that critical middle period and I would like to make another out-of-the-box suggestion here, maybe to pursue another day; which is that it seems anomalous, as I talk to people in the environmental community who work on gas and oil development issues, that there is a lot of stuff that's on limits right now that probably shouldn't be.

And I'm going to be controversial and say some of the coal-bed methane extraction going on in the west is pretty horrific in terms of its surface water and land-use impacts. On the other hand, folks will tell you, quietly, on the environmental side, that there are probably things that are off-limits on the OCS that might be revisited as being on-limits. If you had the right environment and you could actually talk about these things and there was some reasonable degree of trust, you might be able to work a way to take some of the more egregious stuff that's on-limits, make it off-limits, and vice versa. I think there is some potential play in there if it looks like the supply situation is going to be really tight.

And then, finally, there is this long-term prospect that, if we get going on coal gasification – that's a domestic resource, clearly there is not a security issue there and there are environmental benefits besides.

MR. EASTERBROOK: Armond, Joe Lieberman's campaign energy policy has a lot on the outer continental shelf and on the Gulf of Mexico gas as well. So there may be a job waiting for you in the Lieberman administration.

MR. EBEL: Gregg, you know, I listen to what's going on here and I think part of the frustration that we face in trying to put together a meaningful energy policy for this country is that the American consumer, when it comes right down to it, he only has two concerns when it comes to energy – any form of energy. That's price and availability, that's really all he cares about. He doesn't think long-term. The solutions that we have been talking about for natural gas are really long-term: gas from the Arctic, gas from LNG projects, some coming in from overseas or what have you, that's long-term.

What Congress needs is the political will to take steps necessary to put together meaningful policy, and where's the political will? We got the political will in 1973, '74, out of the war to give us CAFE standards and to give us the Strategic Petroleum Reserve. But where is the political will today? What happens when we went into Iraq? Prices came down. Prices dropped by $10 a barrel, you know. There's not a supply problem today on oil. The prices are reasonably acceptable. So, absent the political will, I don't think we're ever going to get a meaningful energy policy in this country.

MR. SHARP: Well, I think Bob's made a very important point; that, depending on the price volatility as the political motivator just doesn't get us there and we got to

have more people taking a longer-term view. Armond said an extremely important thing I hoped people picked up on, which is that there may be a way, over time, to go at this moratoria issue, because I think the one thing that most rational people agree with is the moratoria are indiscriminate. I'm talking about all along the outer continental shelf. It's not that there aren't some places where many of us would agree we should not disturb for various reasons, but just to have such wide swaths knocked off is probably not smart, especially given the environmental importance of natural gas to our economy and our environment.

And that's going to take some political skill and some negotiation outside of Congress, because there is a serious problem that has developed in Congress over the last decade. It used to be we used the word NIMBY to talk about not in my back yard, as if it were the local people and the local politics that was blocking the action. That is no longer the case. And, by the way, people always blame this on the environmentalists – sometimes it is an environmental group, but, as Armond was pointing out, very often that's not even in the equation. It's other interests that are in there trying to block things.

But what has happened is we now have a NIMBY coalition in the Congress, of very intelligent, very capable representatives in both political parties from all across the country. So that, when you decide that maybe you don't want drilling around the Great Lakes, you have the support of every coastal Senator or every coastal – for that piece of NIMBY, because you, of course, are expected, in return, to vote for their NIMBY. So it's an expanding proposition and I think we have got to begin to blow the whistle on that proposition in the House of Representatives and the Congress, because when all the rhetoric followed the president's introduction of his plan, that came out of the House of Representatives, about, now we're going to have a production proposition.

The first thing that happened was not an energy bill, the first thing that happened on the Appropriations Committee was to confirm that we were not going to have – that the moratoria would go forward on outer continental shelf thing. And the second thing that happened was in the U.S. Senate, they pressured the Bush administration to cut back on the lease sale off the panhandle of Florida. Now, that was pretty dumb, folks, if we think that this is necessary for our future. And we have got to take a longer-term view on natural gas. It is the preferred fuel, it is going to be for some time because the marketplace, and given our environmental regulation, is going to say so. And we have got to get down to making harder choices about what's on the table and what's off the table.

