

U.S. Climate Policy: Toward a Sensible Center

June 24, 2004

Excerpt: Round Table Discussion: Action by States and Business

MR. DIRINGER: And with that, I will turn things over to Sally Ericsson, Director of Outreach for the Pew Center.

MS. ERICSSON: Thank you, Elliot. I'm pleased to be here to moderate this Roundtable: Action by States and Business Leaders.

Each of our distinguished panelists will highlight the concrete activities of their companies or their state governments in climate change, and these actions are very important especially because they can inform sort of the policy debate as we move ahead and help serve as examples to other state governments and other businesses.

We're going to have each panelist talk for a few minutes, and then we'll open it up to questions at the very end.

Our first speaker is Jo Cooper, Vice President for Government and Industry Affairs at Toyota Motor North America. She recently joined Toyota after five years as President and CEO of the Alliance of Automobile Manufacturers, and she has a long career in environmental issues in the forest and paper products industry, the chemical industry, and also at EPA and on Capitol Hill. As you all know, Toyota is a leader in the automotive industry in developing and deploying the technologies we need to deal with climate change.

Next we're going to hear from a representative of another leading company in climate, BP. Chris Mottershead is Distinguished Advisor at BP, which is a title we'd all really like to have at some point.

[Laughter.]

MS. ERICSSON: He's a Distinguished Advisor, where he advises the senior leadership at BP, including Lord John Brown, on their climate change policies and strategies. As you've heard several times today, BP set its greenhouse gas reduction target in 1997 and has been a leader on climate, an outspoken leader on climate every since.

Our next panelist is Stephanie Timmermeyer. We're honored to have her join us. She's the Secretary of the Department of Environmental Protection in West Virginia, a state where the politics around climate change are especially challenging, given the coal base and economic base of the economy.

Finally, our last panelist is Doug Foy, who is Secretary of Commonwealth Development in the Commonwealth of Massachusetts. Before he was Secretary, he served as President of the Conservation Law Foundation in Boston for 25 years. Massachusetts, as you know, is a leader in climate policy and a very active participant in the regional greenhouse gas cap and trade program that's being developed in New England and the Mid-Atlantic States.

So hold your questions till the end, and we'll start with Jo.

MS. COOPER: It's really a pleasure to be here to address such a distinguished group, and I hope that my southern accent doesn't put any of you all off too much. It's a real opportunity for Toyota to be here and to really share some of the things that we're doing with regard to the environment, greenhouse gases, and advancing I think societal good.

Last fall Toyota Motor Corporation President Fujio Cho brought together more than 1,000 leaders of 224 Toyota companies from 143 countries. In item 1 on his agenda was Toyota's future in technology especially the technologies that favor the world's environment. By the time the conference ended, he left no question in the mind of anyone there that Toyota

is going to advance environmental technology, and that we will bring the industry with us into a new era.

We are here at Brookings today to talk about moving toward a sensible center on future climate policy, but first I'd like to talk about the sustainable present, because while a vision of future technologies is vital, delivering that vision is certain to be difficult. We know that it will be unpredictable. It's likely to take longer and cost more than any of us might have hoped, and what's more, dwelling only on the future could distract us from what we can do today.

What we know is that we can significantly advance sustainability in the present by putting today's technology into the hands of consumers now. And Toyota is doing that. On roads all over the world we are delivering an important new technology that is reliable and robust, dramatically cleaner, more fuel efficient, and even more cost effective than anything that will come along before at least the year 2010. We call it Hybrid Synergy Drive. It is Toyota's most recent entrant in the race to clean, energy efficient transportation. Many of you know of this technology because you've heard about the 2004 Toyota Prius, a name that means to go before, or lead the way.

I know that many people within our own industry have an incomplete understanding of hybrid technology and its application in the Toyota Prius. Why, they ask, has Toyota invested millions of dollars in a car that has such limited market potential? Well, our answer is, we've sold worldwide more than 180,000 units to date and we're confident of selling nearly 50,000 this year in the U.S. alone, and I can tell you, if we could get more vehicles, we'd sell more than that.

They ask about selling a car that many people still think has to be recharged, plugged in every night, and we answer, of course, it doesn't have to be plugged in, and we're trying to spread the word about that as far and as wide as we can.

And people also ask why we're excited about a car that may offer only minor fuel efficiency and emissions advantages. Here we answer with Prius performance data: 51 miles per gallon on the highway, 60 miles per gallon in the city and 50 miles per gallon average according to EPA's federal test procedure. In addition, 90 percent lower emissions than the average new car that's 99 percent cleaner than the cars from 15 years ago. And finally, we can tell them that it goes from zero to 60 in 10.1 seconds and has nearly the interior room of the Camry, which is America's favorite car.

About 10 years ago, when Toyota was developing a business case for hybrid technology, we decided that the engineering would be done almost entirely in house. This meant that nearly every bit of design, engineering, parts production and assembly would be done by our people. No partnerships, no contractors, no suppliers of major components or systems.

The downside was a huge initial investment and risk, both in financial terms and in engineering resources. Recovery of our investment would be long range, and more important, require patience and commitment from upper management.

The upside, a decade later, is where we find ourselves today. We've recovered Toyota's initial investment in the development of the first generation Prius, and our heavy investment in gas/electric hybrid technology has accelerated the pace of Toyota's fuel cell electric hybrid program.

The future is created by developments today. We must continue to explore alternatives and advance sustainability in all forms because it's the right thing to do for the environment. This is how we at Toyota believe we will move closer to the sustainable future that we all

seek. With modern technology we are doing more with advanced technologies today than we ever dreamed possible, and going way beyond the battery-driven electric vehicles of the past decade. We are building on that knowledge and from our experience with pure electric vehicles to bring out bigger and better hybrids, and eventually viable fuel cell vehicles.

