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ANDERSON COURT REPORTING
706 Duke Street, Suite 100
Alexandria, VA 22314
Phone (703) 519-7180 Fax (703) 519-7190

PARTICIPANTS:

Introductory Remarks:

HE JIANKUN
Vice Chairman, China Expert Committee on Climate Change
Vice President, China Energy Research Society
Executive Vice President, Tsinghua University

Moderator:

S. JULIO FRIEDMANN
Carbon Management Program Leader
Lawrence Livermore National Laboratory

Speakers:

JAMES E. ROGERS
Chairman, President, and Chief Executive Officer
Duke Energy

ZHANG XIWU
Chairman, China Shenhua Group

RICARDO PÉREZ
Chief Operating Officer
Westinghouse Electric Company

WANG BINGHUA
Chairman, State Nuclear Power Technology Corporation

MICHAEL MORRIS
Chairman and Chief Executive Officer
American Electric Power

ZHU YONGPENG
President, China Guodian Corporation

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P R O C E E D I N G S

MR. HE: Good morning. Right now, the development of clean energy in the world has gained unprecedented interest in the world. On the one hand, the development of new and renewable energies and the highly efficient use of clean coal is an important technical response to climate change and slowing carbon emissions.

On the other hand, because the world is facing financial crisis, the green recovery is a new economic growth point. Advanced clean energy technology is now a new frontier and a new focus. It is also an important focus for world technical cooperation and competition.

China is in the state of high speed growth of industrialization, urbanization. Energy needs and our CO2 emissions are quite great. In a short period of time it would be hard for them to change this situation of quick growth.

Socioeconomic sustainable development may be restricted by domestic resource environment

restrictions, and also would face the task of slowing emissions. So the development of renewable technology and clean coal will slow these emissions. It is not only a strategic choice of China in connection with climate change, it is also an internal need in China for developing economically and socially. And coordinating the resource environment with sustainable development.

The Chinese government enterprise attaches great importance to independent, innovative response. And to further international cooperation. New and renewable resources -- we have sustained rapid development. In the Eleventh Five Year plan of 2010, the supply of renewable resources will be increased by over 60 percent. Nuclear facilities will be about 30 percent of the whole world. Wind and photovoltaic advanced technologies will be maturing with the costs going down. And costs are continually going down and the growth of the industry is very rapid.

The Chinese government put forward that by 2020, the carbon and intensity per unit of GTB will be

45 percent less than that in 2005. Non-fossil energy's proportion will reach the goal of 15 percent. This opens up broad perspectives for clean energy to meet this goal in the next 10 years. New renewable energies will greatly increase, and it will be higher than the annual energy consumption of the United Kingdom.

Now, coal's proportion will be clearly much lower and will be still more than 50 percent. So the development of clean coal and using new technologies in hydrogen energy, CCS energy -- just like in new, renewable resources, these are all important contents for China's long term resources.

Economic and social development -- the great demand for it is an important, robust force in innovation. In order to meet this goal investment in this area will total over 10 trillion RMB. For enterprises, this will be a huge business opportunity and a new economic growth point.

The U.S. and China have brought perspectives for cooperation for this area, and there is a very

good basis for cooperation. Not only research institutions and universities have broad cooperation and exchanges between enterprises, there is a great amount of technology transfer, joint ventures, and cooperation.

The establishment of the U.S.-China Clean Resources (sic) Center sets up a cooperation platform for U.S.-China development in this field. The countries need to -- setting up relationship between government, industry, academic, and research establishments. So that we have to go ahead with a wide industrial use technology transfer, and research.

The government must play a reading role in this, and in a policy area give a lot of support to it. China is the biggest developing country in the world. The United States is the biggest developed country. Both of these countries are energy producers and consumers. So, there exists a broad market for this kind of technology. The clean energy area in both countries can have thorough-going cooperation. This is not only a win-win situation for the two

countries' enterprises. In the rapid development of global clean energy technology, the two countries can form a good competitive advantage in the low carbon field.

Now in the course of cooperation in promoting the response to climate change, the two countries should provide both technical and industrial support. The two countries incorporating with each other and in the win-win situation and in respecting intellectual property, the government leadership must be strengthened and -- cooperation under the climate change framework conversion.

So this will, in bilateral technical operation, will move forward the cooperation for response to climate change. I wish you all success in your deliberations today.

MR. FRIEDMANN: I would like to thank Dr. He. We're honored by his presence to have such a leader in government, such a leader in thought -- honors our stage and graces these proceedings.

My name is Julio Friedmann. I am here to

moderate this panel on U.S.-China clean energy collaboration. I'd like to thank Ken Lieberthal for organizing this panel, and the Brookings Institute for bringing such a distinguished group together for the purposes of open discussion.

Many of you saw the announcements of the signings that were made yesterday. Those signings are evidence of very, very strong collaborations and growing collaborations between the U.S. and China in the private sector and in the industrial sector.

With respect to these clean energy partnerships, I think we should acknowledge that they are bold, that they are creative, and that they make deep commitments in the private sector and between governments. And many of the members here on stage are party to those and we should congratulate them all on their achievements in this regard.

These partnerships are going to create jobs in both the United States and China, and they are going to lower the cost in both countries of developing and deploying clean energy as solutions to

everybody.

More importantly, perhaps, we are going to build stronger ties in trade and commerce through these partnerships. We are going to accelerate the development of clean technology and accelerate the emissions of CO2 and pollution reductions.

In this context, I wish to stress, though, that the partnerships in and of themselves are a product of this partnerships. And they bode well for strengthening collaborations between the United States and China on many, many different levels.

With that, let me explain the proceedings. We're going to start with short statements by the members here on the stage. Simply to introduce themselves and a bit about their current efforts and partnerships. After that we'll have a moderated discussion among the panel, followed by an open set of question and answer to the proceedings and to the assembled.

I thought that we might begin thematically and actually start with the budding nuclear

partnerships. And in that context I'd like to first introduce Dr. Ric Perez, who is the chief operating officer of Westinghouse.

