Remarks at Dartmouth College

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Thank you very much. I want to say what a pleasure it is to be back at Dartmouth, back on campus, back in Hanover. It is particularly gratifying for me to be able to return here in a capacity that allows me to contribute a little to the vibrant intellectual give and take that is a hallmark of Dartmouth. So, thanks for the invitation, for the chance to walk around the Green and down familiar paths, and for the opportunity to spend some time with all of you.

I am especially glad that this "Leading Voices" series has decided to devote one of its sessions this year to climate change. The truth is that public consciousness of this issue has faded in recent years despite the ongoing drumbeat of evidence, month after month, year after year, that the globe is warming and our climate is changing. Media coverage about climate change is down almost 40 percent since 2009 and public attention has diminished according to any number of polls. Attention to the issue has even appeared to wane in typically green Europe. An April column in the *Financial Times* started a sentence by saying: "With climate change off the political agenda…" People aren't talking about it anymore.

And those who are talking are too often yelling. An issue that should concern us all, that is likely to undermine our well-being and disrupt the world of our children, has become the latest political hot button, viewed by too many in political life as a third rail they can't touch. Climate change has long been a partisan issue, but when you see a parade of conservative candidates publicly recanting the apostasy of having acknowledged that global warming is real, you know you've entered Wonderland.

This is not healthy. We can talk past each other, close our ears, put our heads in the sand, or join the local chapter of the Flat Earth Society, but here's the thing – the atmosphere doesn't care. Its temperature will continue its implacable rise, with all the consequences that entails, unless we act to stop it. Michael Gerson, George W. Bush's trusted speech writer and advisor, wrote a telling piece in the *Washington Post* earlier this year called "Climate and the Culture War." He analyzed how the discussion of climate change has reached its current toxic state, and then said this:

"[H]owever interesting this sociology may be it has nothing to do with the science at issue. Even if all environmentalists were socialists and secularists and insufferable and partisan to the core, it would not alter the reality of the Earth's temperature."

And that reality has been demonstrated over and over again, most recently in the work of the Berkeley Earth Surface Temperature project, led by Dr. Richard Muller, who began his comprehensive assessment as an avowed climate skeptic and ended it convinced by the clear evidence that global warming is happening and is caused by human activity**.** This conclusion is emphatically shared by the best and brightest of the global scientific community, including our own National Academy of Sciences.

Whether we look at the steady increase in global temperature; the buildup of greenhouse gases in the atmosphere to the highest level in a half-million years; the march of warmest-ever years (9 of the10 hottest on record have occurred since 2000); the dramatic shrinking of mountain glaciers and Arctic sea ice; the accelerating rise in sea level; or the acidification of our oceans; the tale told by the evidence is consistent and it is compelling.

These things matter. They warn of droughts and floods and extreme storms. They warn of water shortages, food shortages and national security risk. They warn of what 11 retired generals and admirals wrote about in 2007 – climate change becoming a "force multiplier for instability in some of the most volatile regions of the world." And they introduce the threat of catastrophic, non-linear change.

A power company executive was quoted in the *New York Times* last week (July 26) saying "we've got the 'storm of the century' every year now," and it's starting to look that way. Consider:

- A searing heat wave struck Moscow in late June 2010, spawning massive wildfires, killing tens of thousands, and cutting Russia's wheat crop by 40%, contributing to a sharp spike in world food prices.
- The 2010 floods in Pakistan were the most expensive natural disaster in Pakistani history, killing nearly 2000 people, affecting 20 million, and causing $9.5 billion in damage.
- Heavy rains triggered floods and landslides in Colombia in 2010 and 2011, killing over 600 people and causing nearly $7 billion in damage, the biggest natural disaster in the nation's history.
- The Queensland flood of 2010-2011 was Australia's most expensive natural disaster, with a price tag as high as $30 billion.
- In 2010, the second "100-year drought" in five years in the Amazon led to net emissions of 5 billion tons of CO2 – a stunning amount roughly equivalent to a fifth of the global CO2 emissions produced that year from burning fossil fuels.
- In Greenland, more ice melted in 2010 than any time since the start of accurate record-keeping in 1958.
- This year, Colorado has been ravaged by wildfires that burned an area six times the size of Manhattan. In 2011, New Mexico, Texas, Arizona, and Minnesota all had record-breaking wildfires, with Texas losing an area larger than Connecticut and Rhode Island combined.

