U.S. Climate Policy: Toward a Sensible Center

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Excerpt: Spencer Abraham, Secretary, U.S. Department of Energy

AFTERNOON SESSION

[In progress] --for the chance to introduce Spence Abraham. I've been waiting for six years because back when Secretary Abraham was the Senator from my home state of Michigan, he was good enough to introduce me in my confirmation hearing before the Senate Foreign Relations Committee, which is something that I've always appreciate greatly. I appreciated that not just because the Senator was very busy with many competing commitments, but also because Secretary Abraham and I are, as it turns out, from different sides of the aisle. We don't always agree on every issue, but we agree on plenty. We have potential to agree on a great deal, and even when we don't agree, I always respect Secretary Abraham for his candor, for his key intelligence, and for his long and extremely distinguished career of public service.

Spence Abraham was elected to serve as Chairman of the Michigan Republican Party at the tender age of 30. He served as Deputy Chief of Staff to Vice President Dan Quayle, and then co-chair of the National Republican Congress Committee before being elected to the U.S. Senate in 1994.

He's currently the 10th U.S. Secretary of Energy, where he runs a department with a budget of more than $20 billion, and a diverse mission that includes national defense, energy security, the advancement of science and the protection of the environment.

Secretary Abraham has been very good to take time out of his schedule to come speak with us today. I'm told that after his remarks he needs to return back to his Department. It is my great pleasure to welcome Secretary Spence Abraham.

[Applause.]

x SECRETARY ABRAHAM: David, thank you. Let me just say in response that I am both at the time and today proud to have had a chance to be both the person who introduce you at the hearing, but also to have supported your nomination, and proud of the work you've done both when you were in government and now here at Brookings.

Let me also just say hi to all of you in the audience. There's a great number of folks here that one way or the other we work with, some of whom very directly. Mr. Bob Card I

see in the audience here, who have been part of work at the Department of Energy, and I just want to thank all of you for the contributions you make. Let me also say that I very much appreciate the interest expressed here today in the focus on climate change, which this conference is all about.

What I'd like to do today is to explain how our administration, and in particular the Department of Energy, looks at the set of climate issues. In doing so, perhaps I can help identify at least one way by which we can find common ground for future national as well as international focus.

As many of you know, during our first year in office our administration conducted an in-depth study of climate-related issues. We determined that action was needed. As the President said, we must address the issue of global climate change. We must also act in a serious and responsible way, given the scientific uncertainties, and while these uncertainties remain we can begin now to address the human factors that contribute to climate change. Wise action now, he said, is an insurance policy against future risks.

We also realize that ultimately--and this is I think very important--major progress in reducing GHG emissions could not occur, will not occur, consistent with a strong economy at least, absent the development of very significant new technologies to transform how we produce and use energy.

Let me try to put that in perspective. the United States has a gross domestic product of around $11 trillion, with a desired rate of growth of at least 3 to 4 percent per year. That means that we will unavoidably continue to generate substantial greenhouse gas emissions despite pursuing greater energy efficiency in the use of alternative fuels and renewables, so long as we use traditional or conventional technological approaches. The challenge is even more pronounced in many development countries which are moving toward an explosive burst in energy demand, but lack many of the efficiency measures which we have deployed here in the United States and that either are deployed or are being deployed in other developed nations.

Ultimately then, the only possible path to offset these likely GHG increases is to develop truly transformational technologies that will bring us into an entirely new energy age, and that is what we are about. This is true because no nation, in my judgment, is prepared to trade economic growth to mortgage its prosperity for cuts in greenhouse gas emissions.

This science and technology model then is really at the core of the approach which we have taken toward climate policy, and the President has tasked our Department, the Department of Energy, with the lead responsibility for its implementation.

For the past two years we have been moving aggressively to try to advance this effort. On the one hand we have been determining which technological priorities we should establish, and aggressively launching or enlarging initiatives in these areas. On the other hand, we have concluded that these science and technology efforts are best advanced through international cooperation, both because it will speed the advancement of breakthroughs and also help facilitate the global adoption of new technologies in an expedited fashion.

Today I'd like to spend just a little bit of time discussing our policies on both of these fronts. Our Department has put considerable thought and deliberation into energy technology priorities, and our view is that six principal areas deserve the greatest attention. I call them the six pillars of collaborative climate research. They are hydrogen, clean coal, safe nuclear power, fusion, energy efficiency and renewable energy.