In addition, we need to keep advancing and adapting our knowledge to benefit other areas of transportation in the future. To do this we need to cooperate more, form partnerships to develop new products, and work together with governments around the world to advance environmental standards. Now is the time to throw society's full efforts behind the all out development of advanced technologies like hybrids and fuel cells.

We also need Washington's support for tax credits for consumers to try these technologies, access to carpool lanes and funding for hydrogen fueling stations, among other things. As good as a Toyota or a Honda or a Ford or a General Motors may be, one auto company alone can't develop all of the technologies and the standards needed for tomorrow. To that end Toyota has entered into an historical agreement with arch rival Nissan to provide our hybrid technology for their vehicles in 2006. We also have alliances with Volkswagen to share recycling breakthroughs, with General Motors to develop advanced fuel cell technologies, and with Exxon Mobil to develop cleaner fuels for the future. And we're open to new partnerships with both large and small companies, with our suppliers.

We're doing all of this because Toyota recognized from one day that our success was fully dependent on making the world a better place. In fact, Toyota's original purpose for being in business states that Toyota will contribute to society by producing high quality products and services, and all of us try never to forget that.

But the reality is these issues are much bigger than one company, one industry, one nation. We are talking about the sustainable ways of living, and I think we all play a role in that.

I believe a new golden age in the auto industry has begun, and we are at the right place at the right time with the right ideas to prosper from it. I think the only thing that can stop us right now is ourselves. We've got to make sure that we don't become our own worst enemy by limiting our vision of the sustainable future.

By working together and encouraging each other's progress we'll prosper. We will reap the greener harvest and we will create a better world for tomorrow. By creating a sustainable present, taking advantage of today with today's electric drive technology, the Hybrid Synergy Drive, and those of all the companies who are entering into this arena, we are moving toward the sustainable future that we all seek.

Thank you very much.

[Applause.]

x MR. MOTTERSHEAD: I'd like to bring us back to the title, which was a sensible censor, because it occurs to me that actually there is a case to be made for cautious optimism about the center that we are actually just making small steps, which is a long journey, but progress is being made. And if we celebrate the success and work from a position of an incentive, then I think that we will make much further progress.

So I'd like to break down what I was going to say into three parts from a BP perspective. First perspective was on what the science says about the future energy business and the targets that we would take from the science as we shape our future business. The second thing is just to share with you a little bit about the journey that BP's been on for the last decade, and then finally to wrap up with a few comments that I think really echo what Jo

just said about the future, and particularly the future of policy support that we need in order to make these actions actually tangible.

So the science. I think Don this morning made an excellent case for why precautionary action was necessary, and in our business judgment, that's absolutely necessary. We can see that the consumption of fossil fuels is adding to the amount of carbon dioxide that is in the atmosphere, and simple science would lead you to believe that if you add carbon dioxide to the atmosphere, you should expect a temperature rise, which you can also see. And there is a great deal of uncertainty, debate, and sometimes contradiction in between, but an increasing degree of clarity that these two things are properly correlated, and therefore precautionary action is absolutely necessary.

Within BP we believe that you need to set targets if you're going to deliver something, and therefore I'm about to make something a numerical target. We believe that anthropogenic human-induced climate change has to be kept below around 2 degrees, that the consequences of changes above 2 degrees are so dreadful if they were to occur--and it may still be only a maybe occur--that we need to avoid that. If you choose to keep your temperature below 2 degrees then you have to stabilize atmospheric concentrations at somewhere between 500 and 550 parts per million.

Of course this is only provisional science. Science is always provisional, but you have to take action on things that you know have a reasonable expectation will come to pass.

So we would translate that that by 2050 you have to have offset around 7 gigatons of carbon from the emission of fossil fuels by 2050. So by 2050, we would argue, if you assume 3 percent GDP growth, if you assume that energy growth continues at somewhere just under 2 percent and the emission growth consequence on that is about 1-1/2 percent, that actually by 2050 you have to have reduced the emissions from fossil fuels to be at a similar level as they are today, and that you have to have invented a new primary energy industry as equal to the current size of the primary energy industry today, and that's the way that we view the world.

So on the BP journey of how did we get to this statement, well, back in 1997 we decided that action needed to start with yourself, and therefore we set ourselves a 10 percent target, and as has already been mentioned, we actually met that target 9 years ahead of when we expected. There's an interesting story about why that occurred. It was because our staff were inspired, and because all the projects that they actually generated in order to reduce the reductions turned out to be profitable projects. So managers felt terrific because they could say yes to these projects, and therefore, this was a self-sustaining virtual circle, where the staff and management cooperated to deliver an 18 percent reduction over three years in our emissions.

We didn't set off with that objective. We actually set off with a very conventional compliance view of we were going to reduce our emissions. We put in place a global compulsory emission trading system with inside our operations, and we approached it very much in the same way as you might say McCain-Lieberman Bill is doing. But actually we found the world was very different. We found that there was lots of business value to be generated. There was lots of enthusiasm in the workforce, and in the people we work with and our partners in order to actually generate the reductions.

So after three years we found we generated an extra \$650 million of shareholder value. In the two subsequent years that followed that, we've generated something like \$100 million in net income in the year that we made the reduction. These are enormous reductions, and

we thought we knew a great deal about energy. We're an energy company. So if we think these things exist for us, we believe they exist for other people as well.

However, having said that, this is only a story so far about the emissions from our own operations, which are just under 100 million tons of carbon dioxide a year, which is insignificant in the global scale of things.