- Severe drought is currently scorching nearly 40% of the continental United States, the largest stretch of country this dry in nearly a half-century, affecting 88% of the nation's corn crop.

Scientists will tell you correctly that they cannot attribute any particular event to global warming because Nature doesn't leave that kind of signal for us. But they also say that these are the kinds of events they predict for a warmer world. And remember, these events are what we're seeing with only a modest global temperature increase – about 1.3° F since 1900 – compared to the much larger increases we will see if we don't take strong action.

In short, while there is certainly much more to understand about climate phenomena, a level-headed assessment of what we know already should impel us to act with vigor and determination.

Today, I'm going to talk about where we stand both internationally and domestically and offer some thoughts about where we need to go in our efforts to limit climate change.

We'll begin in the international arena, and I want to make a preliminary point. Climate change negotiations are very difficult. They are difficult, first, because climate change is not just an environmental issue – it implicates virtually every aspect of national economies, including industry, energy, transportation, agriculture and forests. So limits on emissions make countries nervous about economic growth and development. They are also difficult because the multilateral climate body – the UN Framework Convention on Climate Change – includes over 190 countries; these countries are grouped into various blocs with criss-crossing agendas and priorities; long-standing north-south resentments continue to rile the debate; and negotiations are governed by a consensus rule of procedure, which, in effect, enables any small handful of determined countries to block progress. So this is challenging stuff.

Right now, we are at an interesting juncture in light of what occurred at the negotiating session in South Africa last December – a juncture from which we can look back and reflect on what we have learned over the past three years, and from which we can look ahead to a revised model of international climate action.

At the time President Obama took office in early 2009, hopes were running high around the world that a major new treaty would be concluded in December in Copenhagen at the annual meeting of the "Conference of the Parties" to the UN Framework Convention.

But we believed from the outset that these hopes were built on a dubious foundation. The prevailing paradigm of climate negotiations was still that a firewall existed between developed and developing countries as they were defined in the 1992 Framework Convention, with all specific obligations to cut emissions assigned to developed countries. This paradigm is embodied in the 1997 Kyoto Protocol and the Berlin Mandate that gave rise to it.

The U.S. never thought that paradigm was legitimate. In 2009 we saw it as an unworkable basis for moving forward. As a matter of substance, you cannot meet the climate challenge by focusing only on developed countries when developing countries already account for around

55% of global emissions from fossil fuels and will account for 65% by 2030. You cannot build a system that treats China like Chad when China is the world's second largest economy, largest emitter, second largest historic emitter, will be twice the size of the U.S. in emissions in a few years and has even caught up to the EU in *per capita* emissions, according to recent numbers from the Netherlands Environmental Assessment Agency.

This is no knock on China. Their economic success is remarkable, and they have surely lifted more people out of poverty faster than any country in history. They are also determined to become the world's leading producer of renewable energy. But the Chinese emission numbers do mean that if we're going to be serious about taming climate change, we need to include all the major emitters, both developed and developing, accounting for some 80% of global emissions, and build out from there.

Further, as a matter of U.S. politics, any agreement that requires action by us but not by the emerging economies would be a dead letter in the U.S. Senate. Remember that all the way back in 1997, the Senate, by a vote of 95-0, passed the Byrd-Hagel resolution, declaring that the U.S. should not accept commitments to reduce greenhouse gases unless developing countries accepted such commitments as well. Securing Senate support for climate agreements is difficult under any circumstances, but unless all major countries are seen as committing to real action, it will be hopeless. Of course, the actions of different countries need not be the same – addressing climate change is not a one-size fits all proposition – but they need to be seen as fair.

With this in mind, our focus for the Copenhagen meeting in 2009 was clear. First, while we supported the objective of a new legally binding agreement, we made clear that we would only consider such an agreement if it fully included at least China and other emerging economies. Second, whether the product of Copenhagen was to be legally binding or not, it was crucial that all major players, developed and developing, commit to real action. And third, everyone's implementation needed to be subject to genuine transparency so that all countries could have confidence that others were acting.

If you look at the major climate meetings of 2009, 2010 and 2011 through this lens, you will see that we accomplished quite a bit.