President Bush's Hydrogen Initiative is the first element of our climate strategy. In his 2003 State of the Union speech the President announced his ground-breaking plan to change our nation's energy future to one that utilizes this most abundant element in the universe. The United States is committed, as I think many of you know, to spending $1.7 billion in just the first five years to fund the ambitious Hydrogen Initiative and Freedom Car programs, which we have launched, which will help us to develop emission-free automotive operating systems which run on hydrogen.

As the President said last year, with a new national commitment our scientists and engineers will overcome obstacles to taking these cars from laboratory to showroom, so that the first car driven by a child born today could be fueled by hydrogen and pollution free. I'm happy to say that we are making good progress toward seeing that happen.

In April I was pleased to announce $350 million in nationwide funding for science and research projects to help establish the hydrogen economy as the first phase of this project. These funds are being matched by an additional $225 million from the private sector to advance the President's goal.

Hydrogen represents, in our judgment, perhaps the most attractive option to meet both our energy and our environmental goals. It has a high-energy content. It produces no

pollution when used to create energy in fuel cells, and it can be produced from a number of different sources, including renewable resources, fossil fuels or nuclear energy.

In the spring of last year I went to Europe to brief foreign leaders about this hydrogen plan. I met with heads of state, fellow ministers and representative from industry and academia to try to come up with ways that we could work together on hydrogen. At the International Energy Agencies meeting in May of last year, the United States proposed forming an international hydrogen effort. It was our belief that such a consortium could accelerate the international push to the hydrogen economy by institutionalizing joint research and pooling resources.

In each of the settings where I traveled, we have met with incredible enthusiasm. As a result, in November of 2003, last fall, we hosted ministers representing 14 nations, as well as the European Commission, and we formally established the International Partnership for the Hydrogen Economy. This consortium consists not just of the western industrialized nations, but it also includes India and China, the two countries with the fastest-growing energy demand, along with the Russian Federation, Brazil, and virtually all of the major automobile producing nations. This partnership then is a comprehensive global framework on which to structure hydrogen research and development. It's an ambitious joint venture, breaking new ground in hydrogen cooperation, and it is built on the hope and the expectation that a participating country's consumers will have the practical option of purchasing a competitively priced hydrogen-powered vehicle and be able to refuel it near their homes and places of work by the year 2020.

If our plans are successful, by the year 2040 hydrogen could replace more than 11 million barrels of oil per day in America alone, which is almost the equivalent of today's U.S. oil imports.

The second pillar of our technology plan is clean coal. As you know, coal is our most abundant fuel, but it's also a major factor in greenhouse gas emissions and other emissions as well. Our administration's Clean Coal Research Initiative is an ambitious 10-year, $2 billion program to reduce our dependence on foreign sources of energy while also substantially reducing GHG emissions and pollutants.

The key element of that effort is the Clean Coal Power Initiative, a cost-shared program between government and industry to quickly demonstrate emerging technologies in coal-based power generation and to accelerate their commercialization.

By working with industry, we won't just be sharing the costs and the risks of cutting edge research and development, we will actually be moving technologies, which might otherwise remain in the laboratory, into useful production.

In the first phase of project funding more than $250 million is being awarded by the Department of Energy with additional private sector contributions of just over $670 million to identify and overcome the most critical barriers to coal's environmental performance in the power sector. Second phase of the Clean Coal Power Initiative is now under way. We are currently soliciting the second round of project proposals and we plan to announce new awards of about $280 million this September. I want to emphasize that these awards are now just a one-time infusion or a two-time infusion into clean coal technology, but a major ongoing process to make the clean coal power plants of this country a permanent and substantial part of our nation's energy mix.

Our plan calls for disbursing about 250 to 300 million dollars in grants in roughly two-year cycles over the 10 years of the President's program for a total of somewhere around $1.5 billion in new funding for this part of our clean coal efforts. This effort will go an especially long way toward perfecting the technology for coal gasification. Unlike the comparatively messy process of simply burning coal, gasification breaks down coal into its chemical components, allowing us to more easily capture the carbon emissions that lead to GHG buildup, as well as efficiently generate electricity and produce clean-burning hydrogen.