However, the emissions from our products are 15 times that. The emissions from our products are something like 1.3 gigatons of carbon--

[Tape change.]

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[Tape change.]

[In progress] --on the planet. Therefore, we have to take the conversation to the products. This is not now something we can simply do by ourselves, which is the importance of why policy and business has to work together in a way that it hasn't done in the past. It's clear that there are things that we can do. We have a very successful solar business that we've grown at about 30-percent per annum for the last 25 years. This is not new business to us. This year, we expect it to be profitable for the first time. This is good business to be in.

We expect to make our target of that business having a billion dollar revenues in 2 years' time. There are good pieces of business. Of course, that doesn't do anything for the 1.3 gigatons of carbon dioxide that also should have that. We need to be in new businesses as well. Some of the new businesses are taking gas to coal-rich places. Some of the businesses are actually sequestering, where we're past the experimental stage, and as I speak we're commissioning in Algeria a carbon sequestration project that will store 1.2 million tons of carbon dioxide a year from a gas field. This is not a small experiment. This is an investment, and interestingly an investment that wasn't just made by us, but was made by our

partner, the Algerian National Oil Company. So we're not the only people who think that action is necessary.

But we need to move on. We need to move to this place where we clearly understand what the future will bring, that in the future, if you take 2050, then 50-50 by 2050. So 50 percent of the energy will come from fossil fuels, and there is a good reason to continue to have fossil fuels. It's difficult to see anybody inventing, for the next 2 or 3 decades, anything that is going to surpass gasoline as a principal transport fuel. And the things that Joe has talked about make that an even more sensible solution.

However, there are other things that need to be done, and we would like to see policy instruments to support that, and we'd like to see policy instruments, in particular, in two areas.

We fundamentally believe in cap and trade systems, and by that we mean regulated caps. Voluntary caps are an interesting way of getting started, but unless there is a regulated cap, then the system doesn't work properly. So we think things like the European Emission Trading Scheme are absolutely core to the future of managing climate in the future. However, there are things that need to change. I think the system was set up as in a compliance system, but actually, as it goes into operation, it's moving much more towards being a process that's in incentives. It's opening up. It was changing to the Lincoln Directive.

The national allocation plans people are having problems with. They understand that in a single market targets have to be set uniformly amongst all players in that single market. There is a gap, as somebody mentioned this morning, between the aspiration of Kyoto, which was modest, and the way that people view it from an economic point of view which has driven people away from taking the necessary steps. People have to resolve that contradiction.

And, finally, these systems have to be much more open to learning. There is too much debate about single solutions and debate about whether it is the ideal solution. The solution has to be developed through a process of learning, and therefore the system in itself has to have learning inherently inside it.

The second area we would like help on was absolutely the area that Jo talked about which was technology and Toyota's example. We would argue that if you take this 7 gigatons of zero carbon business that will exist by 2050 and carve that up into 1-gigaton businesses, and less than 1 gigaton it's not really material for us, and what we've done is gone away, with the help of some academics at Princeton, and identified those areas. And we've somewhat surprised ourselves by finding that there are 16 business segments that already exist where the technology has already demonstrated at scale that can deliver at least one of those gigaton reductions.

And we've got 16 options to actually get to a solution that only needs 7. And, for example, one of those would be repowering coal-fired power stations with gas. You'd need about 1,400 gigawatts. Equally, you'd only need 700 gigawatts of coal with sequestration. You'd need a thousandfold increase in photovoltaics, but a thousandfold increase is only half the growth rate that we've managed for the last 25 years. You'd need a 70-fold increase in wind.

Well, that's not an impossible task. We think all of these things are possible, as long as you don't waste time debating over trying to find the silver bullet. There is no silver bullet. There is a suite of technologies that are required, and the market needs to incentivize the choice of those technologies, not administrators set in buildings.

And what you need to do is unleash the talent inside business to go away and reduce the costs in the energy industry that we're very familiar with doing.

Thank you very much.

[Applause.]

* MS. TIMMERMEYER: Just by way of reminder, I'm Stephanie Timmermeyer with the West Virginia Department of Environmental Protection, and I want to thank the Pew Center and the Brookings Institution for asking me to speak. It's an honor just to be in the presence of the scholars, scientists, the business and government leaders here, let alone to share the stage with them.

I like to say that I'm a Marylander by birth, but a West Virginian by choice. And although I enjoyed my time growing up in Maryland, for any of you who have been lucky enough to visit the State of West Virginia, you know that there's a combination of the breathtaking scenery there and the uniquely warm and welcoming people that make it a great place to call home, and that's why I have.

Our tourism industry there thrives due to the world-class mountain biking, hiking, camping, and all of the outdoor activities you can imagine. While our abundance of natural resources makes West Virginia a haven for outdoor enthusiasts, it is also our abundance of natural resources that support our manufacturing and industrial economies. Not surprisingly, that economy, which is a carbon-based economy and of which coal is very much a part, that economy has traditionally provided a barrier to any serious discussions about climate change policy. The following facts on West Virginia's economy sharpen that point:

In 2002, West Virginia mined 150 million tons of coal, second only to Wyoming's 373 million tons.

Methane liberation from coal-mining activities account for approximately 13 percent of our greenhouse gas emissions.

Approximately, 80 percent of our greenhouse gas emissions result from the use of fossil fuel for energy. Sixty percent of that is for electrical power generation.

Approximately, 70 percent--and this is something I want you to keep in mind--approximately 70 percent of electrical power generated by coal-fired power plants is exported to users in other states.

Moreover, in reaction to a concern that the EPA may begin to administratively implement the provisions of Kyoto, in 1998, the West Virginia legislature entered the climate change debate by enacting legislation which prohibits the West Virginian Department of Environmental Protection from proposing any rule intended to reduce the emission of greenhouse gases.