Copenhagen is remembered for its chaos, for the spectacle of world leaders improvising an agreement in the final hours to avoid meltdown, and for the dashing of over-inflated expectations. But it was also important. The Copenhagen Accord included, for the first time, agreement by all major countries to implement a set of listed actions and to do so with international transparency. It thus struck a blow against the firewall. It also ushered in a new, more "bottom-up" structure in which countries put forward their own pledges. This structure was essential for bringing in the emerging economies in a manner roughly parallel to the industrialized countries. And Copenhagen also included important provisions on funding, technology and forest protection.

Although the full Conference of the Parties refused to formally adopt the Copenhagen Accord, owing to the hard opposition of a small handful of countries, the next year's meeting in Cancun adopted a fleshed out, 30-page version of the Accord.

Last December's meeting in Durban, South Africa, took further steps to make the Copenhagen and Cancun agreements operational for the period up to 2020, writing guidelines for the new transparency regime, outlining the structure and functions of a new Green Climate Fund, and taking steps to set up a new Technology Center and Network.

But the headline out of Durban was an understanding reached in another short decision, called the "Durban Platform," to negotiate a new legal agreement by 2015, taking effect after 2020.

For us, the pivotal features of the Durban Platform that will shape the contours of the new agreement are that it is to be "applicable to all Parties" and that it applies to the world of the 2020s. "Applicable to all" matters because it means the 1990s firewall, according to which commitments were only applicable to some, is finished. The 2020s matter because by that time we will be 30 years removed from the original 1992 division of countries, making that division ever more anachronistic.

None of this means that all countries will be expected to limit emissions in the same way. Differentiation among parties is an accepted premise of climate diplomacy. But in the world of the Durban Platform, it can no longer be the differentiation of two distinct categories of countries; rather, it will have to be the differentiation of a continuum, with each country expected to act vigorously in accordance with its evolving circumstances, capabilities and responsibilities.

These initial observations about the Durban Platform are the only the start of the discussion. A live and active debate is just beginning about the kind of legal agreement that should take effect after 2020.

For many countries, the core assumption about how to address climate change is that you negotiate a treaty with binding emission targets stringent enough to meet a stipulated global goal – namely, holding the increase in global average temperature to less than 2° centigrade above pre-industrial levels – and that treaty in turn drives national action. This is a kind of unified field theory of solving climate change – get the treaty right; the treaty dictates national action; and the problem gets solved. This is entirely logical. It makes perfect sense on paper. The trouble is it ignores the classic lesson that politics – including international politics – is the art of the possible.

Nations, as a rule, do not act in ways they see as contrary to their core interests or in disregard of what a great British colleague of mine once described as their "compelling constraints," whether economic or political. If countries are told that, in order to reach a global goal, they must accept targets their leadership sees as contrary to their core interest in growth and development those countries are likely to say no.

These basic facts of life suggest that the likelihood of all relevant countries reaching consensus on a highly prescriptive climate agreement are low, and this reality in turn argues in favor of a more flexible approach that starts with nationally derived policies. Back in 2009, Australia proposed a "schedules" structure – lingo borrowed from the trade world – in which each country would offer up its own commitments. Such a scheme could be legally binding at the national level or the international level.

This kind of approach would have a far better chance of being broadly acceptable to all parties, but the risk of a system like this is that the policies and targets countries submit prove to be too modest. The question is whether a system could be structured to increase its overall ambition. For example, the system might include a six-month period after countries submitted initial offers in which other governments, experts and civil society could react and urge modifications. How to encourage ambition in an agreement that is broadly inclusive will be one of the fundamental challenges in designing a new system.

The keys to making headway in this early conceptual phase of the new agreement is to be open to new ideas that can work in the real world and to keep our eyes on the prize of reducing emissions rather than insisting on old orthodoxies.

In addition, we have to develop an agreement that builds in the capacity for modification over time. Remember that we have agreed to complete this new instrument by the end of 2015, but it won't take effect for five more years. No one in 2015 can have a full understanding of what sort of reductions will be possible so many years in advance. Unforeseen changes in technology in the mid-2020s may make mitigation offers put forward in 2015 obsolete. So the new agreement should give countries flexibility to modify and update their mitigation commitments, spurring more and more aggressive action over time. In addition, the dynamic nature of development around the world means that expectations for country action can no longer be frozen in time. The developing country of 2015 may be a top five economy by 2025.

This kind of flexible, evolving legal agreement cannot guarantee that we meet a 2 degree goal, but insisting on a structure that *would* guarantee such a goal will only lead to deadlock. It is more important to start now with a regime that can get us going in the right direction and that is built in a way maximally conducive to raising ambition, spurring innovation, and building political will.