Ric.

MR. PEREZ: Well, good morning. It's my pleasure to start us off.

Let me begin, I think, with something that's really relevant to today. And start with, I think, a saying that resonates to today's conference. It's a Chinese saying that goes like this: If you're planning for one year, grow rice. If you're planning for 20 years, grow trees. But if you're planning for 100 years, grow men's knowledge. And I think that's quite a statement, when you think about, you know, what we're at today. In the last century the world's two largest economic superpowers have kind of turned to each other to look at how we could grow prosperity and deal with this idea of growing knowledge.

You know, one of the challenges that we both are facing is the concept that economic growth is a need and a demand from both our societies. And if you

look at some of the feedback and some of the studies done recently, most recently from Peking University in Beijing, that said China's economy is probably going to grow over 9 percent over the next 20 years -- at about a 9 percent clip. And that's going to require about 150 percent more capacity and generation of electricity than it currently exists. And within that context, I would contend that China has made it clear that they're going to master the energy equation.

And for us in nuclear energy, it's clear that they've taken that as part of this challenge. I'd like to point out that we actually, as a nation, face the same challenges. The Chinese clearly are growing knowledge. The United States, are we growing rice or are we growing trees, or are we growing knowledge?

On the surface that may sound a little bit of a negative comment. We don't mean it to be. We think it's actually an unprecedented era for our countries, and for us as a company. You know, it was just 12 years ago when we as a company couldn't

actually export any products to China. It was still illegal for U.S. nuclear technology to be delivered to the country. Those 12 years ago, there was only actually 3 nuclear operating plants -- China nuclear operating plants in the whole country.

Today there's over 13 operating, 25 under construction, and 60 in the planning process. I would argue that trees are growing and the seeds for knowledge are being planted.

Early this month the Brookings Institute tried to talk about some of the things that we needed to do together as two nations. And one of the areas of cooperation they highlighted -- and it's clearly identified today -- is clean energy. The other one, which I think is closely coupled but maybe not as relevant, was this -- or as pertinent or as visible -- was this concept of co-development of technology.

As two countries, we are two giant technology developers. And to recognize that we can actually come together and leverage each other and work with each other to drive better cooperation and

technology development space is a huge revelation for both of us to really invest in.

Those two areas of opportunity, clean energy and technology development, are coupled. And it's really given us an unprecedented moment in history that we believe between nations and their industries to break the traditional game that's been played or the traditional model where one single country takes an industrial bet by itself. Can we, in fact, look at this current time and say, as two nations, we have the opportunity in one nation to grow rice and another nation to still benefit from the growth of knowledge from our global neighbors?

It's that new potential that I'd like to frame with respect to some of our relationships at Westinghouse and our Chinese projects. It's a relationship that was forged out of Cold War-era outreach from President Nixon's historic visit in 1972, and the vision of the first president of the U.S.-China business council, a gentleman named Don Burnham, who happened to be president and CEO of

Westinghouse at the time.

You all know Westinghouse as the leader in the development of nuclear electricity across the world. And this year we celebrated 125 years as a company. It's the same company that brought you electricity using AC current. We built the first U.S. commercial nuclear plant, and we've been at the forefront of the nuclear development across the world for the last 60 years. But it's not really just about the operating plants that we have around the world. The technology in its base forms the -- half of the world's 440 nuclear plants come from Westinghouse designs.

Additionally, we have 15,000 employees deployed all over the world to support those reactors and the important role they play in their countries. But, the flagship technology for our company today is the AP1000, which I would respectfully submit represents a new industry standard for the advanced nuclear design of power plants. It's the safest, most economical power plant available in the world today.

But in addition to the fact that it uses natural forces, like gravity and condensation and pressurized air to lessen dependent active components like pumps and generators, it uses a knowledge gained from best practices in Japan and in other modern construction techniques by integrating factory-built modules to increase the quality and reduce the time to construct the plant.

You know, the design promise of the AP1000 is as simple as it is ambitious. Deliver large quantities of non-carbon generated electricity, deployed economically, deployed reliably -- in other words, with safety and with quality -- do it anywhere in the world, and finally, do it in a duration that makes an impact on global climate change. It's aimed at delivering a large amount of carbon-free electricity to make an impact on today's society.

So, let me just kind of focus on the relationship between Westinghouse and the Chinese that emanates from that activity. The relationship between Westinghouse and the China nuclear program has its

core the concept of sharing knowledge and building growing knowledge. That's at its core.

The whole concept of the 4 AP1000s that are being built in China today uses -- has, at its premise or its root, the concept of building the project together. It makes the premise that says you can build these plants more effectively, more efficiently, and safer doing it together where you collaborate together, you learn together, you grow knowledge together, versus building it at a traditional arm's length relationship.

And why is that important and why do we think that pays dividend to both our Chinese and U.S. stakeholders? Let me kind of give you the final conclusion. And that is, the technology -- that the infrastructure that's being delivered in China by the AP1000 -- and it's technology that's being embedded in that country -- increases both the sharing of experiences, the quality of life, the ability to provide not only the power for those countries, but that the Chinese personnel and companies that are

supporting it are able to have an outlook for export and for industrial development that is broader -- that actually expands the timeframe of the plant's construction.

And in the United States, the Chinese project today is supporting over 5,000 jobs in 20 states. And those are high paying jobs, good jobs.

And lastly, what it shows is that for the American public, as we embark on the new generation of new nuclear plants in the United States, we have now a new generation of supply base in the United States. We have Americans -- young -- a new generation that's learning on these projects. So as we deliver these new projects that are just starting construction -- South Carolina and in Georgia -- people can see the value of what happens in China is not a threat or a liability. It's an unbelievable benefit.

Rate payers in the state of Georgia and South Carolina will benefit from what we're doing today at Hi Yung and San Men. Those people in Southern China will benefit from the projects that

happen in Georgia and South Carolina.