I've seen a lot of you carrying around Barry Rabe's "Statehouse and Greenhouse" book. I brought my own copy from home. The passage of that statute is what has made us become categorized as a "hostile state" in Professor Rabe's book. With this backdrop, it's easy to surmise that climate change discussion in West Virginia has been nonexistent for fear that any controls on greenhouse gases would negatively impact the economy in West Virginia. This all changed in 2004, when Governor Bob Wise elevated the climate change debate by repositioning West Virginia's stance on climate change from a reactive role to a leadership role.

So, if Professor Rabe is watching on the webcast, it's time for a second edition.

[Laughter.]

MS. TIMMERMEYER: In his 2004 State of the State address, Governor Wise profiled climate change as a substantive, legitimate and serious issue and urged West Virginia to take a leadership role as a means to protect the vitality and viability of our energy-based economy.

To further elevate that debate, Governor Wise introduced legislation to require facilities to report their emissions of greenhouse gases and to voluntarily register any early voluntary reductions of greenhouse gases.

In explaining the bill before the legislature, the Department of Environmental Protection provided three primary reasons:

The first important reason was to create a current and accurate inventory to protect West Virginia businesses in the event that federal legislation does impose mandatory caps or reductions of greenhouse gases. During federal legislation of nitrogen-oxide emissions, we feel that EPA underestimated West Virginia's growth and emissions which, in turn, may limit the future ability for new facilities to locate in West Virginia. So accurate data on greenhouse gases will help us avoid any inaccurate inventories and allocations and allow for future planning efforts.

The second goal was to create a current and accurate inventory to track any voluntary efforts to reduce greenhouse gas emissions and to provide credit for those reductions in the event of any federally mandated reductions.

The third, and important, although it's last, was to enable West Virginia to participate in the national debate on climate change and to contribute efforts towards addressing what we feel is an important environmental issue. Currently, many of the nonenergy producing Northeastern states are driving this debate through state legislative initiatives.

Governor Wise's greenhouse gas recording bill received stiff opposition from the coal industry lobbyists and United Mine Workers. These groups asserted that the bill was anticoal, that it would ultimately force shutdown of boilers, coal-fired power plants, thus reducing the demand for coal and reducing the demand for mine workers. In fact, our agency was jokingly giving kudos for bringing two groups together on an issue for the first time in West Virginia history.

While several members of the legislature saw the bill as a moderate first step toward understanding our greenhouse gas emissions in West Virginia and for preparing and protecting our West Virginia businesses from any federal climate change legislation, the bill did die without any formal consideration by any House or Senate committee.

The legislature's failure to act on Governor Wise's bill has thus far limited West Virginia's ability to protect its businesses by establishing a credible greenhouse gas emissions inventory and reduction registry. However, despite the legislature's inaction, West Virginia has gained access to the national debate on climate change, which is one of the three primary goals of the legislation. Quite frankly, that bill has provided Governor Wise and the West Virginia Department of Environmental Protection a state and national platform for discussing this issue. Participation in this climate change forum today is one such opportunity.

Our role in the policy discussion on climate change is not unlike those with other states which have introduced state legislation in the absence of any federal policies. The dual form of government established by our Founding Fathers envisioned that states would serve as laboratories to experiment with innovative ways to address national policy concerns like this one. West Virginia welcomes this opportunity in the context of the national climate change debate.

As an energy producing downwind state, the factors that West Virginia considers to address climate change issues will inherently be different from those of upwind, nonenergy

producing states. Yet all of these factors are important and must be addressed for any viable climate change policy. West Virginia's contribution to this effort has all started with Governor Wise's recognition that climate change is a serious issue that may have serious impacts on the West Virginia economy and, in turn, that West Virginia must be a leader, rather than a follower, or a conscientious objector in the policy debate.

Although Governor Wise is not running for a second term, the Department of Environmental Protection plans on carrying forth his vision for the greenhouse gas recording and registration by pursuing similar legislation next session. Certainly, we are already strategizing and planning on assembling a coalition of interested parties to make a renewed effort next January.

We know that there are several West Virginia businesses that will agree to be a part of this coalition. We hope that some of those are businesses that are represented here today. American Electric Power and Toyota are business leaders in West Virginia.

We also hope to educate others in the energy sector over the next few months. Coal is an important part of the nation's energy matrix today and will remain an important fuel in the future, but the future of coal lies in the industry's ability to adapt to the changing climate of the economy, the changing climate of the national energy plan and the changing climate of the environment. Then maybe we can joke that for the first time in West Virginia's history, the Department of Environmental Protection, the Coal Association and Labor were linked arm in arm in an issue.

As a major energy supplier to the rest of the nation, my state will likely never adopt a climate change strategy based solely on possible detrimental effects to our environment. If a climate change strategy is adopted in West Virginia, it will be because of the possible benefits to our economy which entail protecting our vibrant energy sector and looking forward to future opportunities in carbon sequestration and clean coal technology, and that in turn will benefit the environment.

With that in mind, we certainly counsel caution in any climate change discussions at the federal level and suggest that impacts to states like West Virginia be seriously and thoroughly considered, but we welcome the opportunity to work with the nation to find voluntary solutions today so that we may have the combination of a healthy environment and a health economy tomorrow.

Thank you.

[Applause.]

MR. FOY: Well, I'm afraid I'm going to be a big disappointment because this panel certainly has the greatest collection of accents of anything I've seen here today.

[Laughter.]

MR. FOY: And I really, to hold up my end of this bargain, I'd have to talk about the "cars from Boston," and I don't actually possess that accent, so I'm going to let you all down.