That leads me to what is perhaps the most exciting aspect of our Clean Coal Initiative, the Future Gen Program, the cost-shared $950 million project to create the world's first zero emission fossil power plant. FutureGen will be one of the boldest steps our nation or any nation takes toward a pollution-free energy future. Virtually every aspect of the plant will be based on cutting-edge technology. It will be a living prototype, testing the latest technologies to generate electricity, produce hydrogen and sequester greenhouse gas emissions from coal.

FutureGen will help lead to the development of clean fossil fuel power plants all across the world. It will allow this abundant and economical fuel source to continue producing energy without its traditional environmental side effects.

For FutureGen to succeed as a zero emission plant and to make coal a genuinely clean source, of course we must perfect the technology for carbon sequestration. In fact, carbon sequestration really has emerged as one of the very highest priorities in our Department's fossil energy research program over the past couple of years.

In November of 2002 we announced plans to create a national network of public/private sector partnerships that would determine the most suitable technologies, regulations and infrastructure needs for carbon capture, storage and sequestration in the various regions of the country. Last year, following a competitive evaluation our Department named seven partnerships of state agencies, universities and private companies to form the core of this nationwide sequestration network. These partnerships include more than 150 organizations spanning 40 states, three India nations and two Canadian provinces.

To support this enhanced carbon sequestration effort we have increased our requested funding from $20 million in 2002 to about $50 million in the fiscal year 2005 budget request we sent to Congress earlier this year. We intend to carry that effort forward probably for a decade, probably a little longer than that until we are ultimately successful.

Because there still is work to be done, we have also formed a cooperative international partnership for cooling costs and research efforts in this area, much as we have done in the area of hydrogen. It's called the Carbon Sequestration Leadership Forum. The international charter for the forum, a Bush administration initiative was signed about exactly one year ago.

Today 15 nations from five continents, plus the European Commission are part of this global effort to facilitate the development of improved and cost effective technologies for the separation and capture of carbon dioxide.

The forum's goals include research on the transport and long-term safe storage of carbon emissions, efforts to make this technologies broadly available internationally, and finally, finding ways to identify and address wider issues relating to carbon capture and storage. This could include promoting the appropriate technical, political and regulatory environments for the development of such technology.

The forum held a meeting of the policy and technical committees in Rome this January, the second of our meetings to advance the partnership, and then earlier this month met again in London to begin to discuss stakeholder participation. We think it's moving at an exceptionally fast past. The question is what will this do for us? Where will it take us, all of these programs combined?

Let me try to give you a sense of our goal. Our goal--and as I say, we're working hard to achieve it--is clean coal power technology within the next six years, produces 40 percent fewer carbon emissions, and by the year 2020 achieves reductions to nearly one half current levels.

Beyond that, if we can successfully complete FutureGen by perfecting the technology of carbon sequestration, we will be looking at coal power generation with practically zero emissions of carbon into the atmosphere.

In approaching the coal component, we've operated from a very simple point of view. Across the planet, countries including the United States have very substantial reserves of coal at their disposal, and ultimately this coal will be used. The question is, can we make it possible for this coal to be used for power generation or other purposes in a fashion that truly is clean. We are highly confident that the path that we are on today will make that possible.

The third pillar of our plan involves new generation nuclear energy. Obviously, there has been considerable debate going on for a long time about nuclear energy. I suspect at this conference more will be conducted. Proponents and opponents have each had their victories as well as their setbacks, and this has led of course to a very disparate pattern of nuclear power usage throughout the world. The conclusion which we're reached at the Department of Energy is that nuclear energy needs to be part of the overall mix for a variety of reasons, in part because we want to avoid becoming too dependent on any particular fuel or on imported energy, and also because nuclear power simply has such great capacity to provide clean energy to the world.

In my conversations with leaders in foreign countries over the last two years, including, I would note, a number who are Kyoto signatories, and even countries where the nuclear power sector is not today in ascent, it seems to me there really is a growing sense that nuclear energy is pivotal is we are going to successfully address greenhouse gas emissions. Assuming that is the case, it seems to us imperative that we work to address the safety and the proliferation concerns of those who have opposed nuclear energy, and that is what we are trying to do.

To that end we are engaged in a very strenuous effort to develop the most cutting edge technology for nuclear power generation. At the forefront of that effort is an international collaboration of which America is an enthusiastic member, called the Generation IV Program, which I know a number of you are familiar with. This multilateral project includes 11 international partners working to develop new reactor designs that will be safer, more economical and secure, and be able to produce new products such as hydrogen. Through this effort we are pooling scientific expertise and sharing ideas in order to design the nuclear reactors of the future. This Gen IV program, as we call it, holds in our judgment the promise

of cost effective and greenhouse gas reproduction of both hydrogen and electricity from nuclear energy by approximately the year 2020.

