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Joint Conference on Clean Vehicles – Leadership Perspectives

by

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Welcome

Professor Forrest; Counselor LIU Zhiming; The Honorable Pat Davis; Dr. GAO Xinbao; CERC Leaders, PENG Huei and WANG Hewu; CERC Partners; Distinguished Guests; Conference Speakers and Participants; and Friends of CERC; Good Morning. Thanks, especially, to the University of Michigan for hosting.

U.S.-China CERC

This U.S.-China Clean Energy Research Center, which we call “CERC”, is an extraordinary initiative between our two countries. It was:

- Launched by two Presidents – Presidents HU Jintao and Barack Obama;
- Chartered by the countries’ highest-level science officials:
 - Minister of Science and Technology, WAN Gang; and
 - Secretary of Energy, Steven CHU;
- Strongly supported by MOST and DOE, with the equivalent of \$150 Million USD pledged over 5 years, shared equally by both sides;
- Organized under a novel Government-to-Government Protocol; and
- Empowered by an Intellectual Property Annex that strengthens protections of IP, facilitates the joint creation of IP and enables the exchange of IP through licensing under favorable terms and conditions.

Why CERC?

Why would such an “experiment” in clean energy innovation rise to this level of diplomatic interest? It is because our two countries have common strategic interests, are compelled by a shared sense of urgency to find practical solutions to problems, and have much to gain by learning and working together.

Some facts:

- The United States and China are the world's two largest economies;
- We are the world's largest producers and consumers of energy;
- We depend heavily on coal for electricity production;
- We account for 40 percent of global emissions of greenhouse gases;
- Oil is our life-blood and we import more than 1/2 from insecure sources;
- We place high priority on improving energy efficiency;
- We are expanding and modernizing infrastructure, much of which has yet to be built and can be significantly influenced by advances in technology;
- Both countries see scientific discovery and innovation as a means to inspire economic growth and improve the quality of life of all citizens; and
- Both countries have strong research enterprises -- industrial and academic.

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For these reasons, CERC has chosen to focus on 3 areas of strategic importance to both countries:

- Clean power from coal, with an emphasis on high-efficiency, low-emissions, and CO2 capture, utilization and storage;
- Buildings energy efficiency, in new construction and retrofit, with an emphasis on improved equipment, operations and maintenance; and
- Clean vehicles, with an emphasis on electric vehicles and alternative fuels.

Regarding clean vehicles, I note that:

- The world price of oil is about \$100 USD per barrel;
- Oil imports to the U.S. are about 10 million barrels per day;
- Oil imports to China are about 5 million barrels per day, and rising rapidly;
- Both countries "export" 100s of millions of dollars to pay for this oil;
- The economies of both countries are vulnerable to supply disruption;

- Transportation accounts for the 2nd largest source of greenhouse gas emissions, behind electricity production, its distribution and use;
- Combined, there are 300 million vehicles on the road; and
- Combined auto production is nearly 30 million per year.

Clearly, the topic of what you are all working on – advancing technology for clean vehicles – is not just important; it presents large opportunities for leveraged impact.

Promise of Cooperation

The idea of CERC is predicated on a simple, promising idea. By working together on jointly planned research with common objectives, we can:

- Learn from each other;
- Build on complementary strengths;
- Divide labor, reduce costs, and take on a more ambitious R&D agenda;
- Accelerate technical progress; and
- Bring forward the day when advanced technologies improve our futures.

New Model

Although the promise of the CERC concept is compelling, I think it is fair to say that its realization in practice is not easy. International work is challenging. It requires willing hearts and minds, and a great deal of dedicated effort. We are, in effect, striving to build a new model of bilateral cooperation in scientific endeavor.

A broad understanding of what we are trying to do with CERC is important. Permit me to draw your attention to some key differences between the traditional model and the CERC model of international cooperation, as shown on Slide #1.



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New Model for Enhanced Collaboration

Cooperation (Traditional)

- Work Plans Coordinated, but Separate
- Independent Work on Similar Projects
- Interactions Characterized by Research Visits, Personnel and Student Exchanges
- R&D Focuses on Institutional Strengths
- Relationships Collegial
- R&D Results Shared Externally
- Benefits Mainly Academic. Transfer of Knowledge via Technical Papers & Reports
- No guaranteed IP Rights in Other's Territory. IP Provisions Not Flexible
- Few IP Advantages for R&D Partners

Collaboration (New) *

- Work Plans Developed Jointly
- Work Together on Same Projects
- Research Characterized by Division of Labor Among Participants on Joint Tasks
- R&D Exploits Complementarities
- Relationships Interdependent
- R&D Results Can Arise Jointly
- Benefits are Embedded among Partners and Extended by Interests in Commercialization
- Guarantees a Right to IP in Other's Territory. IP Terms & Conditions May be Negotiated
- Potentially More Attractive IP Platform

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* Jointly Funded Research Projects, as Defined by Mutually Agreed-Upon Technology Management Plans

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Intellectual Property

The protection of intellectual property is one of the most important and essential steps to promote innovation. Risk and uncertainty in such matters will constrain the collaborative process and degrade the ambition and quality of proposed research. Fearful partners will not put forth their best ideas.