I'm Doug Foy, and I'm Secretary of Commonwealth Development in Massachusetts. I thought I'd chat with you a little bit about what we're doing up there. Most of it you can find on our website, so I'm not going to go into the details at great length. But as you probably find in the materials that are handed out, I come from a history of environmental advocacy, where I was running the Conservation Law Foundation for 25 years. So I've been on a number of sides of these issues.

And then I was recruited into the Romney administration, Governor Romney elected in November in the Commonwealth of Massachusetts. I didn't know him before he was elected, and he came and dug me out of the woodwork in the nonprofit sector and handed me this

interesting job, which is to head a new mega agency that combines Transportation, Environment, Energy and Housing in what is called the Secretariat of Commonwealth Development. And the concept, which is actually quite relevant I think to what we're dealing with here today in terms of climate change, is an integration across those agencies, a strategic alignment of their missions and their efforts to build a sustainable future for the Commonwealth of Massachusetts.

I actually love the term of the agency, "Commonwealth Development," because our goal, our job is to develop the common wealth. And so that's what we're up to. And as part of that effort we have promulgated I think a very comprehensive and interesting state climate plan, which you'll find on the web.

Just to set the context here, the other thing that's intriguing is the number of New England transplants that are speaking to you today. John Rowe, one of my oldest friends--and he and I don't admit how long we've known each other, but it's a long time--is not off in Illinois running Exelon, and Michael Morris who, for many years, ran Northeast Utilities out of Connecticut and is now heading AEP. So it seems we are colonizing New Englanders in this issue around the country.

When we announced our climate plan--now, again, get the image. This is a Republican governor in a painfully democratic state--

[Laughter.]

MR. FOY: And I say that as a Democrat--standing on the Esplanade in downtown Boston, with the Charles River behind us, and the trees starting to leaf out in the early days of spring, surrounded by business leaders--Bank of America, Gillette, EMC Corporation, a bunch of biotech companies--business leaders, a bunch of environmentalists. Backdrop, a Toyota Prius II, Toyota Prius cars that were recently purchased by our Massachusetts Highway Department as sedans and two CNG GMC pickup trucks, which I wish actually had been hybrids. And if you can get those hybrid pickups built, Jo, it would be a big help.

[Laughter.]

MS. COOPER: We'll work on it.

MR. FOY: As backdrop, and then the governor announces the climate plan, which involves the work of 18 agencies--four of them my agencies and then other agencies throughout state government--18 agencies, 78 major initiatives, some of them regulatory change, some of them investment policy, a very wide-ranging collection of initiatives aimed at doing what we can do to address climate change in a thoughtful, progressive, but economically responsible way for the state. And we are just one state. We're not in a position to have a major impact on this without working in a way that builds on market forces. So it is very much built around the notion of market tools.

But that announcement got rave reviews throughout New England. I think it really is a very aggressive program, and it has launched a series of major initiatives in our state, some of which are already underway, some of which have been tuned up quite aggressively. I'll go through a couple of them just so you know what we're up to, but then I wanted to dwell on a few that are maybe off the normal radar for folks here.

My four agencies spend \$5 billion a year--\$5 billion--and that's a fair amount of money in Massachusetts. It's roughly three-quarters of all of the capital invested each year outside of education in our state. So my agencies build all of the roads, the transit, the sewers, the water, we buy the parks, we maintain park systems throughout the state, we build housing or subsidized housing of all sorts, and we have a major role in energy planning and how that

capital is invested has an enormous impact on how our commonwealth grows, what energy we use, how we use it, and what our ultimate impact is on climate.

And so part of the core of our climate plan is to think more carefully about how that capital gets spent. In our 4 years in office, if the governor serves only one term, we'll spend \$20 billion. John Adams and other friends of mine from the environmental world, just imagine having \$20 billion to spend. And how we spend that and how every state in America spends that will have a signature impact on climate futures.

So, for example, we will now objectively measure the carbon output, the carbon dioxide emissions for many new transportation projects. When we build a new road, we'll at least try to gauge what its carbon impacts are, when we build a transit system we will. By the way, our trains need to be a lot cleaner than they are because, as we are now trying to push transit more aggressively in our state, we have really dirty trains. It's incredible how filthy the diesel engines are that run our locomotives. We actually I think Britain has just done the analysis that actually take a Gulf diesel car, with four passengers, has fewer climate impacts driving from Manchester to London than their high-speed inner-city rail with full seats per person. That's a bad thing. That's a bad thing.

So we are working on transportation investment. We're working on we have a trading negotiation going on cap and trade with Governor Pataki and NRDC and others helped launched that we are actively and aggressively pursuing as a region, along with the Canadian premiers. That extends throughout the Northeast. We're now getting overtures from the Western states, California and the Northwest, to perhaps participate in that conversation. So we will get to, I think, a regional cap and trade system.

We have goals. Our goals as a state are 1990 levels by 2010 and 10-percent reductions below 1990 levels by 2020. We will measure and report. We have already come up with a report that measures the output of all state building emissions today, and we will monitor that on a quarterly basis. We've eliminated SUV purchases from our vehicle fleet, except in actual need-based use. So all of the take-home SUVs sitting in driveways that were being driven to work as commuting vehicles by state employees are now gone. We're trying to buy a lot of Priuses.

We've extended the investment term on state investments in capital to 10-year paybacks. Most states still use 2- and 3-year paybacks on energy efficiency investments. So you've got a hurdle rate that is really quite extreme to do energy efficiency. We've now established a 10-year payback, which is actually still too short, given the cost of capital for a state. If you think about what we can issue bonds for, our cost of capital is rather low. We could probably justify a 15- or even a 20-year payback on energy efficiency investments, but we've adopted a 10-year one.

