

US-China Energy Cooperation Program 2013



Founding Member Companies



General Member Companies



US China Energy Cooperation Program



The US-China Energy Cooperation Program (ECP) is the commercial implementing arm of US-China clean energy collaboration. Founded in September 2009 by 24 US companies, ECP is the only private sector-led nongovernmental organization dedicated to clean energy business development, market expansion, foreign direct investment and job creation in both the United States and China. With official support of the US and Chinese governments, ECP's public-private platform empowers member companies to become part of a total solution industry consortium to deliver transformative business development outcomes that require a collective and coordinated effort. Members join ECP through working groups (WGs) to form industry value chains. Within each working group, members establish a sector development road map for the short-, medium- and long-term. Through this process, each working group identifies annual business development objectives and concrete initiatives for implementation.

In the course of four years, ECP's working group platform has increased its membership by over 40 companies, including Chinese firms, and partnered with numerous organizations to achieve the following outcomes:

- Establish new industries and markets.
- Influence regulatory policy.
- Serve as the industry voice in bilateral government dialogue.
- Facilitate commercial deals.

ECP: Generating Sustainable Clean Energy Business

Mission: Transform the US and China's 'traditional energy' way of life by generating sustained clean energy business and economic growth.

ECP, the commercial implementing arm of US-China clean energy collaboration, facilitates and supports clean energy

- Job Creation
- Intellectual Property Rights Protection
- Market Access & Sector Development
- Foreign Direct Investment

ECP Sector Working Groups

Clean Coal (CC)

Clean Transportation and Fuel (CTF)

Decentralized Energy and Combined Cooling, Heat & Power (DECHP)

Energy Financing & Investment (EFI)

Energy Efficient Building & Design (EEBD)

Industrial Energy Efficiency (IEE)

Nuclear Power (NP)

Renewable Energy (RE)

Shale Gas (SHG)

Smart Grid (SG)

Bilateral Government Support



US President Barack Obama and Chinese President Hu Jintao

ECP's unparalleled bilateral public-private partnership stems from its official recognition and institutionalized support by the US and Chinese governments at the presidential, agency, and local levels. With this bilateral endorsement, ECP members through the working groups collaborate closely with US and Chinese government stakeholders to design and implement clean energy industry initiatives that support national development priorities, plans, and bilateral activities.

Presidential Recognition: US President Barack Obama and Chinese President Hu Jintao underscored ECP's vital role in clean energy cooperation in the official joint statements during Mr. Obama's state visit to China in 2009. During President Hu Jintao's 2011 US state visit, 18 ECP member companies signed commercial agreements with their Chinese partners while eight ECP member companies signed commercial agreements during Vice President Xi Jinping's 2012 official visit to the United States.

Institutional Support: US government agencies - Department of Commerce (DOC), Department of Energy (DOE) and the US Trade and Development Agency (USTDA) - together with Chinese government agencies - National Energy

Administration (NEA) and Ministry of Commerce (MOFCOM) signed bilateral Memorandums of Understanding in support of ECP. The five agencies serve as ECP's official government advisers. At the 2011 Joint Commission on Commerce and Trade (JCCT), USTDA and NEA signed an MOU that recognizes support for ECP's initiatives to promote US and China clean energy business.

Bilateral Validation: Joint statements from the 2012 and 2011 US-China Strategic and Economic Dialogues, led by Secretary State of Hillary Clinton, Secretary of Treasury Timothy Geithner, Vice Premier Wang Qishan, and State Councilor Dai Bingguo, highlighted ECP initiatives as examples of mutually beneficial cooperation.



US Ambassador to China Gary Locke at 2011 ECP Roundtable



NEA Administrator Wu Xinxiang at 2013 US-China Energy Cooperation Meeting

Programmatic Cooperation: With support from the government advisers, ECP organizes an exclusive annual leadership meeting with Chinese commercial partners. In 2012, the State Grid Corporation of China hosted the event attended by executives from 20 Chinese companies to foster commercial partnerships. In 2011, ECP senior executives met with the NEA, MOFCOM, and NDRC leadership and department officials to review ECP working group business development objectives in an unprecedented day-long meeting with a Chinese government agency and international NGO.