And I would just close with saying to you that that's really what these projects are about. Yes, energy is important. But what's really important is that we're growing knowledge together. And I give a lot of credit to the pioneers that got us here that decided to grow knowledge instead of just growing rice.

Thanks. (Applause)

MR. FRIEDMANN: Thank you very much, Ric. At this point it's my honor to introduce Dr. Wang Binghua, who is the chairman of the State Nuclear Power Technology Corporation.

Dr. Wang.

DR. WANG: Good morning, ladies and gentlemen. To the vice president from Westinghouse -- well, he's a very good friend of mine. I very much agree to what he said. I fully agree to what he said just now.

My remark is going to be divided into three parts. The first section of my remark, I would like

to introduce to you what we've been doing with Westinghouse. Because, you know, by showing you what we've been doing will be much more interesting than me reading the remark.

Secondly, I would like to share with you the important points that I believe -- I firmly believe in. And then we would like to answer some questions that you may have.

So let me go into the first section of my remark. Showing you what we've been doing with Westinghouse.

Next, let me just share with you some points. First of all, nuclear energy cooperation between the two countries is highly complimentary. This cooperation will not only bring a lot of commercial opportunities for both our businesses, but also is of a strategic importance for the two countries. When the businesses from two countries cooperate, the advanced nuclear energy and also advanced market and also advanced engineering techniques -- and to have in-depth, broad cooperation.

This kind of a question will not only create a lot of competitiveness and a market opportunity, but also will be conducive to the optimization of the trade structure between the two countries. And this will also play a role in contributing to the world peace.

AP1000 is really the biggest energy cooperation project between the two countries. And both governments have been paying a lot of attention and support to this cooperation. We have overcome a lot of difficulties and challenges. So actually we have a lot of challenges. Up to this point the project in general has been going smoothly, but we still face a lot of uncertainties, and for that all of the participants should have a clearly defined measures to cope with it.

The peaceful utilization of nuclear energies is really of great significance. AP1000 project is really a project where the U.S. and Chinese government have reached agreement to have sort of an indigenous innovation. This is a great example.

So based on the AP1000 technology, we will

join forces with Westinghouse on the AP1400 or 2100 project in the future. And we will maintain a friendly cooperation with the originator of the technologies.

And we put forward the standard designed module construction specialized management. All these measures will really greatly shorten the cycle of the project, and this is to make sure that the power generated by AP1000 will be highly competitive.

In our future energy cooperation we should have a competition. But I think we will have cooperation. We may have frictions, but I guess we have more respect to each other. As long as we take a sort of general approach to the cooperation and we can -- in consideration of the benefits for our two peoples. Also, trying to have a win-win situation, we can not only resolve the development issues, we can also contribute to the peaceful utilization of nuclear power for the main kind.

Thank you very much. (Applause)

MR. FRIEDMANN: That's Dr. Wang.

Please allow me now to introduce the chairman of the Shenhua Group, the world's largest coal company. We're honored to have Dr. Zhang Xiwu.

DR. ZHANG: Respected chairman, ladies and gentlemen. Good morning to you all.

I am very pleased to have exchanges with you, and I'm also glad to join forces with you in pushing forward the cooperation between the two countries in the area of clean energy.

We all understand that U.S. and China are the biggest economies in the world. China and the U.S. are also the two countries where we have the largest -- we are the largest consumer of our primary energies. So future economic development will have a great requirement for energy. So, the cooperation between the two countries in clean energy will play a positive role in coping with economic crisis and climate changes, and we can also contribute to the regional development, and even to world peace. This is really of practical significance.

The coal producer where I work for is the

world's largest coal producer. And it's also the largest coal distributor in the world. Last year we produced 440 million tons of coal. In the Fortune 500 ranking last year, our company was ranked 365. It's expected that our ranking can be somewhere around 250 among Fortune 500.

The company that I work for achieved a $33 billion revenue. We have about $9 billion USD profits. Apart from owning 11 advanced coal-producing plants, we also own a railway and we also have sea ports. And we have 45 million kilowatts coal-fired plants, and also wind powered plants.

We also have the direct coal liquefaction plant in the world. And that plant has been operating in a safe fashion for about 4,000 hours. And we have 1.08 million production capacity.

And we also have an MTO plant. And last year we successfully experimented with that approach. And up to this point we're producing about 40 million MTO. And we also have the coal bed gas production. And we also have other green power generating

practices.

In the second decade of this century, we have formulated a development strategy, and that is we want to be ranked as the first 100 of the Fortune 500 companies in the world. We want to become the world-class coal producing conglomerate. Through technical innovation, we want to achieve a low-carbon development -- low-carbon industry, and also we want to make sure that our employees are the happiest employees in the industry. And for that, we feel obliged to carry out our mission's responsibilities. We are committed to making investments in research and development, and also we want to have a highly efficient, safe coal exploration; and we also need to consider the impact on the environment of our approaches -- direct liquefaction, indirect liquefaction, MTO production, natural gas production, reducing carbon reduction, energy conservation, and new energy development.

So, through our efforts in the past five to ten years, we want to be a innovative, technology-

based business, and we want to be the world's advanced low-carbon initiator. And also we want to become the pioneer in low-carbon technology, and we also want to be the supplier of low-carbon resources, and also we want to be a supplier and a service provider of these business.

Ladies and gentlemen, for the sake of social progress, social economic progress, and also by providing a safe, reliable, stable, and clean energy for our mankind, this is really a joint responsibility obligation for both of our countries -- in particular, the cooperation between our two governments and between our energy businesses. We need to really strengthen our cooperation to have a so-called practical cooperation. Let me offer you three recommendations.

First, we need to have a cooperation in the mining industry in order to have a win-win situation. Shenhua Business Group is willing to share with a successful experience, financial resources, technologies, talent; and based on the -- by playing

by the rules, we want to achieve a cooperation between our two businesses. We want to cooperate, jointly develop coal mines and energy product markets; and we are willing to contribute, together with our U.S. colleagues, to the rich and economic development protecting the environment.

