

THE BROOKINGS INSTITUTION

"GLOBAL CHALLENGES FOR U.S. ENERGY POLICY"

Economic, Environmental and Security Risks

Friday, March 5, 2004

[TRANSCRIPT PREPARED FROM AUDIOTAPE RECORDINGS.]

PANEL 4:
POSSIBLE U.S. POLICY APPROACHES

Introduction:

Jason Grumet, Executive Director National Commission on Energy Policy

Speaker 1:

Robert McNally, Vice President of Tudor Investment Corporation

Speaker 2:

Phillip Sharp, Congressional Chair, National Commission on Energy Policy

THIS IS AN UNCORRECTED TRANSCRIPT.

MR. GRUMET: Thank you, David. It was really the concern voiced by Bob Hahn and John Holdren over free ridership that caused to change our schedule. We were crystallizing our concern that some of you might free ride home, trusting that others would stay behind to listen, so we have paternalistically decided to essentially make me your coffee break and move directly to our final panel.

In the finest tradition of a casino, we have blacked the windows the removed all the clocks from the room to deprive you of any natural insights as to the time of day, but it is shortly after 4 o'clock, and I promise that if we are all focused, we will get the boxed line flowing by 5:00, so we will actually start late and end early.

I am Jason Grumet. I am the Director of the National Commission on Energy Policy, and I get to now try to move us off of the last discussion to the final panel where we explicitly focus on where we should go from here, the qualitative portion of our afternoon.

There has been I think a very pleasant consistency really over the course of the last several hours in the projections of the trends and the risks and the probabilities of our current trajectory.

Many of those presentations were qualified with the notion that what we were seeing was the expected result if nothing changes. That, of course, was modified by Thatcher's Law of entropy that the unexpected, of course, will occur, but beyond the joy of the passive discovery of the future, we have the

blessing and the burden to be living in a great democracy, in fact, in the very capital of that democracy.

We are now today flanked by two of our nation's finest think tanks, so we are forced at the end to ask the difficult question what should we do, recognizing that "we" is a broad and difficult term, but how should we change things, and we are fortunate to have two really wonderful speakers to address this challenge.

First, we will hear from Bob McNally, who is presently a vice president of the Tudor Investment Group. Prior to his work in the world of hedge funds, Bob had a relaxing two years in the White House where he just floated on the gentle waves between the National Security Council and Economic Council addressing issues of energy policy and the ramifications that those policies would have for our economy and security.

In addition, we are joined by Phil Sharp. Phil is presently a senior advisor for the consulting group of Lexicon, where he focuses on many of the issues we spoke about today. He is also affiliated with the law firm of Van Ness Feldman in town, and in his honest moments will tell you he proudest career achievement is that he is also a member of the National Commission on Energy Policy.

Prior to that, Phil was elected by the good people of the Second District of Indiana to 10 terms in the U.S. Congress where he served on the Energy and Commerce Committee and actually chaired the Subcommittee on Power at Energy, so Phil has clearly thought about these issues more than once.

In order to get us rolling, and we are going to have some brief speeches and then entertain any and all themes that can be phrased in the form of a question, I am going to ask our speakers to indulge in a minor thought experiment and to project forward 12 months, that it is now March 5th, 2005, we have a president, we have a closely divided Congress, and just, for kicks, let's assume, Bob, that you have a prominent position in the administration, that your reputation is an intellectual beacon on issues related to energy and the relationship between economics and security has resulted in you being tapped essentially to design really the next version of our national energy strategy, and, Phil, for kicks, let's assume you are a popular Democratic Senator from the Heartland, a passionate pragmatist, and that you have been asked by both parties to develop a framework for our next round of comprehensive energy legislation.

Lest you dawdle, Phil, I will have to tell you that the demographics of your district are changing, and this may be your last shot.

MR. SHARP: Make it the last shot, that's easier.

MR. GRUMET: Frame the discussion as you would like to see the nation entertain it, and then we will entertain ourselves with questions from the audience.

MR. McNALLY: Thank you very much. Before getting into that thought experiment, I want to thank you for inviting. It's an honor to be here with Congressman Sharp.

I had a very fortunate experience at the White House, two and a half years, National Economic Council and National Security Council. I thought that if over 20 years you had a major California electricity crisis, major energy

plan, major energy legislation, one real disruption from Venezuela, one almost disruption from Iraq, and just for the sheer fun of it, an Enron subpoena investigation, that that would be a good career over 20 years.