The fourth pillar of our strategy is fusion. Fusion power itself is one of those future technologies driven by success in basic research that could truly transform the world's energy equation. From an inexhaustible and entirely clean fuel source a fusion plant could generate huge amounts of electricity during the day to power mega cities and at night produce hydrogen for transportation needs with no emissions of greenhouse gases. It carries with it, comparatively speaking, virtually no security concerns with respect to proliferation, and it produces no long-term waste. And that is why in early 2003 the President determined that we needed to bring fusion to the forefront of America's long-term energy plan.

At his direction we joined our partners, Japan, China, Russia, the Republic of Korea, and the European Union to develop ITER, a major international fusion experimental project. ITER, as many of you know, is a long-term multibillion dollar program to develop nuclear fusion as a future energy source.

My Department regards this effort so highly that we have made ITER our number one facility priority in terms of funding. In addition, the National Research Council of the National Academy of Sciences has endorsed our efforts with ITER, and I think everyone is excited about the prospects as we pursue it. This is a huge project and the first operational experiments will not take place really until early in the next decade. But if those tests are successful, ITER can prove the feasibility of fusion energy. We did not know for certain if we can realize fusion's potential. We do know that it is our responsibility to try.

Many of these technologies I have just discussed, of course, and fusion is probably the best example, will only be developed over the long term. Some will not be realized for another 10 to 15 years. Some may take 30 or even 50 years. So it's not enough to rely only on new technology breakthroughs. It's important that we make the most of the technologies that we have available today for reducing GHG emissions, and that is why we are promoting energy efficiency and renewable energy, both now as well as for the future.

I see these as the final pillars of our plan. Energy efficiency and renewable energy are not afterthoughts in our Department. In fact, our current funding request for these programs exceeds funding levels enacted by Congress during any of the 20 years prior to the Bush administration. These funds support a variety of efficiency programs for homes, schools and businesses, as well as the Federal Energy Management Program, which promotes

conservation and efficiency efforts in the Federal Government, which of course is the largest energy consumer in the United States.

We're also working to improve the effectiveness of our renewable energy programs. DOE research and development has brought down the effective cost of renewable technology by a factor of 10 or more over just the last 20 years. In some areas of the country wind-generated electricity is today becoming competitive with electricity generated by natural gas. And we are determined to bring down the cost of wind, solar, biomass and geothermal even more.

I think that it bears mentioning that the United States is the leading producer and consumer of renewable energy in the world today. According to the International Energy Agency, the United States had over 116 gigawatts of installed renewable energy capacity in the year 2001. This is greater than the amount of renewable energy generation capacity in Germany, Denmark, Sweden, France, Italy and the UK combined.

My point here is not to boast. In fact, part of our success I think can be attributed to the bilateral agreements which our Department has signed with other nations to promote shared resources and mutual cooperation in these areas. Just last month in the United Kingdom, Minister Timms I signed the Efficient Energy for Sustainable Development Partnership to Improve the Productivity and Efficiency of Energy Systems.

Complementing all of these efforts is our Climate Vision Program, a presidential initiative launched by the Department of Energy in February of 2003, which is designed to reduce the growth of greenhouse gas emissions by energy-intensive industrial sectors. Participants in that program, which account for between 40 and 45 percent of U.S. greenhouse gas emissions, have already agreed to meet specific commitments to reduce their industry emissions and to use their successes to help others reduce their GHG impacts as well.

The Climate Vision Program works with industry, trade associations to accelerate the transition to practices, technologies and processes that are cleaner, more efficient, and capable of capturing or sequestering the greenhouses gases.

Clean coal, hydrogen, safe nuclear power, fusion, energy efficiency and renewable energy, these I believe are the six pillars which we've established in our Department to meet our growing future energy needs while also aggressively confronting the challenge of climate change.

Each of these areas holds great promise. Each is fully integrated into a collaborative multinational effort to bring science and technology to bear upon meeting our energy needs. Each area, as it progresses, will bring us closer to reducing GHG emissions. Together and over the long term, I believe they have the potential to overcome our climate change concerns all together.