The administration's counting very much on the Rockies and the coal-bed methane. Armond and may people on the environmental side are raising serious questions about that; lots of farmers out there, lots of ranchers, lots of various people and interests are raising questions. So my guess is it's never going to be as lucrative as the data shows that it's going to be as a source. The politics and environment and economics

are going to shrink the amount that people are expecting to get out of there. So we had better look at these other sources as well, while we're at it.

MR. EBEL: Look, until we understand that every decision we make, whether as an individual or as a nation, every decision we make relative to energy carries a tradeoff; and that tradeoff, in turn, carries a cost. And until we take that into realization, we're not going to make much progress.

Let me give you a good example based on what Bill said about nuclear power. Nuclear power provides 20 percent of the electricity in this country. Do you realize that 50 percent of the fuel burned in our nuclear power plants comes from Russia? Are we putting ourselves in an extremely vulnerable position because of that import that we bring in from Russia? Well, what's the tradeoff? Is the tradeoff that we have made with Russia in our national interest? Yes it is, because the fuel comes from destroyed nuclear warheads; and, to date, I think Russia destroyed about 7,000 nuclear warheads. That's great, people can understand that, what that tradeoff is. But for every decision we make there's a tradeoff and a cost; and until the public understands that that there's a cost in everything they do relative to energy, we're not going to make much progress.

MR. EASTERBROOK: Andrew?

MR. LUNDQUIST: Well, I would like to compliment Armond, because I agree with you and I'm glad you brought up the moratoriums and I didn't; but I will comment on it because it does need to be re-looked at. I mean, all of the East Coast is off-limits, all of the West Coast, the eastern Gulf is off-limits, essentially. There's many areas in the Rocky Mountains -- that isn't the answer, Phil, you're totally right. We're not going to produce enough in the Rocky Mountain area, but we need to produce more. I think they do need to be looked at. This administration, the Bush administration, has been deferential to the states and were in the case of Florida, which is no surprise, and will be as well on those moratoriums off the East and West Coast. But there's a good bit of natural gas in those areas and I think it needs to be looked at and we should have that dialogue.

Coal-bed methane, there's a lot of promising coal-bed methane and a lot of production, and that's on the rise. I don't know what you have seen out there, but I have actually toured many of those coal-bed methane fields and they're doing quite a job. Some areas – I can't speak for all of it – but I will say this, that the cattle ranchers there actually appreciate the fact they're getting this water in water-strapped areas of the country; and the stuff that I saw, they're doing a darn good job of watching it environmentally. So, I just have to not let that go by, that I think –

MR. COHEN: You must be talking to different ranchers than we are -- (chuckles) -- as there have been some people mighty upset about the noise and some of the water contamination. But I think that I take your point, Andrew, which is that there is potential

for some dialogue here. I think, rightly or wrongly, I think there's a feeling that there's a lack of an honest broker right now to pull off that agreement, and I'm not sure that it's going to – maybe we just need to find some kind of neutral space where that can happen, because I think there are folks on the environmental side who are willing to be creative about this; but I don't think they quite trust the current institutions to make that happen. It may be that there needs to be some sort of structured negotiation, but that may be beyond the scope of today.

MR. EASTERBROOK: Okay, we will take one more and then we will do the audience, okay?

MR. MARTIN: Just a very quick question. I have never distinguished between the difference between oil and gas drilling, but in a case where the gas has such significant environmental benefits and in the case where LNG is just so much more expensive than, let's say, imported oil because of the processing part of that, could one distinguish in drilling between gas and oil in some of these more sensitive areas?

MR. EASTERBROOK: It depends on how close you live. I mean, if you live right next to the drilling noise is 90 percent of the objection, and I think that's approximately the same – isn't it, Rick? Drilling noise from oil and gas is roughly the same? Yeah, so the aesthetic objection is noise. If you have a philosophical objection of, you know, the pristine wilderness shouldn't be disturbed or something, that would probably apply to either form of drilling, too, I would guess.

MR. MARTIN: I guess what I'm saying is the drilling for gas in this case, because gas is purely a domestic resource: it's actually of more value to the United States. Take the example between ANWAR versus gas versus oil. Oil, in the case of ANWAR, is a million or 2 million barrels a day to the world market of 70 (million barrels) or 80 million barrels a day. Hey, it's a little bit, it's a contribution, and so forth. Gas, however, from Alaska, because this is our market, is 100 percent a secure U.S. source. So, if you're looking at energy security and so forth, in this particular case, U.S. energy security and environmental quality is enhanced far more by gas in the U.S. than it would be by ANWAR, which is really a gift to the world much as if, like, Caspian or Russia or whatever.