I had it all in two and a half years, so probably to get to your answer in your scenario, if I am a senior administration official in December, I am also divorced and visiting my kids on the weekend.

I noticed two things in just the parts I was able to participate in. You are all very tired and you have been sitting down for a long time, and you have apparently gotten to the hardball questions earlier in the say, so I am going to propose a straightforward bargain. I will be brief if you throw me softball questions afterwards.

Let me get at your scenario by kind of proceeding in this fashion. I would like to make some observations on the challenges I think involved in energy policy-making and the circumstances that energy policy-makers of both parties confront.

In terms of energy policy-making, in my opinion, despite all the heat and controversy that is generated often by environment energy questions, most of energy policy-making involves pragmatic, sensible adjustments to our tax regulatory and security policies, that is done by centrist moderates of both parties.

That has been my experience, believe it or not. I think there is a broad understanding that our country confronts about four important challenges in terms of energy.

The first is we have to align our electricity laws to 2004, not 1934. We have had two recent experiences in California and New York where the incompleteness of the Federal Government's adjustment to the reality of competitive wholesale markets is apparent.

My experience was we had more cooperative help with the Democrats in the Senate than even with Republicans in working this through, that we all knew we had to get to open access, mandatory reliability rules, et cetera, and so forth, citing provisions even.

The electricity legislation has been kicking around for years in the Congress, it has to get done, so the first thing I do in December was say, Mr. President, if we do anything, we have got to get with Senator Bingaman, Senator Domenici, and others, and we have got to get electricity legislation finally done.

The second thing is we have to continue to work on comprehensive policies to mitigate our economic security and environmental vulnerability to the reality imposed by geography, geology, and economics, that we are and will remain dependent on fossil fuel consumption, and we can do that in a variety of ways.

I would probably tell the president that I am fully supportive of the policy he laid out in 2001, and we ought to continue to see that that is implemented. We ought to fill the Strategic Petroleum Reserve to capacity. We ought to be building on the largest CAFE increase on SUVs in 20 years, we ought to build on what the NAS told us was possible with the CAFE program, reform it, so that we can improve fuel economy without harming safety and without harming jobs.

I would say a third major priority is we have to find ways to use coal cleanly. That is just a bipartisan imperative. We have a 250-year supply, it's half of our electricity, we are going to burn coal in the next couple decades with strong bipartisan support.

Funding for clean coal research was mentioned. Those types of things have to be continued with the Congress. Again, I see already bipartisan support for that. Finally, and this is to the longer term, and some of the issues that came up in the last presentation, we have to find a way, we have to put this nation on a realistic cost effective plan to get off of oil entirely.

We have to do that for energy security reasons, we have to do that for public health reasons, and we have to do that for climate change reasons, and the order is not by accident in my opinion.

I heard mentioned in the last panel, some of the projects I was very pleased to work on personally. We can start with hydrogen. The President embarked on a bold, new, and expensive program to subsidize research into hydrogen fuel cell vehicles and the hydrogen generation and transmission technologies, so we have got the car makers and the energy companies coming together with a research plan, with a budget, real money from the United States Government with the objective hopefully of reducing the cost differential between conventional cars and the hydrogen cars, conventional fuel and hydrogen fuel, so that by hopefully 2018, we can be in a position where we are walking into a showroom and seeing the first hydrogen cars.

Fusion. The United States walked out the fusion partnership in 1998. President Bush directed that we walk back in, so we joined with EEU, we

joined with Japan, Canada, other countries, South Korea, and we are now part of that process.

If that works, we hope we will be able to commercially develop and deploy fusion energy in around the middle of the century, so that you could almost see a plan, the best--I am not a scientist, I am not a geologist, but the experts who have come to us have said the best way we can devise out of the mess we are in, dependence on fossil fuels mainly that come from the Middle East, is to develop hydrogen.

We will first reform that from natural gas and eventually from renewable and water, and we have to have sustainable electricity generation capability. That means Gen 4, advanced nuclear capability. It means clean coal, FutureGen project. It is a 1 billion, 10-year project that will develop both electricity cleanly, zero emissions, and hydrogen, and if we can bring fusion on line in the middle of the century, we can generate electricity and the hydrogen we need for transportation.

That is the best plan and offer that I am aware, that our nation's brightest and best can come up with, and I was pleased to be part of that.