Now I want to shift gears slightly. As much as we need to make the UN climate regime work effectively and promote aggressive, real-world action, we also need to recognize that it can't do everything. So we should expand the field of international engagement to include other, more informal groupings of countries prepared to act in ways that can make a difference. The point of such coalitions is not to negotiate agreements, debate the meaning of treaty clauses or grandstand about the imagined sins of our rivals, but to act. To produce results. To get something done. And efforts like these are starting.

- In 2009, the countries of the G20 agreed to phase out fossil fuel subsidies. We collectively spend nearly $500 billion a year on such subsidies, with only about 15-20% going to the bottom 40% of the population in developing countries. These are largely perverse incentives bolstering already lucrative energy sources that we need to use *less* of, not more. There are far better ways to deploy our funds. The G20 countries need to follow through on this commitment now.
- The Major Economies Forum on Energy and Climate is a group of 17 major developed and developing economies that we established in 2009, building on a structure created by President Bush. The "MEF", as we established it, has a two-track mission: to facilitate

negotiations in the UNFCCC and to focus on action that this group of countries, accounting for some 80% of global emissions, can do on our own.
    - In 2009, MEF action spawned a new coalition, the Clean Energy Ministerial, led by energy ministers and focused on spurring the development of clean technologies.
    - The MEF also has real potential to drive a much more aggressive agenda going forward, focused on large-scale actions that this group of countries can undertake on our own.
- In February, Secretary Clinton announced a new effort, the Climate and Clean Air Coalition, committed to reducing so-called "short-lived climate pollutants," such as methane, black carbon and HFCs . Together, these agents account for over 30% of current global warming, millions of premature deaths, and extensive crop losses. We started with six countries and have already grown to some twenty countries and ten non-state partners. We have created a Science Advisory Panel, brought on other key players like the World Bank, and so far have $20 million in committed funds. We are implementing scaled-up, real-world initiatives to attack large sources of emissions, such as methane from landfills and from oil and gas production; black carbon from heavy-duty diesel engines; and HFCs used in refrigeration and air conditioners.
- The Global Research Alliance on Agricultural Greenhouse Gases was launched in 2009. It now includes 30 countries, led by New Zealand, and is dedicated to reducing emissions from a sector that currently produces around 15% of the world's annual greenhouse gas emissions.

These initiatives and others like them are no substitute for multilateral action in the UNFCCC. But our mission has to be to produce results on the ground, and if initiatives like these can help get things done, then more power to them.

Let's turn now to domestic policy and politics. We know that international agreement on climate is critical, because climate change is a quintessential "global commons" problem, where countries won't act unless they have confidence that their partners and competitors are acting as well. But the real key to bringing down emissions is national action. And the action that is at the heart of the matter is the transformation of the energy base of our economies. So let's take a quick look at what the U.S. has done over the past 3 ½ years.

Although large-scale legislative action was blocked in 2010, President Obama has accomplished a great deal through executive action:

- In the transport sector, accounting for some 35% of U.S. greenhouse gas emissions, the President has put in place historic new standards that will nearly double the fuel economy of our cars and light duty trucks to 54.5 miles per gallon by 2025. Dan Becker, a long-time climate activist and Director of the Safe Climate Campaign called it "the single biggest step the American government has ever taken to cut greenhouse gas emissions." And we have also introduced the first efficiency standards for heavy duty vehicles.
- In the building sector, accounting for 40% of U.S. emissions, the Department of Energy is leading an aggressive effort to boost the efficiency of buildings through stepped up appliance standards that will affect virtually everything that uses energy inside buildings.

And this effort is making a difference. In 2005, the Energy Information Agency projected that CO2 emissions from buildings would increase 53% by 2030. But by 2012, EIA's projection for the same time period had dramatically changed – rather than a 53% increase, EIA now projects a 2.4% *decrease* in CO2 emissions by 2030. Part of this change is attributable to slower economic growth, but by no means all. Better energy efficiency is a big factor.