A bunch of other things. You'll find them all on the web. The two that I wanted to dwell on because they're a little bit unusual is we're doing a lot of work, as are several other states, on school siting. One of my great frustrations is that, in Massachusetts, one of the great competitive advantages Massachusetts has, my second-favorite state in America is Wyoming. Anyone from Wyoming here? No? Darn. Wyoming is a gloriously beautiful state, and I've spent a lot of time rattling around in its mountains. It's truly magnificent, way more magnificent than Massachusetts. I'm going to get in trouble for that at home.

[Laughter.]

MR. FOY: Really wonderful landscape, but it's got pretty ugly towns. We have world-class towns, truly world-c't--I'm not going to--in Massachusetts--MIT and Harvard may come

up with the stuff on sequestration and coal gassification, whatever, but the State of Massachusetts is not going to do that research. Our private sector may well.

What we can do is deal with the short- and the mid-term challenges and come up with really finely crafted pragmatic solutions that actually build on a lot of what we all know about design. So school design was my first issue that we actually--school location was the first issue that we actually bolted into the climate plan. School siting is part of our climate plan.

The other part of our climate plan is how we're going to fund transit. If you look at the current way we fund transportation in this country, it's fuel taxes. It's the gas tax. And the environmental community has been arguing for decades to get the gas tax up, and we're still arguing to get the gas tax up. And Toyota is actively working to eliminate the consumption of that fuel or reduce it dramatically so the proceeds from that tax system will decline dramatically if they succeed, and I hope they do.

And as a consequence, how we pay for public transit, which itself has enormous climate potential benefits, is a really interesting challenge. So here's what we're doing in our state. We get a lot of federal money. We get a lot of state money we put into transit. But the average new transit corridor in a state like Massachusetts costs a billion dollars. We have 8 or 10 of them we would like to build, a billion each.

There is not going to be that amount of money coming out of the federal government nor coming out of the state bond cap. We're going to have to finance those through value capture. We're going to have to figure out a way to actually extract from the development value you create around a transit corridor the price of the construction. And the best example, come to Boston. Boston has had an interesting renaissance in the past 20 years. We've cleaned up our harbor. The city has been rebuilt. The waterfront is spectacular. And we've recently--thanks to everyone in this room--

[Laughter.]

MR. FOY: --torn down the central artery, which is this hideous highway that's no longer there in the center of the city, and we're now connected to our ocean. And as that happened, the next beachhead of development in Boston is a thousand acres of land 100 yards from the center of the city, with 40 million square feet of potential development. It's in the South Boston Seaport District. It's literally next to downtown Boston. So it's fully all of downtown Boston again, 40 million square feet. Everything in Boston, from Boston Common to the sea, could be built again in this new area of the city, which is currently covered with surface parking lots.

In order to make that happen, we have got to build transit to that location. There is no way we could get automobiles in there, and if we did, we will have a devastating impact in our own small way on climate futures.

So we're building transit to that area, but it's going to cost us billions of dollars. And in order to pay for it, we're telling the 40 million square feet of development that they're going to have to help pay for it. And on an average per square foot, over a 20-year payout, for a condo that will sell for a thousand dollars a square foot, it's not a big number to pay for the transit to make the place viable and to get transportation there in a way that is climate friendly and economically sensible.

Our job, as a state, is to figure out how to do that over, and over and over again. And what I offer you is our own small model, which I hope others will use, and improve upon, and send us good ideas on how we can do much better.

We were criticized by the environmental community when we issued the climate plan not because it wasn't a great plan--they all loved it--but because my governor is an agnostic on the science of climate and refused to say, "Oh, of course, this is the worst thing that's happening, and the science is clear it's over oil," and they kept saying, "You have to say that we need to come in brief him."

I said, "No, no, no. He's been briefed. He understands the science of climate. That's not the issue. We're going to just do it. We're going to just do it. Isn't that good enough?"

"No, no, no. You have to make a statement on climate."

[Laughter.]

MR. FOY: And we didn't. We just did it, and we will continue to just do it, and I suspect that that's what this whole group is all about--finding that sensible, let's just do it center on these issues.

So thank you very much for having me.

[Applause.]

MS. ERICSSON: I'm sure there are some questions, given the diversity of approaches of this panel. Please identify yourself.

MR. KENNEDY: Don Kennedy. I thought that was a terrific series of presentations, something to learn from each one of them. Because I'm sort of stuck on hybrids, I did want to make two quick points about hybrids.

With respect to policy encouragement, we live here inside the Beltway in this little "Taxation without Representation" island between two great states. And if you ask yourself, Can I drive my hybrid through the diamond lane in these surrounding states, the answer is, yes, for one and, no, for the other. I never can remember which one. My hybrid, unfortunately not one of yours, is in California. But it's interesting that we can't get together on such a simple matter.

Second point. I'm fascinated with the conjunction of electricity and internal combustion. And as you know, it was a battle back at the turn of the 20th century which would succeed. And the Secretary of Energy made I think an interesting historical error. It wasn't the internal combustion engine that drove the horses out of New York City. The entire New York City taxi cab in the first few years of the 20th century was electric and so were all of the delivery vehicles. They decided that in the city electric was the way. It lost out in the competition eventually, but there was a shining moment.

[Laughter.]

MS. ERICSSON: Janet?

QUESTIONER: I actually wanted to ask a question to Chris and Jo. I'm glad they're sitting together because they've got a lot in common.

Number one, their customer base is largely in the auto sector or the transport sector, which is one of the largest-growing sources of emissions in this country and certainly many others.