So, on those areas, and we are always going to fight over CAFE, we are going to fight over ANWR and whether CO₂ should be on a multi-pollutant bill or whether it should not be on a multi-pollutant bill, but I think underneath there is a commonality of views and understanding of what work has to be done, and a commitment to get it done.

Just finally an observation on making energy policy, and I ask, and I will be interested to hear from the congressman and others if this applied

in their careers, I find it is very arduous. It seems that there is an Off and On switch. If gasoline prices are \$1.50 or below, and electricity is flowing through the lines coming into people's houses, the American public and the political leaders more or less are in a state of deep, deep, deep sleep when it comes to energy policy.

That is good because I think it allows the folks who are really concerned about these problems to have meetings like this and to work on solutions, and so forth.

But then what happens is when gasoline goes to about \$2.00 a gallon now at high speed, as it is currently, and it has several times in the last few years, or when electricity suddenly doesn't arrive to the homes and businesses that have come to rely on it, all of a sudden we flip onto mania and panic, and a search for instant solutions as if with everybody sure they have the silver bullet solution to the immediate problem, as if you fell down, suddenly experienced chest pains, were able to do immediate diagnosis and tell the doctor exactly how to solve it, raise CAFE, use the SPR, impose price controls.

So, it is that off-on which I find I find disconcerting. This is something I would be interested in folk's questions and ideas and thoughts on it. In my mind, the only way to manage this, because we do deal with the most important issues I think in public policy, but we deal with kind of off/on policy-making process, is we have to do a little bit better job I think of formulating both legislative proposals and the consensus behind realistic non-legislative proposals, so that when the next crisis hits, we can move through the Congress or into the public realm, an acceptance for sensible policies rather than quickly diverting

into the marshes and the swamps that we know so well, particularly in election year.

I am not optimistic that anything will happen this year, but in 2005, that is basically what I would tell the president.

Thank you.

MR. GRUMET: Thank you, Bob.

MR. SHARP: First of all, I am very sorry Bob left the administration and I hope he will go back. That was very good.

I am going to address my remarks primarily to sort of the global agenda, which is what the conference was focused on. For those who say we have no energy policy, we have a plethora of energy policies, and we could talk about many of those.

I went to Congress in 1975, when we were just coming off of the embargo of 1973, and we were very much committed on a bipartisan basis to transforming our participation in the world oil market, and we were willing and able in this country to engage in incredible interventions that most of you that are younger would not even dream should be done or could be done in a political level in this country in terms of taxes, in terms of regulation, in terms of subsidization of all kinds of things to transform that market, and that colors my view of things.

There are two issues I think that have sort of run themes throughout the day on these world markets particularly oil, but also natural gas.

One is the reliability of those markets. Sometimes we call that the security, whether they are disrupted, whether price is run up, or whatever,

and then the other is climate and what we are going to do about that, and in both cases, I just have a couple thoughts.

First of all, on the global oil market, let me give you the Doctor Strangelove view for those of you who are old enough to have seen the movie. The subtitle was How I Stopped Worrying and Learned to Love the Bomb.

Well, let me suggest to you stop worrying and learn to love the world oil market because it is going to be with your grandchildren, and if you elect Ralph Nader president of the United States, he will still be confronted with what all Americans are confronted with, what all importing nations, what all exporting nations are confronted with, and that is that the oil market and the world markets are profoundly important to us and the world economy, and we are not going to be able to be indifferent from them, we cannot pretend they don't exist, and we cannot run away from them, and we cannot pretend in 10 years that we will be substantially and significantly in a different world unless you are now willing to commit yourself on a sustained basis to a much higher level cost of energy to this country.

We have seen no evidence in 30 years, whether it is with the threat of the Soviets, with the threat of embargo, with the threat of 9/11, that this country will tolerate that kind of thing.

So, let's stop the pretense and say how do we make these markets work effectively for us and for the rest of the world economy, because that is where all our politics or much of it has to be focused on this issue.

I hate to bring cold water on those that have the quick and easy way out. I don't see it. If you have got one, I hope it will work. But that does

not make me, and I do not think it should make the country, a laissez faire attitude about these markets.

Quite the contrary. Let me suggest a few things. One that we did not talk about, it has been alluded to in a couple of instances today, but, first, the world market is in energy. Even in uranium and nuclear affairs in oil and emergent in gas are becoming more significant, not less significant, and we are still developing the kinds of institutions and bilateral arrangements these markets we correct for their problems.