MR. EASTERBROOK: Good point. Questions from the audience? Sir?

Q: Just to follow-up on that same point, you know, you never read about natural gas spills washing up on the beach, it doesn't happen. (Laughter.) It seems to me, one way to get at the NIMBY is -- and we have talked about, particularly on the OCS – is to find out what's there. And the OCS inventory of oil and gas was deleted by voice vote in the House and Senator Graham is going to bring that amendment up in the Senate. Is he going to be successful, is the -- (inaudible) -- of the coastal states, legislatures – I guess a

question for you, Armond. Do they really have something to fear from the environmental community or the media if they don't go along with Senator Graham?

MR. COHEN: Yeah, I guess I'm already in over my head, so to speak, and I'm probably already in too much trouble with my environmental friends for what I have already said. But what I would say is I think what I was positing is that you – there needs to be a different process that I think is kind of -- the immediate legislative process, again, the quiet conversations that go on are, if we could just lock down X, we would be willing to give Y, and I don't see that that conversation is really going on right now.

And with all due respect, Andrew, I don't think people trust the current administration to be the honest broker on that one. I think people tried in the Reagan years to pull off something like this and I think they felt they just couldn't, they just – there was not enough trust. So I'm not going to respond to the particulars here, but I think it's maybe more of a process answer than, you know, than in this particular deletion or that.

MR. : Some of it must also be –

MR. SHARP: Yeah, but please don't make the mistake that it's – because you used this word environmentalist and that's always as if to dismiss, as if it's just those people who care about clean water and clean air; which I happen to believe are very important and those people who advocate on behalf are.

Jacksonville, Florida, it was the political establishment that fought that recent lease. It was the governor of the state, it wasn't the environmental leaders – could not have gotten anywhere, in terms of cutting that off, it there had not been broad-based, economic, business community, all kinds of fighting because they worry about onshore development, they worry about other things. So we have to understand this: it makes it too easy to act as if, oh, if we could just go and get an environmentalist to stand up and say yes, we could do this. There are strong business, political, zoning – I don't want it in my backyard, I'm rich and I have got mine -- I mean, you know, come on folks. This is not a clear clash between environmentalists on the one hand and something else.

MR. LUNDQUIST: Armond, I would suggest that, as far as trust for this administration, there's a lot of people that do. But what your answer may be is working with the states because that has been the position of this president. Is that, if California closes off the shore, he said he would abide by that moratorium and hasn't done anything, and has been committed to keeping it there; and the same with Florida, and the same with the East Coast. So I think the work has to be done with the states, in fact, and if there is this opportunity to have this discussion and try to open those areas, I think that's where it begins and that's where you could be helpful.

And the other thing I would suggest that, you know, I would – within the administration, this energy policy, the president has been very consistent and he has been followed through with every one of those commitments in energy policy. I can see why skepticism was, early on – to be honest with you, I was a target of a good bit of that – but in fact, on the hydrogen, on the renewables, on the energy efficiency, and frankly nuclear, and commitments to coal – as far as emissions and carbon sequestration – he has been true to his word. So I would just suggest there is the opportunity to trust because he has proven that with a great track record in those areas.

But that isn't where you need to start on the moratoriums anyhow, you need to start in the states because they're the ones who are going to determine their offshore resource.

MR. COHEN: My understanding from the last round -- and again, this is more of the Reagan years -- that the history, as I understand it, was that there was a, you know, a dialogue with the states and with the environmental groups, actually, and with some of the oil companies; and that, in effect, it was Interior that kind of was the obstacle. And I'm not suggesting that's the case now, Andrew.

MR. LUNDQUIST: No, I know.

MR. COHEN: Maybe it's the hangover from that previous experience that has made people shy back from trying to play again.