Number two, their products are about--it's the real problem--it's the order of 10 to 15 times the emissions of their direct operations.

And, three, they both invested, to their credit, quite heavily in lower emission products. And they both alluded in their presentations to the need to help galvanize their competitive position here and support for the policy.

And Jo mentioned tax credits and access to High Occupancy lanes, and Chris mentioned that BP likes cap and trade. But neither of you mentioned the word "product standards." It didn't pass by your lips. Perhaps the possibility of tradeable product standards,

that was raised as a possibility in a recent Pew report, and that's a way to link it to the cap and trade that you support, Chris.

I wonder what your view was about that as a policy approach to helping you do better with the products you're developing.

MR. MOTTERSHEAD: Well, I agree. I think we've got an enormous amount in common. I think that hybrids have enormous potential, and we talk, unlike some of our competitors, very, very supportively of them, even though ultimately it reduces the amount of product that we sell, which is an interesting thing for a company to stand up and say, "We want you to use less of our product because the product that people like Toyota make is so much better that we think you should use their product rather than a conventional combustion engine."

I think when it comes to standards, we're a little fearful that people talk about standards as something that gets imposed. And our view would be standards are something that is actually the consolidation of best practice. And therefore what you do need is to have some degree of experimentation. And once that experimentation has run its course, then absolutely you need the process of rationalization. And you can see that in the number of varieties of gasoline that exist in this country that isn't even necessarily in anybody's interest and that there is a proper economic reason then to rationalize into the limited number of standards. But I think, at the moment, we're still in the experimental stage, as far as these lower carbon-type solutions are concerned. So you absolutely need to get to where you are, but not yet. Otherwise it's simply people choosing their favorite answer, which may or may not ultimately be the right one.

MS. COOPER: I think we would echo what you said. I think the experience that the auto industry had in California with electric vehicles imposed, you will produce so many for sale in California. And the public, the vehicles didn't deliver exactly what the public wanted. So they weren't as successful as the regulators hoped. So I think we learned from the experience that when you begin to put those requirements out, in some cases you have a chilling effect on the research in different areas and alternatives.

So our view is to try to encourage and incentivize research and development cooperative agreements. And then when the technologies do get into the marketplace to try to incentivize them and try to encourage consumers to purchase them because when they first come out, there is a cost differential that can be very substantial. And I know, in Toyota's case, that there was a substantial amount of providing to the market at a substantial cost to the company. But being able to do that and introduce it and get it out there I think is really the way to go and not have a product requirement in the marketplace.

MR. BENEDICT: Thank you. Richard Benedict, Pacific Northwest National Laboratory. I have sort of a rhetorical question for anyone on the panel or even in the audience, and I'd also like to echo, by the way, Don Kennedy's statement on how refreshingly diverse and promising these panelists' reports have been.

It concerns the power of government to influence markets. Now, we have representatives of state governments here, and there are, in addition to U.S. Government representatives, there are also at least people from the United Kingdom, from France, from Germany and maybe others.

My question is this: Given the power of the government, why do not governments--state and national--do more in the way of their procurement policies? For example, they could demand--require--a certain percentage--I would say 100 percent--of their government fleets, auto fleets, use the kind of cars that are now more than prototypes. They're already

proven on the market. This would help to expand the market for these kinds of vehicles and enable the companies, the producers, because of the economies of scale, the lower the prices for general consumers and thereby really expand use of these automobiles that are more efficient.

For example--this is just one example--you could look at other areas of government procurement, but I think that if governments are really serious, our British and German friends--I mentioned I live in Germany as well--they haven't done that yet. Chancellor Schroeder still drives around notoriously in used Mercedes. They make fun of him about that. Anyway, if they're serious, there is a way of doing it.

And I just launch this kind of rhetorical question. Thank you.

MS. TIMMERMEYER: I'd like to take a shot at that one. I think, in a sense, that it's a little bit of a cultural change. At our agency, and in my state, we actually did switch over to a partial natural gas fleet. And then with so few fuel-up centers throughout the state, it ended up not being convenient, ended up not working right, so we went back to regular vehicles.

Well, I'm excited to say we bought our first Prius as an agency fleet car, and that may seem like a baby step to some of you here, but now that we have that car, we can track numbers of mileage. What we want to do is prove to our Department of Administration that this car saves money in the long run. Believe it or not, it was a fight to buy it because it cost a couple grand more. So we've got the car. It's on order. I got to pick the color. I was excited.

[Laughter.]

MS. TIMMERMEYER: Sometimes I get an easy decision. And so I'm really excited about getting feedback from the folks that are driving it to talk about that it is a good car. You do hear bad things about any type of alternative fuel vehicle. So we are excited to get it and to show folks that this is the way to go, that we want this and to eventually switch over to that.

In addition, we built the first green building in West Virginia. Our new Department of Environmental Protection building is a certified green building, and so the press and the media that we've been getting with that has inspired other businesses and other folks to do the same.

So there are some things like that that need done, but I agree that it's our job to do that. Certainly, we need to lead by example.

MR. FOY: Can I add one thing to that?

We have actually quite an interesting procurement program in Massachusetts, which I highly recommend to anyone who would like to pursue that suggestion of government purchasing.

I spoke to the annual gathering of a thousand state employees who are in the business of buying sustainable products of all sorts, ranging from automobiles to green energy, to building products, to buildings themselves, and these folks take it, they are very seriously engaged.

We have a whole manual that we published the day we dropped the climate plan, a manual on sustainable purchasing, which is about that thick, that covers all agencies of state government, and it's really quite an impressive document. I highly recommend it. You can, I don't know if we have it on the web, but you can certainly pull it out of or have access to it out of our website.