We have those arrangements on the domestic front for our markets in many, many ways, and have had for a long time, but we are obviously still working that on the international front, and an administration-- and this administration has done a number of positive things--needs to take this seriously, and the United States as world leader needs to take it seriously.

Let me just quickly run through a couple items. Obviously, the International Atomic Energy Agency, the President has just announced the need to upgrade a whole series of things and how we make that marketplace more safe for us in terms of nonproliferation.

In the world of finance, there have been long-time arguments over World Bank and other things, but clearly those institutions have to be directed at real world problems, and the negatives and the externalities that oil distribution and production create in some parts of the world.

On the environmental front, we have to strengthen our capacity and our leadership to see to it that the way in which oil production and gas

production occurs in other countries has a minimal protection of the local economy, as well as the distribution system.

This is not to criticize all of our companies. Oftentimes they are doing a far better job in bringing new techniques into these areas, but it is not universal, and we, by the way, are politically going to get the down side of this over time as people see us as the energy hogs who give them the pollution.

Finally, we need to strengthen and accelerate our information and coordination efforts among our governments on energy policy and energy information. The reason I say this is we went through a period when we were ready to dump the IEA, for example. It didn't seem relevant in the '80s, why are we even spending federal money to keep this silly institution going.

There may be problems with the way it collects data and announces them, but we would be very foolish to get into an energy crisis without at least best available information to the various governments that will panic, absolutely panic if Saudi Arabia is not able to up production at a time of distribution.

As we heard earlier today, there is increasing worry that they may not have the surge capacity or the political capacity to play the role that they have played in the last 20 years, which has actually been generally in our national interest.

Let me suggest the second thing where we need to focus, and that is on the crisis response kind of proposition. We did hear that several times today. We have our salt domes with about 600 million barrels of oil for our

Strategic Petroleum Reserve, and I applaud the administration in giving new emphasis to this.

Republicans and Democrats were willing to start selling it off as the pressures of the budget in the last decade became big, and it didn't look like there were any problems on the horizon, and it is expensive, folks. We pay a lot of money for that.

By the way, the American people will absorb lots of money, they just don't know they are paying that one.

The fact is that it is very important. China is talking about doing it. We need to encourage this around the world, because frankly, we don't have many tools except depression as a way out.

I mean you can always solve every energy crisis by putting people out of work. It happens instantly. You just slow down the economy and it is marvelous, you get over the energy crisis, of course, the other crises you have got to deal with.

But the point is, the Strategic Petroleum Reserves are inadequate to a severe situation, but they give us marginal protection, they give us political leverage with Saudi Arabia and other producers, and so it is in our national interests to preserve this asset and to have it available.

Now, it is caught between two forces that argue about it, the use it or the lose it folks. The lose it people say it is silly for us to spend all this money, and it is not worth it, so let's lose it, it's an easy source of revenue obviously for a while for the Federal Government, and since we have passed our golden age of 10 minutes of having a balanced budget in this country, this will

become an intense argument. Mind you, we never balanced the budget while I was there, so I don't pretend it is simple.

But the other part of that is the use it, those who advocate, well, let's use it as a way to modulate prices and whatnot. In my view, only in the extreme circumstance should we do that. I agree with Dan Yergin and this administration, and a number of other people that this is a strategic tool, but it is a cost worth bearing.

Let me turn to the third proposition. We heard all day from the economists, and someday I hope economists will step forward and actually support in the political arena the internalization of costs that they believe is what we ought to be doing.

Excuse me for expressing some skepticism. There are those who do. But the two external costs that we probably don't internalize in price most obviously, one is the cost to us. The protection and the promotion of the international oil market clearly has some implications for our military budget, some implication for our foreign policy and foreign aid budgets.

I don't pretend that people can sort that all out and know exactly what it is. I just know that if we have a reasonable case to be made for, you know what, we ought to have a little tax on oil to help offset that cost to the budget, so in two years or three years when finally people get past the notion that they can escape all taxes and all expenditure cuts, and they start having to deal with the deficit, this might be a fruitful place to look for this tax.

I don't put a lot of hope in this. I just think it would be smart for the country to say this is an external cost, a portion of which ought to be borne on, and its value, I think is a smart way to go.