- In the power sector, EPA recently issued CO2 regulations for new power plants that cannot be met using coal unless the resulting emissions are captured.
- Boosted by major investments under the 2009 Recovery Act, the U.S. has nearly doubled renewable electricity generation from wind, solar, and geothermal energy since 2008.
- And the Administration is also pursuing a multi-track R&D approach under the leadership of our Nobel-Prize winning Secretary of Energy, Steve Chu. This includes:
    - First, funding a new agency, "ARPA-E," to support early-stage research aimed at delivering game-changing energy technologies. ARPA-E is modeled on the Defense Advanced Research Projects Agency – DARPA – the agency responsible for innovations including the Internet and stealth technology;
    - Second, creating Energy Innovation Hubs – large, mission-oriented research efforts that bring together top researchers from academia, industry and government laboratories. The first three Hubs were for energy efficient buildings, nuclear reactors, and fuels from sunlight. The President recently proposed three new Hubs for smart grid technologies, batteries and energy storage, and critical materials.
    - Third, establishing 46 Energy Frontier Research Centers, mostly university-led teams working on basic research to overcome technical impediments to clean energy development.
- This R&D effort may end up being more important than anything else. The best hope for containing climate change is likely through major advancements in technology, so government R&D support is crucial. Some still insist that government should just stay out of the way of the private sector, but our history tells a different story. Technological step-change has been aided by government engagement over and over again, from railroads, to the interstate highway system, aviation, telecommunications and the internet. More recently federal research support helped lay the groundwork for the new horizontal drilling techniques that are revolutionizing the production of natural gas and altering the U.S. energy landscape.
- One final point: since 2006, according to the International Energy Agency, U.S. CO2 emissions have fallen 7.7%, *the largest reduction of any country in the world in that time period.* Meanwhile, the latest figures from the Energy Information Agency, for the four months ending in March, show that U.S. emissions are *14%* lower than in 2005. There are many reasons for the U.S. emissions decline, some relating to the broader economy, some to fuel switching from coal to natural gas, some to the measures taken by the Obama Administration, outlined above. But these are statistics few people around the world would have predicted even a year ago.

In short, the President has made real progress on climate and clean energy on the strength of his executive authority. But for action of the scale we need to transform our economy, there is no substitute for national legislation. And this truth brings us back to the question of the political

challenge of climate change in the United States, because national legislation of scope and reach requires a broad base of engaged public support.

Such support is not easy to come by. Climate change, by its nature, is a tough issue politically. It involves short-term cost for long-term benefit. Its dangers seem distant and can be crowded out by more pressing concerns. It is complicated, and the link between global warming and natural disasters often feels uncertain to people, since scientists can't say global warming caused *this particular* event. A sense of issue fatigue can take hold, born of the difficulty of making rapid progress. The natural propensity of the press to give equal time to both sides of any issue, even when the evidence lies overwhelmingly on one side, can leave people confused. And then, of course, ideological interests have worked overtime to make this issue too hot to handle.

What we need is a straight-shooting conversation that explains what's at stake in climate change and why we need action to accelerate the transformation to a clean energy economy. We can and should make clear that there are immediate, non-climate benefits to doing this – building America's competitive future, since clean energy will be one of the defining industries of the 21st century; making our air cleaner; protecting our health against conventional pollution. But we also need to make clear that the severe risks of climate change make this transformation essential if we care about sustaining our health, our prosperity and our national security. Climate change is what makes the transformation of our energy system an engagement of necessity, not one of choice.

On December 12 of last year, the *Economist's* on-line blog said: "A hundred years from now, looking back, the only question that will appear important about the historical moment in which we now live is the question of whether or not we did anything to arrest climate change." I wouldn't go that far – we are surely dealing with other seismic issues in this historical moment. But, the underlying point of the blog is on target. While potent issues of the moment will always command our attention, we must also take the long view, acting now to avoid crisis down the road.

So we need to present the case – both the short-term benefits and the longer-term imperative – in a sober, persuasive way, not alarmist, but not pulling punches. The benefits of action are manifest; the costs manageable.

We also need to go beyond the usual suspects to find trusted figures – including from business and the military – who can speak to a broad constituency. My own conviction is that if you talked privately to the CEOs of the Fortune 500, the vast majority would recognize that climate change is real, serious, and calls for a concerted response. Exactly what that response should be is a fair subject for debate, but if we can at least establish the priority of *developing* such a response, we'll have taken an important step forward.

Finally, we need energy – the human kind – which can be found in large supply in places like this and among young people across America, whose stake in what we do about climate change couldn't be higher. Your future is now.

Paving the way for broader national and international action on climate and energy won't be easy for all the reasons I've outlined. But it can be done and we need to start.

Once again, thank you so much for the invitation to come back to Hanover to share some thoughts. I'd be happy to take questions.