MR. LUNDQUIST: Yeah, I don't disagree with that –

MR. SHARP: Actually, I chaired that roundtable of discussions -- it went on for a year and a half outside of Congress – and we actually found environmentalists and the drillers from the oil industry, the most prominent people agreed, in the Bering Sea, as to which elements could be drilled and which not. They signed a letter to the secretary of Interior saying, if you will only lease these that we have agreed upon, there will be no legal challenges to that. Interior Department, for a variety of reasons, didn't go along and it split up the negotiation that might have been fruitful; but it's a hopeful sign for the future sometime.

MR. EASTERBROOK: Were there questions from the audience? Sir?

Q: I think this has been a heavily supply-oriented discussion and the one issue that really was emphasized on the demand side, on automobile fuel economy, was somewhat dismissed as being too expensive or taking too long or just not having the potential that you get from natural gas and – (inaudible) – hydrogen fuel cells, transportation sector. But, you know, I mean, I think this is all true, but that it gives, perhaps, it's going to take a long time to make a big impact – (inaudible). You know, I think a lot of people consider this to be our greatest failing in terms of energy –

(inaudible) – which is kind of absurd. (Inaudible) – also the environmental impact. So -- and, you know, you have to start somewhere, and it's certainly going to happen faster than if we just go for the hydrogen – (inaudible). That should be done in parallel. I think, you know, the bottom line is don't we have a responsibility to be reducing energy consumption as much as possible, both for energy security and environmental impact reasons? (Inaudible.)

And just a last word, if I may. (Inaudible) – to ANWAR, you know, I think that a lot of the environmentalists suppose on ANWAR, in terms of the destruction of the habitat and the environmental impact on the site there. Another aspect, of course, is that if we keep coming up with supply-oriented solutions, it only furthers the time when we're really – (inaudible, background noise) – cutting our consumption. And the way that's going to be done is through new technologies. (Inaudible) – our automobiles to renewables and coal gasification and carbon sequestration there – (inaudible) – advanced nuclear systems. So, I –

MR. EASTERBROOK: I hate to say this, but do you have a question for the panel? You have got to come to a question.

Q: (Cross talk) – can we come back to the demand side, and I –

MR. EBEL: Sure. Well, the demand side means gasoline, is that really what you're talking about? Among other things.

Q: The whole – (inaudible) – because really the discussion was so supply-oriented, that – but I think that's the number one area where we have an opportunity –

MR. EBEL: Well, I think, you know, when you look at consumption of gasoline in this country, about 45 (barrels) out of every 100 barrels of oil we consume is gasoline; and you put it in the world perspective, about one out of nine barrels of oil consumed worldwide is represented by U.S. gasoline consumption. So what we do in this country, with regard to gasoline consumption, is going to have an impact on worldwide oil consumption. But how long is it going to take to make any meaningful reduction when you have got over 200 million cars/trucks running around today and you're adding or you're building 17 million every year? What's it going to take, and when is all that going to come about, where it's going to have some meaningful impact on our gasoline consumption?

MR. EASTERBROOK: Well, the recent historical parallel, rather, wouldn't it be the enactment of the CAFE standards in the early '70s took about 10 years to affect – and 10 years later, the OPEC price maintenance structure collapsed. So yes, there was no immediate effect, but it did – one decade is a relatively fast turnaround for a policy decision.

MR. EBEL: But that came about because we had the political will to do it – (unintelligible) – of the 1973-74 conflict.

MR. COHEN: Gregg, I just want to comment. My comments earlier about the CAFE standards being kind of at the margin of the debate doesn't – I didn't mean it to imply that it's not an important margin to be dealing with. There are real barrels and there is real pollution associated with that, so I don't want my comments to be taken as, we don't go down that path. My point was that it sometimes seems like 90 percent of the political energy gets spent on about 10 percent of the solution, and that's the process concern I have in these energy bills.

MR. EASTERBROOK: Let me phrase this question to the panel in this way: petroleum efficiency -- an end in itself, regardless of supply -- should U.S. policy seek petroleum efficiency as an end in itself, regardless of supply?

MR. MONTGOMERY: I think that's exactly the right question because it was actually the one I was just about to answer; which is, you seem to be assuming that reducing – that consumption is bad in itself, and it is not. There is no reason to think about energy efficiency as being a goal of policy. What we care about in policy is our national economic well being, we care about energy security legitimately, we care about clean air, we care about climate change; whether or not energy efficiency is an instrument of possibly getting at one of those things: it's not something that is good in itself. So it's really perverse to say that we should not pursue supply-side initiatives because they make us defer energy efficiency initiatives. If anything makes sense, it makes sense to do both of them on an even-handed basis.