The second internal cost, I think is both more politically realistic even though that is not what you gather from other speakers today, and that is I think on climate change. The United States is getting close and will in short order decide that it needs to establish at least a modest path on carbon restraint in this country.

We could argue, I could build a case for that if you want me to. I think it's coming. I think industry has decided, they more and more recognize they need the certainty of guidance. They are making huge investments for long term in this country, a number of which could be undermined by a sudden change in policy in this country. There are just lots of reasons.

We need to establish that path to help guide private investment, and frankly, because it is so difficult at the federal level to guide your research budget and your other kind of policies as the energy bill illustrates, and it is not the first time this problem has come up, that if we had some direction on that, it would give some guidance to where you need to invest the federal dollars as well.

My suggestion is one that has been floating around a lot, is that we got to a cap and trade system with a safety valve, and we would probably start modestly and up.

Safety valve means you sell credits. It's a predetermined cost that you are placing on the economy, so if you don't have enough credits to meet the cap, you can go in and buy them from the Federal Government at a set level.

If you are intent on making a certain goal or compliance, this is not a smart thing to do, but if you are intent on getting a process in place and getting some shadow costs in the marketplace for what carbon costs, I think we will do this unilaterally, by the way. I don't think we are going to just turn the politics upside-down from where we were before.

You have to have the international agreement first, you have to have everybody doing it first. I don't think we will do it very strongly. I think we will do it modestly and then we will work on the engagement. So, I would internalize cost there.

Third, as a part of internalization of cost or what I would call as a part of making the market work, the oil market in the United States does not have a very good demand response proposition to it, because it is so focused in transportation, and to be frank about it, even these \$2.30, or whatever it is now, we may not see a lot of market response to that price level unless it is sustained for some time.

So, I think we have to take very seriously--which we have partly underway in this country--ongoing research and development of the Federal Government and assistance with companies to advance technologies and alternatives and in efficiency, but that never guarantees it is utilized in the commercial marketplace, and regrettably we didn't do anything about it in 1992 under the theory that lots of technologies were coming in the marketplace, it was

easier for us to do nothing, and those would transform the landscape anyway.

The market is doing it, why should we mess with it.

Well, as one of the speakers alluded to, the fact was that the technologies came in, they are using lots of automobiles, but, of course, they are more power now, so you climb Mount Everest in your Hummer, and everybody wants to apparently. I don't believe they do, by the way, I think that is a bunch of baloney.

But the fact is we can have a lot more power and a lot more choice in consumers, and we can also have a lot more fuel economy, so we are going to need some kind of CAFE adjustment. It doesn't have to be the extreme, we should give companies lots of time.

We just need to keep the direction headed in the right way, and it is not enough to have one group of cars that are affected. We need a fleet that can do lots of different things.

I appreciate your reference to national academy studies. Excuse me, I am taking longer than I meant. Let me just go the fourth, and I am not even going to spend much time on that.

We have heard a lot about technology policy development. Obviously, there is a lot of things we have to do, but let me suggest to you the hard part here is--the hard part is making the decision of how you are going to compensate for that low cost of oil and gas prices in the marketplace.

You may complain or we may complain about the cost of that, but I can assure you that if you want real technologies to enter the marketplace

in significant ways and make a difference, we haven't seen a lot of that happen unless the price of the current fuel goes up.

So, we have to decide selectively how we are going to put public resources in, to bring into the commercial marketplace the demonstration of the technology beyond the R&D stage, not an easy question, but I think we can do some of that without breaking the bank.

With that, let me just conclude with one comment about where we sit internationally. We obviously, as a world leader, our military power matters, how our diplomatic skills work matters, how our economy flows matters, but I would suggest to you also that we had better be focused on that we are now the big dog on the block, and that has brought on some things that a lot of Americans don't like.

Some of it, people will say we inflicted on ourselves, some of it is just the natural result of being the remaining huge power, but let me suggest to you one of the arguments you increasingly hear, and I think if we are not wise, it is going to intensify against us.

That is that we over-consume our share of the natural resources of the world. We over-pollute our share meaning that is in carbon, because we are actually pretty good on other fronts, unless we are willing to take some steps, and we are very careful about, well, we don't think we want to drill off of Pensacola because, gee, it's 100 miles out and who knows, that might keep two tourists away from the shore, the tourist interest there.

But we are quite happy to have that happen somewhere else without environmental constraint. In other words, we are exporters, we are just a little too good for everybody else.