Secondly, we want to push forward the cooperation in technology areas. Shenhua Business Group is willing to further cooperate with relevant U.S. universities and research institutions based on the CCS technology cooperation. We want to expand into the utilization of a clean coal technology, hydrogen power, nuclear power, and also technologies to protect the environment, to restore ecological systems. And we want to cooperate with you in the R&D of the equipment involved.

Shenhua Business Group in the next three years is willing to -- there’s a strategic cooperation between these institutions and in an orderly manner support important results, important for industry, and go forward to commercialization.

Third, to go forward with the training of personnel. The Beijing Research Institute and Shenhua Research Institute will establish research centers in the United States. We also welcome scientists and young people to join us. Our group sends a lot of technical personnel and other United States institutions to participate in various work.

My country's (inaudible) had an important statement that is if we are poor we could only take care of ourselves; if we are prosperous, then we can benefit the whole world as a leading enterprise. Shenhua will be at this high point where we try to benefit the whole world with a modest attitude and a pragmatic, cooperative spirit. The (inaudible) should benefit the whole world, and we should jointly use clean energy so that the sustainable economic growth the world will be truly achieved.

Thank you, sir.

MR. FRIEDMANN: Thank you, Chairman Zhang.

It's a pleasure now to introduce a real industrial leader in the United States. That's

Michael Morris, the chairman and CEO of American Electric Power.

Mike.

MR. MORRIS: Thank you very much Julio. I'll do my best to see to it that you don't have to give me the hook, as you keep sending time signals to all your speakers.

We are honored to be here with you to talk about the U.S.-China Clean Energy Collaboration. There's nothing more important than the electrification of the economy of China to raise the overall prosperity of these 1.3 billion people who have such a dramatic impact on the world as we go forward. And American Electric Power is clearly honored to be a partner with Huaneng in some very important projects and China grid, as we can learn a great deal from our partners in that undertaking.

The electrification of your economy as our economy over a number of years will allow for the raising of the standard of living; it will allow for the freedom of educational pursuit; and it will allow

for the freedom of the creativity of this incredible human mass of intelligence that will change the world for sure.

Last night I had the honor of sitting next to Secretary Chu and Chairman Wang, and I must tell you that the conversation about what one does when they're 30 and what one does when they're 40 and what one does when they're 50 led me to believe that I wished I were 30 years younger and had an opportunity to interface with our partners for a longer period of time to watch the incredible success that these two countries should jointly share with each other for the betterment of humankind throughout the globe.

I think you heard our friends from Westinghouse talk about educating folks to go forward and live for a hundred years. Truly an opportunity that the electrification of your economy and the joint sharing of technologies will allow both of us to go forward and do.

So, I come to this podium today, I come to these meetings, I go to China with a very mixed

emotion of a person of two minds. One, I'm deeply impressed with where you stand and where you'll go, and I'm encouraged by the openness of our partners and the eagerness to move forward.

We had an opportunity yesterday to speak with one of our partners about manufacturing -- some facilities in the United States because we, like you, are interested in jobs being developed in our own service territory in our own states. And he mentioned that that might be able to be done. We could probably do it before 2011 passed. To build a manufacturing facility in the United States, one would speak in terms of 2021, not 2011, because of the magnitude of the processes that we go through.

Last night you heard Secretary Chu speak about 60 nuclear power facilities being built throughout the world. There are two utilities in the United States scraping the ground, no one building anything as we saw in the introductory film from the chairman of the nuclear activities in China.

So, I look at that in a very different way.

When we get to the state regulatory environment where all of us in the electric utility live in the United States, we face a very different pushback. We face a reality of state regulatory controls that are trying to hold down the cost of electricity as we try to improve the benefits that electricity can bring. It's impossible to move forward with energy efficiency, with energy cleanliness, with additional facilities put on your production facilities and see the price of electricity go down. It's a fact of life that the price of electricity will go up.

But the price of electricity is only a fraction of the value of the product. And your country understands that. You see energy and energy development as a plus. We see energy and energy development as something to be fearful of, of something to stop in every way that we can.

Just last week one of the large environmental organizations in our country stood strong on do not develop the largest solar facility in the state of Arizona because it may have some effect

on the environment of the desert. Yet, when I go to China, I see wind developments 1100 kilometers from the population centers, and I see an 1100 kv transmission system built in a very short period of time, something to truly be envious of. So, I wish I were 30 years younger. I wish I could collaborate with my partners more long, more deep, and more seriously. I'm deeply impressed with what I see and happy to be here and have an opportunity to share a couple of thoughts with you.

MR. FRIEDMANN: Thank you very, very much, Mike.

It's a pleasure now to introduce Dr. Zhu Yongpeng from Guodian. He's the president and CEO of Guodian Power Corporation.

Dr. Zhu.

DR. ZHU: In the second U.S.-China strategic forum on clean energy cooperation at this time energy efficiency and emissions reduction is already a necessary requirement for environmental protection and (inaudible) development, so my company -- The Guodian

Corporation -- is speeding up its structural adjustments, increasing its abilities in this area. We, from beginning to end, have made this sustainable energy a long-term strategic goal.

Ours is an integrated energy company. We've got electric generation; and various other areas, like finance, (inaudible) have reached a high level and we have 120,000 staff. In 2010 my company was part of the Fortune 500. China is working to build a society with savings in energy in this environment. Environmental and resource restrictions are there, so this is an internal requirement. Our basis is coal, so 80 percent of our power generation comes from co-fired facilities, so a lot of water resources and coal is used and has environmental impact. So, in developing this kind of energy, we need to reassemble our electricity sources when we have to increase the efficiency in the use of these energies and reduce pollutants and emissions of CO_2.

Our company is energetically developing hydroelectric power, wind power, nuclear power, and

solar power and biomass power. In the hydroelectric area when we now -- in this area we are very -- paying much attention to improving our work methods, our designs, security, ecology, and the resettlement of populations. And in the wind power area, in our capacity we are first in Asia the Longyuan Electric Company have set up a number of wind farms -- have set up six big wind farms in nuclear power.