And I think the issue with new-car fuel economy is that there is nothing wrong with people consuming gasoline in motor vehicles. People are showing by their choices in the market that they want and enjoy the services that they get from vehicles, and taking that away from people is imposing a cost just like any other cost. The fact is that we have about the same fuel economy and about the same gasoline prices that we had 10 years ago, but we have vehicles that deliver far more services than you could get out of that cost and out of that fuel over 10 years. What has happened is the consumer has chosen, when new technologies become available and cars have been improved, to take that improvement in size and horsepower. It's a consumer choice, and it's a real cost to take that away.

I mean, if it is worth doing something about those other issues and we design policies like good air quality regulations, good emissions standards for vehicles, good climate change policy – it may produce a change, but it's as a consequence not as a goal in itself.

MR. SHARP: I take exception to some – David makes some strong points, but I think there's a problem here, and that is it isn't just about consumer choice. Politically,

we make the argument: it's blame the consumers, they make these choices, or blame General Motors because they make the choices; and both sides, it's not true about either. GM can influence the consumer to some degree and consumers are saying, well, I would rather have it fuel efficient if you can, it's just not at the highest priority with me. And the question is whether we have a social reason to try to make it a higher priority, I believe we do.

I personally do not believe that transforming the automobile is going to rescue us from Saudi Arabia like some of the rhetoric says. I have a problem with the rhetoric, it's always – my own included, probably is inflated. But I think we're very foolish to allow the situation to continue as it is, which is we are simply declining when we don't have to give up any of the services that consumers are saying they want.

Now, if you take a very aggressive CAFE, yes, you will either force a considerable downgrading or the elimination of some of the things that are available. The one thing the National Academy of Science has clearly said on that panel was that there are a whole variety of technologies available to at last make some improvement. Where you get the benefit is on the environmental side because it is the carbon emissions that you get.

Now, frankly, I think we have a stake in the government continuing to promote, in a variety of techniques, the advancement of not just fuel efficiency but transportation technology. That's increasingly the big user of oil in the United States and internationally and China, is going to be in this sector; and we don't know what the outcome is going to be, and I wouldn't just leave it to the market to take the risks here. GM and all of them can't afford right now to have a huge burden imposed on them, but pushing, again, out 10 (years) or 15 years, we ought to be pushing them toward greater efficiency, in a variety of ways, through technological development.

The truth is, the ZEV Requirement – that's the Zero Emissions Vehicle Requirement that California has on, which you can argue, when they were imposed on electric vehicles, was probably irrational because that is not a technology that could develop. But I think it had an unquestionable impact on the development of the hybrid that now we see and to some degree on the fuel cell. We're not going to see these technological developments without government pressure, either in mandates or in subsidization. There's no reason to economically make them for the individual car, but socially they add up to huge pollution and huge energy things, and so we ought to be pushing the market on those issues.

MR. EASTERBROOK: I will tell you, and then we will go to you, Bill. I don't have a ZEV, but I have a ULEV – I have an Ultra-Low Emission Vehicle, a Honda Accord built in Marysville, Ohio, that's magnificently powerful and comfortable and all those other great things, and it's one-quarter of 1 percent as much pollution as a 1970 car.

And you're right, there's no way Honda would have developed that technology if they hadn't been required to by government.

MR. SHARP: It does cost you more, by the way, but – (laughter) – actually, than what it used to.

MR. EASTERBROOK: More compared to what it might have cost otherwise, but I can tell you this car that I just got – I traded in a 4-year old model and, considering the low cost of interest rate, it cost me less in real dollar terms than my '99 car had. So, Bill?

MR. MARTIN: Just a comment to your point. It's easier to talk about supply because it's tangible, but we haven't talked about electricity at all. We have talked a lot about cars, but Secretary Abraham recently – Andrew was there – had a meeting with high-tech executives in San Jose to talk about marrying the IT revolution with energy. And the IT executives, first of all, were very concerned about the price of electricity in California and were not going to build any more chips in California; they were leaving, and that was terrible to the state of California. So electrical reliability becomes very, very important. They made the comment, though, as the most ancient technology we have is electrical metering. Isn't there some way we can pass the market signals to the consumer so that he knows when the price of electricity is up or down?