But while those six pillars seem to hold the most promise today, and are the ones we're currently focused on, we certainly don't rule out the possibility of other new technologies emerging as well as we learn new things. For example, there is Genomes to Life Program. We are just at the beginning stage of this remarkable effort which carries the prospect of microbial organisms that actually eat pollution. Genomes to Life is an outgrowth of the Human Genome Project that our Department launched back in the mid 1980s. Using the knowledge gained by the Human Genome Project we are confident that the Genomes to Life Program will perfect genetic techniques to harness microbes to consume pollution, create hydrogen and absorb carbon dioxide.

Another promising technology is Super Computer. Recently I announced our plans to build the fastest super computer in the world that will be open to all users. We are making this significant investment in our scientific infrastructure with the expectation that it will yield a wealth of dividends, major research breakthroughs in virtually every field of science today. We can use super computers to simulate a design for an efficient, environmentally benign coal burning boiler, or a super clean diesel engine, or a radically improved gas turbine for generating electricity. Today in fact scientists regard computers not just as tools to crunch numbers but as a tool for discovery that is just as important for experimentation.

Obviously, all of this has a price. Let me try to give you a sense of a level of investment our administration has made. In my Department alone we're devoting $2.4 billion to climate change technology this year. Of that amount, almost 800 million, about a third, consists of new Bush administration initiatives. Other climate change programs at the Commerce Department and elsewhere represent an additional $2-1/2 billion of expenditures. What that means is that all together over the next five years our administration is committing $25 billion to research and develop technologies to solve our GHG challenges.

No other nation is pending anything close to these amounts. Moreover, everything I have just mentioned is just the investment by the public sector in climate change programs. There is of course an immense effort underway in the American private sector as well to

improve energy efficiency, develop new technologies and mitigate GHG emissions, and our nonprofit sector is also pitching in. Let me just mention a research effort going on at Stanford University. There the Global Climate and Energy Project hosted by a variety of folks is dedicated to developing pre-commercial research on technologies that would foster the development of a global energy system with low greenhouse gas emissions. Much of its sponsorship is private industry including $100 million from Exxon-Mobil, and 50 million each from General Electric and Toyota, just to mention a few. And that is far from the only research project of its kind going on in our country today.

So that is what the United States is doing. Of course, people will continue to debate whether this is enough or whether these are the right emphases, but at the end of the day I find that there is one common thread in my discussions wherever I travel. Whether I'm speaking to officials in countries that are Kyoto signatories or in places that are not, whether they are major developed countries or small developing ones, they all agree that we need a collaborative international focus on the major transformational energy technologies which are before us. They all agree that science and technology are the keys to solving our problems.

This idea then of a collaborative science-based model for addressing climate change is in my view the most promising vehicle available to allow us to move past the debates and to actually get about the job of significantly reducing GHG emissions.

Clearly I am putting a lot of faith in the power of technology to achieve our goals. Let me tell you why I think that's justified. A hundred years ago, before the invention of the automobile, people were becoming increasingly alarmed at the growing numbers of horses in cities like New York. Horses were the only practical means of transportation, but they were big and smelly, and were stabled on every block and next to homes and businesses. They required vast acres of farmland dedicated to growing feed, and every one of them produced several pounds of manure every day, often in very inconvenient places. All in all they presented serious environmental hazards and health concerns of their own. Yet as the cities grew, so did the unavoidable need for even more horses, so that some people worried whether cities would even be habitable within a few years.

Then along came Henry Ford and everything changed. Who could have predicted that? Who could have predicted the miraculous change brought about by the Internet? The truth is that all we know about the world 50 or 100 years from now is that it will be vastly different

from the one which we inhabit today. In the 22nd century we will likely produce and consume energy in ways that we cannot imagine today. And the six pillars for international technology cooperation, I think we should pursue today, may look quaint to our descendants, just as the Model T does to us. But Ford's Model T changed the world. And I like to think that in our national laboratories we have other Henry Fords who will also change the world.

To vindicate that hope and to meet the climate challenges we face today requires that we press forward with cutting edge science and technology.

I'm very proud of the work we're doing at the Department of Energy and throughout our administration on this, and I am confident that if we do not flag in our commitment, we will find even more potential, discover even greater possibilities, for creating a safer, cleaner, better world for future generations, a world in which greenhouse gas emissions will be as quaint and distant a memory as the urban horse hazards of a century ago.

Thank you very much.

[Applause.]