I would suggest to you that these things are not things that are going to fundamentally shift the international politics, but I don't think it is where our grandchildren want America to be.

[Applause.]

MR. GRUMET: Thank you.

You have asked a number of questions of us, and I would like to just kind of close this out by asking a collective question of you. The synthesis that I would propose, it Phil and Bob were for the moment one person that we have heard, is that we need the government to try to rationalize the transition towards a future electricity market, there needs to be reforms to the current CAFE system. There needs to be I think a reasonably aggressive program of technology advancement that has the government playing a hand in promoting clean coal and hydrogen and advance nuclear power, and there needs to be some kind of leavening of those technologies to market through the imposition of a market signal, whether it be through carbon or through internalizing the cost of security.

So, what do you think? Would anybody like to comment on that, ask questions about it, or is it time for the boxed line? It is hard to tell at 4:38 in the afternoon.

Does anybody have any closing questions or thoughts?

MR. GOODMAN: I am Mark Goodman again.

On the subject of import dependence and import shares, sure, it would be great if we didn't have to import any oil, if we did it eventually, and not in a way with everybody else doing it in a way that would destabilize the economies and societies of the many developing countries that are oil exporters.

We have a higher oil import dependence now obviously than we did in the '70s. We see supply interruptions and yet they have a lot less economic impact now for a variety of reasons. The biggest in terms of volume of interruption, you know, the biggest disruption we ever had was in 1979.

At that time, England, which was a net exporter of oil and of energy overall, had the largest recession of the industrial world. Japan, which imported 100 percent of all of its energy, avoided a recession all together.

People from Argonne Labs have charted, as we saw a sort of summary chart going back, but if you look at the history of oil price shocks since the advent of petroleum age, and they go back that far, in the U.S., we have had some sort of a recession after each price shock including that period of 50 years when we were supplying the rest of the world with oil.

The economic costs to use of oil price shocks are virtually unrelated to the level of oil that the U.S. imports, and we shouldn't kid ourselves about that.

It seems to me that when we talk about energy security, there is three dimensions to energy security. There is what everybody associates with it is security from these price shocks, which I think in retrospect we can see aren't really threats to our security at all.

Moreover, they are really a part of the functioning of the normal commodity price cycle that you see for all commodities, and what happened in the '70s was we didn't understand that, we went crazy, we overreacted, you know, not only with conservation and with alternative energy, but particularly with major new supplies of non-OPEC oil, Alaska North Slope, Mexico, North Sea, all coming, bunching on the market at the same period of time.

The result was a glut, depressed prices for a decade, the loss of any progress we were making on efficiency, although that happened with a lag, the gutting of much of our energy industry in the Southwest followed by depression in the real estate industry in the Southwest, and the savings and loan industry in the Southwest, which then threatened the savings and loan industry in the rest of the country. It is important that we put these things in perspective.

The second dimension, which has been talked about earlier, is the threat of a cataclysmic supply disruption, which would be a real threat to our security, and it is something we haven't seen yet, and the policies for safeguarding ourselves against that are very different than any policies we might take to try to stabilize prices in the market, and in some ways, they contradict each other.

The third dimension would be long-term sustainability. Again, the policies that would promote long-term sustainability, not only aren't the same policies, but can be in conflict with policies of these other.

We need to develop an analytical framework for understanding energy security within its various dimensions, what are the relationships

between them, how can we prioritize between them and reconcile these objectives and the measures that we would take to do that.

Unfortunately, in 25 years since the Department of Energy was formed for the purpose of addressing energy security, it has never attempted to do that, to the best of my knowledge, and I am not sure that really anybody else has.

MR. PIZER: Billy Pizer [ph], Resources for the Future. I am an economist. I guess I wanted to ask you guys both an economics question, somewhat divorced from the problem.

It seems like there has been a lot of discussion about the security and climate change concerns that exist regarding energy usage, and both of you guys have kind of talked about the long-term need to either move off of oil or move off of fossil fuels to protect the climate.

Both of you have kind of articulated or it has been articulated during the day, two different approaches. One is kind of pricey externality and let the markets rip, the other is focus more on bringing forth the technologies through R&D.

As an economist, I can cite failures in the R&D market, I can cite failures in the market for the externality whether it oil security of climate change. I guess what I am curious about is when you guys are weighing the relative merits of these two things, either raising the price of the externality oil security or climate change versus subsidizing the technologies, how do you weigh the relative importance of those two approaches, how do you balance that?