France, my mother lives in France. She has a little green and a little red light, and she knows to run the washing machine when it's green because it's one-third of the price of when it's red. Now, that's not high technology, but she saves a lot of money that way. We do nothing, I mean, running the thermostat is similar to, at least in my experience, running a VCR. I don't know how to run the thing and I – clearly, marrying some of the other parts of our industry with the energy and bringing it up to date a bit can help quite a bit and save everybody a lot of money -- including utility companies, because if you read Andrew's report, these 1200 new – I wonder if you mean 1200 new –

MR. LUNDQUIST: Generators.

MR. MARTIN: Generators? Where are we going to find 1200? So, conservation and energy efficiency becomes extremely important in lighting and using the benefits of the (rest of the nation ?). I'm not quite sure how the Congress – we don't want the Congress to regulate this, but if the consumer got the right price signals, that would help.

And again, I go back to using, again, you're going to produce electricity for your home, why not do it with a fuel cell, through gas as opposed to electricity, using those molecules more efficiently as opposed to a central load? There's a lot we can do on the conservation side.

MR. EASTERBROOK: So once again, if only we would trust the French, everything would be fine, right? (Laughter.)

MR. LUNDQUIST: I agree with Bill. I mean, we should be looking at energy efficiency across the board.

MR. MARTIN: Well, that's what your report said. It wasn't reported that way.

MR. LUNDQUIST: That's exactly right, it wasn't reported that way and that's fine, but I think we have been consistent in the administration in following through with it and I think that's what's important. The other thing that I would point out is that you shouldn't ignore the fact that our economy is becoming more and more efficient, and that's because of technology and if frankly has to do with us becoming more of a service industry as well. But energy per GDP has been going down and we have been doing quite a good job at that, and that was all factored into, you know, estimates. We can do more and we should be doing more; and I think that, you know, Congress is looking at many things that are very effective in that. I think that, you know, a tax incentive is the best way to do it, because, you know, I think that that's more attached to the market and have better results. But all of those –

MR. SHARP: They are on electricity in the bill. There's one of the PERPA requirements -- this half of PERPA has never been in debate, that I'm about to talk about – but it directs the state has to go through a review of new pricing techniques and metering techniques, so at least you force that conversation to states. This is a state decision and probably it's going to remain, and should remain, a state decision.

But we are – it is absurd, in our modern economy, that we still are pricing electricity in a way that assures that you over-buy high-cost power. And maybe while you don't personally feel it, you do ultimately, because collectively we're paying for the most high-cost stuff because we're not adopting the technology that would help us work out that peak, among other problems. So we have to be honest about this, go back to – if you don't price it, then you have to have the government policy working triple overtime to save energy if you're unwilling to allow reasonably accurate pricing signals to get through, this was the very painful lesson a lot of us got on oil and gas back in the 1970s.

MR. EASTERBROOK: Other questions from the audience? Sir?

Q: I think this symposium is a good thing to have this discussion. (Off mike.)

MR. EASTERBROOK: Well, interesting. If you read the Constitution closely, I would say you've got a right to own a gun and to read a newspaper, according to the constitution. Those are the consumer choices that are spelled out very carefully. What happens to energy policy sounds like the proper province of Congress to me, but anybody want to take up that question?

MR. SHARP: I don't think – most of what we're talking about, I don't think, would have much – it probably gives more choice to consumers over time by making sure they have energy available for the things they want to do. If you impose a really rigid CAFE system, of course you will reduce those choices. If you do it with some reason, you probably don't have much impact on those choices, other than the fact that they get the choice of something more fuel-efficient. Though they will have to pay for it, they probably can make up for it; that was what the CAFE study was all about. It said, here's what you could do at which they would make up for the cost within the savings on gasoline.

And admittedly, that narrows a choice, but there are a lot of the consumers out there who don't like the choices they are getting out of the market the way it is, and 90 – you know, Congress gets -- having been one, most of your job is to hear the complaints, which are endless, about what's wrong with America, what's wrong with this interest group or that interest group, and the reality is you can't do much about most of it. That's why I come back to the most important part of our energy policy is having open, resilient markets, whether it is in electricity, in natural gas, in oil – that's the first and foremost thing.