Our company in Fujian and Jiangsu various promises --we've got early development work in nuclear energy.

Mr. Zhang Xiwu is also here right now. China has not yet a holding company, so they have to do it.

In solar energy, we are developing solar energy. So, 13,000 kilowatts. 130,000 -- we also have 6 biomass power generation plants in Tibet or Jiangsu and various areas like that. So, using various facilities. And so our company is now the water and wind and renewable resources. Our capacity is 20 percent; in 2015 it will be over 30 percent;

2020 over 40 percent.

Now, China has come up with a small scale of co-fired units. We are adjusting its structure, so we also -- through these small units, we are also building the large environmental-friendly coal fired units. We have got rid of certain facilities, so coal consumption has gone down from 334.9 grams down to 326.3 grams. We are improving our coal fired plant structure, so we will see super critical units proportion has gone up from 31.4 percent to 50 percent.

So, my company -- we pay a lot of attention to environmental and efficiency issues. We have ionizing fire-lighting technique. We're using it in our units. Abroad we are using it in Korea, in Indonesia, and Russia.

In water-saving processes we have the use of cooling -- air-cooling systems we've already completed, so the NDFI units have gone into operation.

In environmental protection, my company has the self-removal activities. In 2010 we had gotten

rid of a large amount of sulfur.

So, we have in all these technical areas -- in steam turbines, increasing combustion -- done a lot, and China and the United States are the main consumer and production producers of energy. My company pays much attention to corporations in the United States. In UPC renewable energy company yesterday we signed a framework cooperation agreement. We will -- we have great prospects for these exchanges.

We would like to express my sincere thanks for the two organizations for organizing this (inaudible). On this basis, we should be able to -- we are propose -- mutual -- increase mutual visits and also a discussion of corporate strategies and developments and also increase cooperation and exchanges in technology and management and also personnel management and training.

Thank you very much for your time.

MR. FRIEDMANN: Jim Rogers is a standout himself, is one of the first people who recognized the

opportunities for me to your power corporations between the United States and China and technology corporations to engage. It's my pleasure to introduce him now -- Jim Rogers, Chairman, president, and CEO of Duke Energy.

MR. ROGERS: Good morning. I am honored to be here today and have an opportunity to briefly speak with you. Our company just announced a merger that when completed we will be the largest utility in the United States. But the reality is being the largest, of and in itself, means nothing unless you can create superior value for your customers and for your investors, and that is the challenge that is in front of us.

When I look in the mirror, we see ourselves as a technology company that is disguised as a electric utility. If you think back a hundred years ago, we were the Microsoft or the Google of the intel of that time.

I envision us returning to our roots today and in the future. Job 1 for us is to provide

affordable, reliable, clean electricity 24/7, 365 days a year as it is in China. That same mission exists there today. We are very committed to incorporating new, potentially disruptive technologies in our business model to allow us to achieve this mission of affordable, reliable, clean electricity.

Our business model is a little different than China, in that we're vertically integrated. We have generation, everything from coal to nuclear to wind to solar to natural gas. We have transmission distribution with smart grid deployment, and we also are very involved in terms of creating energy efficiency within the homes and businesses of our customers.

We're building a co-gasification plant with GE Technologies. It's 130 megawatts -- 630 megawatts. We're also very focused on building supercritical coal plants. We have three nuclear plants on the drawing boards. I share that with you, this huge building program in front of us, to give you a sense -- I envision ourselves as a technology company; I envision

this huge challenge of incorporating this huge challenge, of incorporating new technologies and rebuilding our system -- is why I thought it was critical that our company build deep and meaningful relationships with companies in China.

First, our mission is to collaborate on technology and on scaling. There's a lot of debate around intellectual property. But I believe that in China there is intellectual property with respect to scaling, and I don't think people fully understand the value of being able to scale technologies very quickly.

The other thing that we did going to China was to look for partners to co-invest with us in the U.S. as well as in South America. We have five developing and deepening relationships with state-owned entities, such as Huaneng, and private companies such as ENN. And we are working with both or all of them, each focused on creating value for both.

China's imperative is to provide universal access to electricity, recognizing the link of

prosperity to access to electricity. China is leading the world in nuclear with 24 nuclear plants being built; solar panel production; wind turbine; new, advanced technology coal plants; as well as smart grid. This is the IP of scaling that I was talking about.

But the imperative for the U.S. is very similar. By 2050 virtually every one of our power plants will be shut down, retired, and replaced -- except our hydro facilities. We also have to modernize our grid. We have to make our communities the most energy efficient in the world. So, in many senses, our challenge is very similar to your challenge, but we're starting it different places.

Our aspirations is that companies -- there would be an optimizer of electricity usage from generation to transmission to distribution to within the home. We have this long view of how we can use technology and optimize the usage of it in the efficiencies.

I have a very special relationship with

Chairman Wang of ENN, who is going to speak in a moment, and as deep as we've explored, integrated approaches to providing electricity from gasification, from trying to capture carbon from flue gas to accelerate the growth of algae and create bio fuel to echo cities to smart grids, and I think that's just one example.

And I could talk in detail about other relationships that were developing, but let me leave you. If you've heard anything -- or if you take anything from my words, take this. I believe in the power sector. Collaboration between our two countries is really critical. It's important. And at the end of the day, the importance is in raising the standard of living of our people in both countries. Unlike other industries where it's difficult to collaborate in the power sector, collaboration is natural because it's an infrastructure that benefits the people in each country.

A hundred years ago when we started down the road to provide universal access to electricity in the

United States, we could not envision refrigerators. We couldn't envision television, X-rays, MRIs, radios, computers, the internet. We enabled all of that by being able to provide electricity. We stand here today on the threshold as we adopt new technologies, as we re-design our systems, as we use these technologies and bring them together, as we optimize the use of electricity. We can't envision what we will enable in the next hundred years. I can clearly see electricity vehicles as a part of that. But there are many other things that will come that we can't envision. But based on our past and based on faith that we can achieve incredible value for our customers, collaboration is the only answer in our sector, because we accelerate the benefits for all our people, and that to me is a noble mission for all of us to share.