The CERC operates under a US-China Protocol. This Protocol has the signatures of Ministerial-level officials and commands the full support of both governments.

The Protocol acknowledges the importance of protecting IP. Its IP Annex stipulates that IP agreements, known as Technology Management Plans, must be put in place before research can begin. It took us nearly 9 months to work these out. Plans for all 3 CERCs were completed about one year ago.

These Plans:

- Clearly state the rules of partner engagement under CERC;
- Provide for declaration and protection of background IP;
- Define procedures for allocating and protecting rights to new inventions;
- Provide for non-exclusive licensing of IP under favorable terms;
- Encourage sub-agreements for specific IP and related terms & conditions;
- Support fair resolution of disputes under international standards;
- Establish a role for government monitoring and oversight; and
- Encourages compliance with existing agreements.

We have already experienced some encouraging tests of this process. Secretary of Energy Steve Chu concluded, and I quote:

“With both the U.S. and Chinese governments supporting these [IP] agreements, we are freeing our researchers to offer their best ideas and encouraging innovative thinking.”

Signs of Success

As a result of your good work to date, we are already seeing some signs of CERC’s success.

- Research relationships continue to expand and deepen;
- Researchers have access to unique experimental platforms and data in the other’s country;
- Industrial partners are adding market knowledge and business relevance to research planning, buttressed by cash and in-kind contributions;
- Large-scale business ventures are exploring ways to collaborate with CERC, share data, and accelerate new technology deployment;
- Additional private partners are seeking to join;
- Other countries are beginning to take notice and observe our progress.

Attractions

The elements of the CERC model that, I believe, are attracting this interest are:

- Support and engagement by the two governments at the highest levels;
- Ambitious technical projects focused on important problems;
- Strong teams of distinguished and creative scientists and engineers;
- Emphasis on “collaboration” (joint work), not just “collegial” work;
- Strong, but flexible, framework for protecting intellectual property (IP);
- Endorsements by the governments, which enables oversight and encouragement of compliance; and
- A guaranteed right for the exploitation of IP in the other country’s territory, which can potentially facilitate access to expanded markets for new technologies.

Looking Ahead

We are now starting the 3rd of 5 years of CERC. As we look ahead for new opportunities to strengthen CERC and expand our portfolio of collaborative research, I urge you be mindful of the potential power of this CERC idea and make the most of it.

Across all 3 CERCs, DOE and MOST are looking to:

- Strengthen the portfolios;
- Encourage the creation of commercially valuable IP; and
- Deepen engagement by industrial partners.

Together, DOE and MOST have suggested the following guidelines for future CERC-qualifying proposals.



Guidelines for Awards of Future CERC Projects

Basic criteria:

- Merit, including research plan and expected outcomes;
- Relevance, to CERC goals, scientific advancement, and timeliness; and
- Quality of the research team, including supporting resources and facilities.

CERC-specific guidelines:

- Beneficial outcomes for both countries, not just one country;
- Research emphasis on science, technology and innovation, with potential for intellectual property (IP);
- Potential path to commercialization of resulting knowledge or technology;
- Evidence of "other-country" research collaborators participating in each CERC project.
- Evidence of business partners from both countries participating in each CERC project;

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To Whom Much is Given . . .

I quote of an earlier American President. Perhaps, there is a Chinese saying for the same thought. "For those to whom much is given, much is required".

If all sources of CERC funding, from government and private sources, are added together, in China and the U.S., our two countries will have contributed more than \$50 million USD to the CERC Clean Vehicles Consortium by the end of 2015.

Fifty million dollars is a big figure! Expectations for meaningful outcomes, at commensurate levels, run strong, at high levels, in Washington and Beijing.

We must ask ourselves:

- What will we have achieved with such an investment?
- Are our ambitions sufficiently high?

- Will our expected outcomes have a significant impact?
- Are we working together in truly leveraged and productive ways?
- Will we live up to the confidence placed in us by our countries' leaders?

Thanks

I want to thank all of you for your creativity, hard work, and dedication to this project. As measured by what I see during my visits in China and in the U.S., by Technical Reviews that take place in Washington and Beijing, by the Quarterly Progress Reports I read, and by industry feedback, you are well on your way to “bragging rights”. But we must let down our guard.

Closing

In closing, I note that if we are successful -- and I am confident that we will be successful -- the U.S and China will benefit in the near-term from:

- Leveraged research and, possibly, big breakthroughs;
- Accelerated technology development; and
- Opportunities afforded by new U.S.-China research and business relationships, potentially improved product design, and potentially expanded markets.

Over the longer term, and more broadly, the U.S. and China will accrue to its citizens the benefits of:

- Adoption at a scale of a new and improved fleet of clean vehicles;
- A more resilient and secure transportation system;
- Leading positions in automotive vehicle design and innovation;
- Lower transportation energy costs;
- Improved air quality, particularly in urban areas;
- Accelerated transition to a low-carbon economy; and, hopefully, the
- Avoidance of the worst consequences of climate change.

I hope you agree that these are worthy objectives.

I wish you a most productive conference. Thank you for your time and attention.



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