Second thing is to get right what you need to do on the environmental side, because markets pollute. They do not clean up unless they have to clean up to a standard; then markets are wonderfully efficient. If you have the standard in place and you say, go at it, and they will get it. But that is a collective that we have to worry about, and that, I think, in the long-term is the energy issue about energy policy, is how to have a reasonably clean nest and have the material wealth that we want to have that comes from energy.

MR. LUNDQUIST: I would just like to comment that, you know, I do agree that we should be careful not to have government mandates that may have – (audio break) – and we can look in retrospect whether that was a good idea. We tried to control oil prices, for example, in the early '70s. That was an abject failure, okay? And we can have that result. That's why I say – and this goes to individuals picking and choosing themselves, is you've got to use the market to do it. You've got to use market mechanisms, I think, to produce those results, and I think that's where we should put our concentration in.

MR. EASTERBROOK: Other audience questions? Sir?

Q: All of you have – (inaudible) – mantra, maybe I can combine them, about market mechanisms, and maybe I can combine Phil Andrews' questions about the market, because if you swing from government regulation to market mechanisms, there is a third bias – (inaudible) – market that pays a short-term premium. So 93 percent of all of our – (inaudible) -- gas, because that's a good short-term payout for utilities, and that can make investment. So that's a distortion the marketplace brings to the party that

government could otherwise help correct. (Inaudible.) Isn't there still a role for regulation to move the markets back to the long-term, away from the short-term bias, particularly electricity?

MR. SHARP: Well, let me suggest to you first of all, the notion that government has a long-term view or that markets have short-term views, I don't find that either of those arguments holds up well. Politics is very short-term view in this country. And I think what you're referring to is that at least when we had regulated cost of service there was a tendency to make a long-term decision. Actually, what we began to see happening -- and one of the reasons we moved to deregulations was that precisely that was not any longer happening. That is, that in many regulatory environments they were challenging every one of these long-term decisions as being imprudent, and so it swings back and forth is the problem.

The reality is there's no question that we just went through a short-term purchase of a lot of natural gas generation, so it was misplaced in the wrong place. By the way, the consumers didn't get stuck with it; the investors got stuck with it, which was part of the goal. But –

Q: But the consumers pay higher gas prices because there's a fuel surcharge capacity.

MR. SHARP: They can, that's right – that's right, if they're in contract. What I think we're moving toward in electricity that will help iron this out is we're getting wiser in the marketplace and in the regulatory system about you need a portfolio of sources for the utility to buy, but as the seller of power, a merchant plant is no longer going to be just a gas plant. They're going to have a portfolio of plants, a portfolio of contracts that are of different lengths, so they're not just operating as a merchant in there.

This will begin to get us a more mature marketplace that has a chance to work. That's not to say the government has no role in resource adequacy issues at the state level at all. But I'd just be very careful because the failure is to jump back to the assumption that the old way of delivering a bunch of electrons and roughly getting them there most of the time is adequate for our economy in the future is baloney. We have got to have a system that recognizes that it needs electrons for a digital economy, for at least major portions of it, and that takes a much more open, sophisticated system than what we've had in the past. That is not to say there is no role for government – it's very important – but get out of this notion that, oh, well, we just go back to the way it was in the '80s and that will be good enough.

If we want to be like Japan, that's okay, we can do that, but in the 1980s we decided we weren't going to go to that system in this country. We broke it open to more competition and we had a lot more goodies to distribute to a lot more people in this country as a result.

MR. EASTERBROOK: Let me interrupt for one second to tell the panel we have five more minutes. We'll take a couple more questions if we can, but by way of summation I'm going to have you vote with show of hands on a couple of propositions that have come out of all the things you said. So I'll tell you what they are so you have a minute to think about them.

I'll take a show-of-hands vote on three things. One, the energy bill currently before the Senate, would you vote for it, yes or no – current version of the Senate bill. Second question will be, does the energy bill -- assuming it passes, does it leave unanswered significant questions that will come back to haunt us, yes or no? And the third question is, if there were a carbon trading scheme to address the environmental effects of energy, would you favor it, yes or no, assuming for the sake of argument that it was practical and well designed and so on.

Other questions from the audience? Sir?

Q: (Off mike.)