Thank you all very much.

MR. FRIEDMANN: Thank you very much, Jim. And thanks to all of the panelists here.

Although he will not be joining the panel,

because of his unique perspective and his unique relationship to many U.S. partners, we have asked Chairman Wang from ENN, Wang Yusuo, to come up and make a very brief statement, and that will lead us then into the panel discussion to follow.

Chairman Wang?

(Applause)

CHAIRMAN WANG: Ladies and gentlemen, guests and friends, good morning. Thank you very much for giving this opportunity to speak here and I'd also like to give my gratitude to Jim who gave very good evaluation of our collaboration, especially the personal friendship between us.

The topic of the forum today is collaboration, so I will start with collaboration. First point, why ENN enters into partnership with Duke Energy? How did this come from? From the Enterprise perspective there are two aspects. The first aspect is, we know that Duke Energy is the leading utility company or energy company in United States in terms of its capacity, its intelligent, great technology, it's

actually, indeed, the pioneer in the world.

ENN, my group, I have a lot of friends or colleagues here from China and we do gas, as you know, especially gasification technology, gasification technology and its distribution and transportation. We do well in this area.

And the second aspect, both Duke and ENN will work on, renewable energy. We know that Duke, in several areas, is doing very well, especially in wind power -- wind power, thermal, and biomass. Also, especially, in clean coal technology Duke has a lot of mature products. So, these are the foundations of our collaboration.

From our personal perspective we also have good foundation for collaboration as well. The first foundation is our mutual aspiration. When I first met Jim he shared his view with me. He said, he wished that Duke would reposition energy percept so I was very much inspired by that, first, so that’s our basis for collaboration, both personally and strategically.

Of course, we have a lot of like common

interests that I'd like to share with you, hobbies. Mr. Jim very much loves Chinese liquor Maotai, and is also a good drinker, and so both of us are good drinkers, so we find --we find a friendship in each other that way.

Initially, I wasn't scheduled to speak, but as we go through the session, Jim actually was supposed to speak first in order to save time for me, and he moved himself down and give me some time to speak. So, this is how we collaborate. It's the manifestation of our friendship.

So, look at the ties we wear. They match. So, that might be a coincidence but also it tells there's very good understanding between us.

Okay, now let me move on to our company -- my company, ENN Group. ENN Group is currently the largest clean energy holistic solution provider in China. So, we provide comprehensive, holistic solution package to customers and through this process we operate our natural gas, solar energy, and other energy services business. So, the main focus -- the

main focus I'd like to emphasize is here.

As solution providers our first mission is to -- in my understanding, our mission, our first mission, is to achieve integrated development between fossil fuel and renewable energy in a symbiotic and complimentary approach. They should not be separated from each other.

The second mission, I think, should be integrated model among heat, power, and gas. Only through this model we can achieve the highest efficiency. We can achieve the highest efficiency in terms of resource conservation. So, if we gather together talk about energy, we have to push innovative ideas. Through pushing innovation we can achieve better future together. Thank you.

MR. FRIEDMANN: Although it is not necessarily the only basis of collaboration, I personally favor collaboration that involves drinking together and hope to have the opportunity to do more of that in the future.

I would, however, like to focus now on a

discussion with the panel. In the next half hour I'd like to split the time in which we spend some time discussing among the panelists, whose own expertise and knowledge is so great, and whose commitment to partnership is so great. I then open up the panel to those in the audience who have additional questions.

First, the -- as I've said before, the efforts that the panel and its members have brought together in terms of collaborations are truly inspirational. In that context, I'd like to ask them if they have specific recommendations that they can make to support Sino-U.S. collaborations. In particular, what kind of unilateral actions might the United States or China take to support these kinds of collaborations? These might be in the form of tax breaks or loan guarantees or accelerated permitting. There's many, many things which could be done, but to instead ask the panelists where they see the most value in how the China or the U.S. can further support and accelerate their efforts.

MR. MORRIS: I think that was a question to

us, folks.

MR. FRIEDMANN: Yes, folks.

MR. MORRIS: The -- from our vantage point, we're quite encouraged at American Electric Power what the Department of Energy has done in supporting our endeavors with our partners as we reach across that great expansive water to share with each other the important steps that we're taking to continue to add intelligence to the energy delivery system, as well as ultimately developing, at scale, the projects that will demonstrate the ability to capture and store carbon as the world begins to coalesce around an approach that will address the issue of global warming.

Until that comes to some fruition, and I know our two countries are working toward that end, importantly so, it's difficult to find a process whereby we could move forward more aggressively. But through the Department of Energy and in support for the projects that we're doing along with our partners, we think that it's important to continue on that road

because that technology is important ultimately to all of us as we go forward and continue to burn coal as one of the basic fossil fuels for the baseload generation throughout the world.

SPEAKER: If I may follow on to Michael's point, coal is really critical to both of our countries and the reality is, we have to find a way to use it in a more environmentally benign way, and I think that is the challenge that we have.

But let me make kind of a generic sort of observation with respect to this collaboration. I believe that we can build a ladder of cooperation, but we have to build it one rung at a time, and we have to have milestones in the short-term, but we have to have a long view. And so we have to be able to achieve both -- short-term milestones so we see progress, but we need a long term view in terms of what can be achieved over time. And I believe to the extent companies work together, we build this ladder of cooperation one rung at a time and over time we will build such a ladder that that will embolden our

governments to be even more supportive of our efforts.

So, I don't look to the government first, in the United States, I look to our individual effort, and if we achieve results with that, the government will subsequently support what we are doing and one of the great challenges is, with the concern with jobs, is that people say, well, what if you do a joint venture with China and build in the U.S.? And this study really demonstrated that 70 percent of the jobs in infrastructure, like electric power plants, the grid -- 70 percent of the jobs are created wherever the infrastructure is built, whether it's built in China or in the U.S.