MS. ERICSSON: We have time for about two more questions.

QUESTIONER: Michelle [?], with ICLEI, the International Council for Local Environmental Initiatives.

I actually don't have a question. I feel compelled to represent a sector which I don't see here today--local governments. And I think they're an imperative in the context of this policy discussion. For the past 10 years, ICLEI's Cities for Climate Protection campaign has been working with local governments across the world, and in particular a 150 local governments now in the United States, and collectively effecting positive change and realizing quantifiable benefits. Last year alone, the 150 local governments here that include Los Angeles, New York, Denver, Chicago, et cetera, reduced by 115 million tons greenhouse gas emissions and realized cost savings of almost half a billion dollars.

So I encourage all of us to think about the power of local governments in this context of the debate.

Thank you.

MS. ERICSSON: Thanks very much.

Right here. Thank you. Sorry. Last question, please.

MR. BRAUN: Yes. My name is Charles Braun, formerly of NOAA and now on my own, Planet [inaudible].

I've heard very little about public transportation today as a means of conserving energy, and I think the automobile is reaching its limits in urban areas, even a pollution-free car will not alleviate the problems of traffic congestion and building highways and parking lots and infrastructure to support it. I think that would be especially true in countries like China and India, where population density is much higher.

However, my question is why can't the auto industries think of themselves as transportation industries and build a form of transportation that's appropriate for the particular environment involved?

MS. COOPER: I guess other companies need to think in a much broader way than we have in the past. We started out with mobility, and I think our society has largely, in this country, certainly, and I think what you see in China, and India and other places, that mobility that the auto gives one or gives society has really allowed us to be able to develop our country, to live all over, to work where we want, to vacation where we want. But I think now we're in a different place, and I think all of these modes of transportation we really do have to look at.

But I'm not sure the auto companies are necessarily the right group to do that. I know a lot of our companies do have interests in buses, natural gas buses. I know one of our competitors, General Motors, has produced a lot of natural gas buses in cities around the country, but I think we've got a societal, a mind-set right now that isn't as much in the mode of public transit. And I think things that are going to happen, as urban areas become less and less willing to take on vehicles, I mean, I know in London there's a real emphasis on taxation to go into cities.

And when we reach that point here, I mean, I was at EPA in 1970, when we tried to put in place tolls, and taxes, and all kinds of things on the American public, and it went nowhere. We may be in a different place in this century, and I would expect that to be the forcing mechanism because, in that, we have to have a mechanism.

MR. FOY: Just to add to that thought, two observations, because I agree, public transit is a critical ingredient of a sensible climate strategy, as is the renaissance of cities. We need cities to be doing the kinds of things we're seeing happen to the New England cities. But in

order for that to happen, you need to solve the issues of public schools in cities, you need to solve the issues of transportation in cities to make density possible.

The interesting challenge that we found, in addition to financing transit, which itself is intriguing, is there is a surprising absence of innovation on transit vehicles. What you see happening in the auto industry, it would be nice if Toyota was building subway trains or transit vehicles. Just to give you one example. We have been hunting around for shuttle commuter trains. In the old days, you used to have self-contained one- or two-unit trains. We called them "budliners," where the engines were in the train, and the passengers were in the same car, and they're gone. You can't buy those things anywhere any more.

So, if you want to run transit-quality frequency on a commuter rail line, shuttling trains back and forth, the little ones, you can't buy the train sets right now or they're hard to find. And we've got a bunch of commuter rail lines where we could do that and provide, without having to drill tunnels and put brand new mega-costly subway systems into place, we could just run shuttle trains on those lines, but the technology is not well-developed, so that's a really interesting problem.

QUESTIONER: If I could ask a follow-up question, would that be something suitable for a government to fund in the form of a pilot study?

MR. FOY: Well, it would certainly be interesting. We finally found a producer in Colorado that claims to produce this stuff, although they have not yet been run in any transit system in America, which is a problem, and not one that has snow, which is a big problem.

[Laughter.]

MR. FOY: But, yeah, it would be nice. I've been surprised. You see the high-speed train technology, which is very impressive--the European and Japanese train technologies--but the more moderate-scale stuff that's surface 100-mile-an-hour or 80-mile-an-hour vehicles that are going to run on existing commuter rail lines is really poorly developed.

The other thing that is interesting and is a fascinating challenge in London, the thing I found out about London, in addition to charging for entry fees, which is intriguing and has been very successful, apparently, it turns out that London Transport, which runs the subway system in London and the bus system, also possesses control of the streets. So, when they run surface bus systems, bus rapid transit, which is one of our transit solutions, they can actually require that those lights change when the bus approaches the intersection. They can force clearing a corridor or a lane.

Contrast that with American cities.

[Laughter.]

MR. FOY: We have a corner--I'm sorry to go on, but this is--we have a corner in downtown Boston where our--we have a bus rapid transit system, the Silver Line, which is spectacularly successful, that connects an inner-city neighborhood, Roxbury, to downtown Boston, buses on the surface in a dedicated corridor, until they hit the center of the city, when they get into mainstream traffic.

They get on a mainstream traffic corridor at Tremont Street. They need to make a left turn onto another street. These are articulated, double-ended buses. There is a corner with two parking spaces on the side of the road that prevents, if the cars are parked in the parking space, prevents the bus from making the turn. It can't make the turn. Will the mayor of Boston remove those parking spaces? No.

[Laughter.]

MR. FOY: Now, I don't get it, but this is a problem, and we won't solve long-term surface transit issues without getting some control over the way we run our streets.

There, I'm done with my tirade.

[Laughter.]

[Applause.]

MS. ERICSSON: Thank you all very much. Thank you.

[Applause.]