MR. EASTERBROOK: Did you guys get that question? Do you want me to repeat it?

MR. LUNDQUIST: I'll take a stab at it. I think it's possible to have that discussion on gas, and Armond thinks that there's room for discussion, and I think they should have that discussion. But I would also say that the policy, let's call it, of the states and the populace – and I'll use Florida for an example – it's quite illogical. I mean, they rely on natural gas; they want to have more natural gas. They think it's environmental to burn natural gas but they don't want to produce natural gas off their shores, so they want it piped in, and other things.

So if you use just a hydrogen economy argument to try to bootstrap lifting the moratoriums, I don't think it works; I think education of the public on the safety of it and the responsibility of it I think can be, and a dialogue would be helpful.

Q: (Off mike.)

MR. LUNDQUIST: Keep in mind that the considerations and discussion were to just limit it to natural gas only, and some of those fields are natural gas only. There is no oil there.

MR. EASTERBROOK: One more quick question then we have to wrap it up. Sir?

Q: I have a question about the investments of markets and what type of signals an energy bill would send to those. CBO said that the energy bill would be about $50-plus billion plus tax cuts on top of that, so that's about $70 billion an energy bill might provide. But, given that we passed ostensibly an education bill that didn't get fully funded, what is the signal we send if we pass an energy bill but then we don't fully fund – (inaudible)? Is it still worth doing?

MR. EASTERBROOK: That's a wide-open question based on whether it is or isn't funded.

MR. SHARP: Some of that's really funded because it is a tax cut; some of it's not because it's an authorization, so I don't haven't added it up, whether they added up – I'm sure they added it up, but I mean – and you can tell –

MR. EASTERBROOK: Was there a specific program you had in mind? No, there wasn't. Okay.

MR. LUNDQUIST: The way to answer that is the tax provisions are going – if they pass, right – are going to be funded, all right? The R&D I think is less important for the markets. Many of it should be funded, you know, and I think would be helpful, but that's not going to affect the market. What I was talking about earlier is providing some regulatory and legislative certainty, put it behind you, because, you know, the fact is they probably will need more legislation but it usually takes several years to do that. This industry needs to be able to look forward for 10 years and see that there's some stability in the regulations in the legislative side before you're going to see a great bit more investment. There's other issues out there; that isn't the only issue that created this instability.

MR. EASTERBROOK: All right, we have to finish now so let's have our panel vote. We'll make you all United States senators for the moment. So, the first question of the energy bill, as it stands before the Senate now, show of hands, yes – who would vote yea for that bill? We have two votes on the yea. And voting nay?

MR. SHARP: I would abstain. (Laughter.)

MR. EASTERBROOK: Phil, you can't abstain. You're going to have to go to Oklahoma if you want to abstain.

MR. SHARP: I used to live where I couldn't abstain. I don't anymore.

MR. EASTERBROOK: All right, we have two yea, three nay and one abstention.

MR. COHEN: Two abstentions.

MR. EASTERBROOK: You have two abstentions? What, are you guys a pair? What are you –

MR. COHEN: Mine is based on ignorance.

MR. SHARP: We're bargaining for more. (Laughter.)

MR. EASTERBROOK: All right, so we couldn't even reach a quorum with a panel.

MR. MONTGOMERY: You have to understand, I would vote against anything called a comprehensive energy bill.

MR. SHARP: First of all, that's a misnomer. There never has been, never will be a comprehensive one. If you mean coherent –

MR. EASTERBROOK: All right, so my second question, assuming the bill passes, will it leave unanswered some major energy issue that will come back to haunt us? Who thinks yes? Everybody thinks we're leaving something unanswered.

All right, and the third question would be energy and environment. If there were a carbon-trading scheme, assuming it were practical and efficient and blessed by economists, would you vote for it? Who would vote yes? We've got four votes yes – five votes yes? Four? Is that a yes or a no?

MR. : Oh, I'll be yes.

MR. EASTERBROOK: All right, we have five yeses, and who would vote no?

MR. : No.

MR. EASTERBROOK: No? All right, we've got five to one in favor of a theoretical ideal carbon-trading scheme.

All right, panelists, we thank you for coming. We certainly thank you for your time and your very thoughtful and intelligent comments. Audience, thank you for coming as well.

(Applause.)

(END)