So, we need to put that issue behind us that political leaders like to raise and focus on how we can build this ladder of cooperation, because in that we will create true value, as I mentioned before, for all our customers, all our people, in both China and the U.S.

SPEAKER: Here I want to mention one issue, U.S. government, between companies from both

countries, how U.S. government can liberalize restrictions on high tech transfer. I know nuclear energy belongs to high tech area and when we work with U.S. companies, one serious problem we encounter is U.S. government 810 Article. We talk with the companies, but when it comes to this law, when it comes to authorization, during the process the government will make the process too long. Sometimes they will reject our cooperation intentions, so on this issue I hope U.S. government and through our communications and through our societies to appeal to the U.S. government to liberalize the restrictions and to liberalize our cooperation in the high tech area. Thank you.

SPEAKER: I think there's a corollary to what Chairman Wang identified and that is the issue of cooperation in nuclear technology has had a pinch point, the issue of proliferation and how two nations can cooperate in an effective fashion for peaceful use of nuclear energy and deal with this proliferation question.

I agree with Jim's point, government's not the answer to everything, but there is an issue that I think is relevant and pertinent for governments to facilitate and to bear into, and that is the concept of, how do we, as two nations that are dealing with similar issues relative to the back end of the fuel cycle, and how to deal with that in an effective, constructive fashion, that still generates peaceful use of nuclear energy, and that we can come together to be able to mutually have a common position on proliferation, I think, is at the basis of the 810 problem.

At the 810 problem, if the two nations could come together and come with a common vision as to how we manage proliferation and the civil use of nuclear energy, today, I think, that is one of the major potential roadblocks for deployment of what is the largest scale, non carbon generating energy source in the world.

So, my only, I guess, advocacy to this panel would be, government isn't the resolution for

everything, but there is a role for our two leaderships in government to come together and have a common vision on proliferation, and I think if we could resolve that, that would take us a long way.

MR. FRIEDMANN: Thank you. Back to a point which many of the speakers have made, and using Jim's metaphor, rungs on the ladder of collaboration, all of the people on stage represent companies with enormous flagship projects. In the case of AEP one of these projects is their integration of capture and sequestration of Mountaineer. For Jim Rogers that's embodied in the IGCC plant at Edwardsport and others. We have Shenhua's fabulous direct coal liquefaction plant and the CCS efforts there. We saw many of the projects that Dr. Wang is bringing forward through the State Nuclear Company, and Guodian, of course, is leadership in both pollution control and in wind.

One of the interesting things around these projects is that they are designed to develop and deliver certain kinds of results to the companies that are involved in them. However, they are not currently

paired with science programs or technology programs in which additional learnings can be brought to a wider set of stakeholders in private life.

In that context, I would like to ask the panelists if they imagine a science or a technology program paired with these projects, whether it's in wind or in sequestration or in nuclear, whether that would be a program that would enhance your program, or one that would complicate it, and how you can see those coming together?

Yes?

SPEAKER: Yeah, we do have a problem. One is, both sides -- electricity companies, we have a lot of demands, but we lack information. So, a problem of building bridges, in China, some technological areas, we have done a lot of exchanges with foreign counterparts, colleagues, and we have achieved some results.

Right now we are paying attention to -- in the field of new energy sources. There are some crucial technologies and some practical technologies,

for example, we mentioned carbon sequestration, also wind power, solar power, and how to store energy, and also the great -- how to commercialize these energies. Also, electric powers, how to save energy, some new technologies. We are looking at these issues. We have very good cooperation, but at the same time we hope to expand this field. Also, investment issue too, we hope that we have more. We welcome U.S. companies to invest in China. And recently we established a new research academy, we want high end foreign talents and technology to come to China. I hope people present to recommend some talents. This is a first.

Second issue here. We want to invest here in the U.S. We have technologies, products, that can be sold in the U.S. We believe we also -- lack of communication or information for solar energy, wind power generators. We really are doing great job in these areas. So, we particularly hope that we want to invest in new energy areas in the United States, so we want to do the projects and projects here. But right

now we are making little progress here. So, I only ask you presented here to help us to promote more Chinese investment in these areas, in this country.

MR. ZHANG: To follow up with the previous speaker, Shenhua Company has invested about 2.5 billion yuan in Beijing to establish a low carbon research institute. It has been about two years since we talked about this and we invited the (inaudible) from EPS company, low carbon research institute, to be the president of this institute, and we also invited Nobel Prize winner from the United States to serve as the consultants. We also invited ten engineers from the U.S., the top talents from the U.S., they are experts in low carbon. Now, this institute is not only belonging to Shenhua -- Shenhua Company. I believe this company is really owned by the entire world. So, we believe that this is really -- we're contributing to the common goods of the entire world.

We are obliged to invest lots of human resources, financial resources, to push this thing forward. Our goal is to build the three bases. The

three bases are, we want to build a integrated research facility and also secondly we want to build a talent pool, specializing in low carbon analysis, and thirdly, we want to be a sort of a base where innovations can happen from this particular base.

For a specific goal, we want to achieve is that we want to be like a laboratory in terms of innovating on the technologies related to clean coal, so we want to -- we hope that representatives from U.S. academics, research institutions or businesses, whoever that is interested in this joint endeavor, they can come to China, that we can work together.

SPEAKER: That was a wonderful description of cooperation because I really believe, in a very similar way, that research, development, commercialization, need to be together and they need to be a continuous loop where they're working together as we evolve these technologies.

I've been to Tsinghua University three times and had opportunities to see the work that's going on there. In the U.S., one of our great challenges, is

to be able to create research, development, and commercialization, and this loop, because today, the way it works in the U.S., money is distributed to various universities and labs and there's not that connection with the commercialization. My sense of it, and I've come back from Tsinghua with a different view, was some of the universities and areas that I do business with, and basically have urged them to take more of that approach where the scientists and the deep researchers are working with the development and the people that actually have to commercialize it, and if -- take our coal gasification plant -- if the scientists are there as we find problems or we see opportunities for improvement, we will be able to accelerate it to the second generation.