MR. McNALLY: Easy question from my former colleague.

Thank you so much, Billy.

I think you have to make an attempt to calibrate the approach to the need based on what the science you believe tells you and where the political support for the policy measure is.

I would, in my hierarchy, say that the first approach, price externality and let her rip is the serious, high-octane approach, if you will. Subsidizing research is less politically difficult, I think less intrusive in some ways I think, and a broad of a measure, easier to get done.

I think in the case of climate change, with all due respect to the scientists, and I am not one, my sense is that understanding of the science, the risks, the costs, and the benefit of different approaches is more consistent with the second approach, which is subsidized technologies that have other benefits that are politically more understood and accepted, such as energy security and public health.

The science around sulfur dioxide, mercury, nitrous oxide, lead, I think is a lot firmer and harder, and permitted these other kind of more aggressive--either regulatory or market-based approaches that we have taken.

I would just submit, as a reality, that the science and the public will to do the same type of thing in climate is not there. I would just observe, you know, take a look at Social Security. We can calculate with fairly good precision the net tax burden we are putting on children right now for failing to address the long-term imbalance in our Social Security.

One of the most irrational things I think for any society throughout history to do is to disadvantage and harm its children's future, yet we persist in talking for years and years and doing that, and if we can't even get around to fixing Social Security, we are having so much problem getting a multi-pollutant bill done on pollutants that have known and much more scientifically understood and believed health impacts.

Thinking that there will be a consensus to take that first more robust approach I think is a bit difficult, but that is what you are always trying to do is to calibrate it.

MR. SHARP: The first thing, if you never get agreement of what the goal is, you are way ahead of the game in American politics, because, first of all, we just almost never agree on goals, and if you can get that, that is the first and foremost thing, because at that point, then, I get pragmatic and I say, well, my economist friends tell me the best thing would be a tax as a way to internalize externalities, and we might get a fourth of what we think we ought to have by tax, and then we do it the rest of the way.

The truth is we Americans have had such a luxury politically and economically of being able to disguise cost, do all kind of inefficiencies that other societies haven't. I don't see how we are going to grow our way out of that.

I mean people are sort of shocked and offended by the energy bill and with good reason. What it shows a lack of is what is the goal. It is just not clear. I am not talking about what the administration proposed, I am talking about what the Congress did, and I had been there, it wouldn't necessarily have been any better, that is not my point.

The point is, is that what it reflects is the absence of an intellectual or political discipline in the society about what we want to accomplish. One of the reasons for this commission is they might be able to identify what some of those goal are.

But I would argue that in the end, most of it is our qualitative judgment, and while I don't disagree with Bob about trying to calibrate these costs, I think John Holdren made it pretty clear, we are taking risks whether we know that they are for sure or not with our grandchildren if we just do nothing.

I think Bob would agree with that. I think that we have to push the technology, but I tell you, we have spent, people do not realize this, for half a century, billions and billions of dollars in research on technologies, and coal gasification, all these things, nothing new about those.

We were thinking of doing a [inaudible] plant in this country, as they did. That is South Africa's thing years ago. The catch is it is more expensive than just buying the oil out of the marketplace, or gas out of the marketplace, and you have got to make up your mind, if you are serious about this, is just having the technology work isn't good enough in an economy like ours.

There is no evidence the economy will jump to just adopt a whole new technology or a whole new fuel. I don't seen that evidence. Maybe economists will show it to me, because it is always up against the existing infrastructure and up against that.

So, it is a big price, it's too mushy for an answer for your thing, but I think we have to drive harder on some of these goals on the environmental

side, and I think we will. I think one of the results of where we are politically in this country is we are coming back to recognizing that we have to do more.

MR. GRUMET: Other questions?

I think I can sum it up in part in response to Billy's question. Our commission is doing some research looking into what might be the interesting synergy between the combination of an inadequate technology policy and an inadequate price signal, but that the notion that two modest measures in both camps might actually produce results that are greater than the sum of the parts.

It has been a real pleasure to have the opportunity to be with you today. I want to thank very much Brookings for hosting this event, and the American Enterprise Institute for joining with us.

Thank you all and for the stalwarts, I hope you stay around a little longer.

[Applause.]

[Whereupon, the conference concluded.]