So, I do believe this combination is critical to success in the advancement of technology.

SPEAKER: So, when we think about the interface with others who can gain from projects that we're working on in collaboration with our Chinese partners, we are an open, transparent organization,

there are three steps to the carbon capture and storage activities. Obviously one is the chilled ammonia approach that we've chosen, and that is intellectual property owned by Alstom and they have every right to view that as one of their added values to the overall organization.

But the concept of chilled ammonia is well understood by all of us. It isn't the most complicated undertaking in the world and we can all learn from what's happening there.

Secondly is the sub surface characterization of what the storage complex looks like. That was done by Vittel in collaboration with Slumberger and we are very comfortable with sharing with anyone, our partners included, the knowledge of what we thought we saw, what we now understand we see, the drilling of wells and storing of liquids or gas underground is well understood worldwide and we're happy to share that information with anyone who is interested in learning more about that and we encourage others to join us in this endeavor as we go forward.

MR. FRIEDMANN: Thank you. I have a whole other raft of questions which I'm eager to ask, but I'm more eager to have questions from the audience, so at this point, open up here for the first question. They're coming with the microphone now.

SPEAKER: Hi, my name is (inaudible) from Innovation Center for Energy and Transportation. It is an NGO based in Beijing and United States. We try to build an information bridge between the United States and China on low carbon development as well. Thank you for the panelists give a great discussion on energy.

I get a little bit more confused about clean energy because it seems every energy can be clean, so I would like to ask maybe James and Chairman Xiwu, maybe, do you think there is any way to set up standards to rate what kind of energy is clean or how to make the clean energy, especially to give the energy a rating, a green rating, how to do that. I'm not sure if that's possible. Thank you very much.

MR. ROGERS: That is a very tough question.

I would approach it this way, I look at every option that generate electricity, has to match up across three standards -- affordability, reliability, and clean. Coal is very affordable but it's not very clean, and so you have significant investment in terms of making it cleaner. Wind is not very affordable, not as reliable, but it's very clean. Nuclear is expensive, not as affordable, it's very reliable, our plants run 98.6 percent of the time last year, and it is very clean because it's actually the only technology we have today to provide electricity 24/7, with zero greenhouse gases and no other problems.

Since we're such a large consumer, as AEP is, with respect to coal, we never really say we have clean coal, we say we have cleaner coal. It is a long road to clean coal. We just continue to make it cleaner.

So, what you're suggesting is a good idea but it has to be in the context of affordability, reliability, and clean, because there are trade-offs in each of these different ways of generating

electricity, and I think it would be maybe as important to try to do the analysis so that you understand what the trade offs are, and that would give you a more complete answer.

MR. FRIEDMANN: Chairman Xiwu, do you wish to comment?

DR. ZHANG: You pose a very difficult question for us. Talking about clean, nothing's clean. Wind power can have air pollution and also blocking your views. Hydropower is also polluting. But in general, wind power, solar power, they are generally considered to be clean. This is in a broad sense, so we need to expand more cleaner energy, otherwise we have nothing to do, right? But in China it's primarily we use coal fired mechanism, so we need to do the super, super critical generating capacity, we need to de-sulpherize, and of course also we would need to take care of the water pollution issue.

So, in general we will probably have different understandings at different stages of development, so we need to focus what we have at hand

right now.

SPEAKER: For the last five or six decades, the world has continued to electrify and air quality, water quality, has improved in every of those decades. Searching for an answer to what is clean energy is almost the improbable, so spending time on that is although interesting, not very productive. Just remember that as we continue to advance the electrification of the world's economy, we'll continue to improve the environmental impact that's associated with that undertaking. That's been true since the beginning of humankind, that will continue to be true.

MR. FRIEDMANN: Is there another question?

QUESTION: I have a question for the U.S. members of the panel here, and that is, what would your response be to members of the new Congress who might want to substantially cut back on sustaining U.S. federal government support for this collaboration in light of growing concerns about the deficit and the prospect that we're not going to have a carbon price very soon?

MR. ROGERS: AEP in the alphabet comes before Duke.

MR. MORRIS: And in keeping with Chinese tradition, Jim is respecting his elders.

That would be an ill-advised approach for the U.S. Congress to take. There are many areas where we can slim down the amount of money that's invested in programs that yield little benefit for the betterment of the world's experiences. Collaboration with our partners from China, in these particular areas, because of the never-ending onward progression of electrification of the worldwide economy, it's essential that we do these projects and invest in them and fund them, and I think when you speak to the new leadership in the House, particularly from our state, Ohio, Speaker Boehner, from a state that we do business in in the region of Congressman Upton, the leader of the Energy Commerce Committee, I think you'll see strong support for the continued funding of the kinds of things that are going to yield improvements in this particular space and lots of

places. Read today's Wall Street Journal article, there's a number of places where we can save a tremendous amount of misspent money. This isn't one of them.

MR. ROGERS: Michael's comments are perfect and I support every word in his comments. This is unusual. But I would only add one thing. I think that as we try to balance our budget, look at our deficit, deal with our national debt, we need to prioritize, and one of the things that should be at the very top of the list is how can we -- because we know by 2015 we'll retire and replace every plant -- how can we work and let Congress support the efforts to work even closer with China and keep in mind the IP of scale that China is developing. At the end of the day, that will translate into more affordable electricity in the United States, and so that needs to be a long-term view, and they should be encouraging collaboration even more than they're encouraging it today, but even without their encouragement, I believe that U.S. companies and Chinese companies, whether

they’re state owned or private, should be eagerly working, because we will both be better working together than separately.

MR. FRIEDMANN: I really wish that I could do this all day but I’ve been asked to direct you in an important way, and that direction is, when you leave here, turn right, head to Grand Room A for lunch, but before we go, I’d like to take an opportunity to go ahead and thank all of our panelists for their contributions and their candor and their commitment to these kinds of collaborations.

Thank you again.

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