High-level Communication: ECP members regularly take part in roundtable discussions with senior officials, including Ambassador Gary Locke, Secretary of Energy Steven Chu, USTDA Director Lee Zak, and State Department Special Envoy and Coordinator for International Energy Affairs Carlos Pascual, to discuss the US-China commercial energy landscape. Senior Chinese officials include NDRC Vice-Administrator and NEA Administrator Zhang Guobao and MOFCOM Vice Minister Ma Xiuhong.

Cross-Agency Engagement: In addition to the official bilateral advisers, ECP works closely the National Development and Reform Commission (NDRC), the Ministry of Housing and Urban-Rural Development (MOHURD), the Ministry of Environmental Protection (MEP), the Ministry of Industry and Information Technology (MIIT), and the Civil Aviation Administration of China (CAAC). Other US agencies include the State Department (DOS), Federal Aviation Administration (FAA), Department of Agriculture (DOA), and the Environmental Protection Agency (EPA).

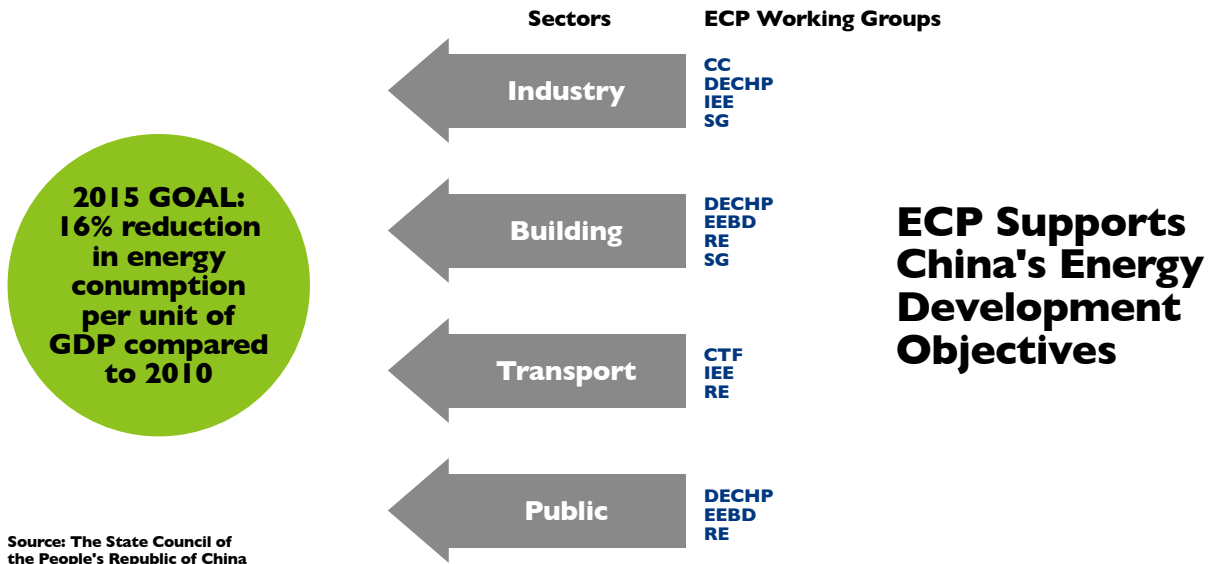
Local Government Collaboration: ECP members interact with local leaders and agencies to deploy commercial clean energy projects. With the support of ECP's bilateral government advisers, ECP working groups led provincial and municipal trade missions, including Chongqing, Hebei, Yunnan, Qinghai, and Shandong. In September 2012, the US Foreign Commercial Service and the Shandong Provincial Department of Commerce signed an MOU promoting clean energy development to be led by ECP members.

“The two sides welcomed the establishment of The U.S.-China Energy Cooperation Program (ECP), a partnership between government and industry to enhance energy security and combat climate change. The ECP will leverage private sector resources and expertise to accelerate the deployment of clean energy technology.”

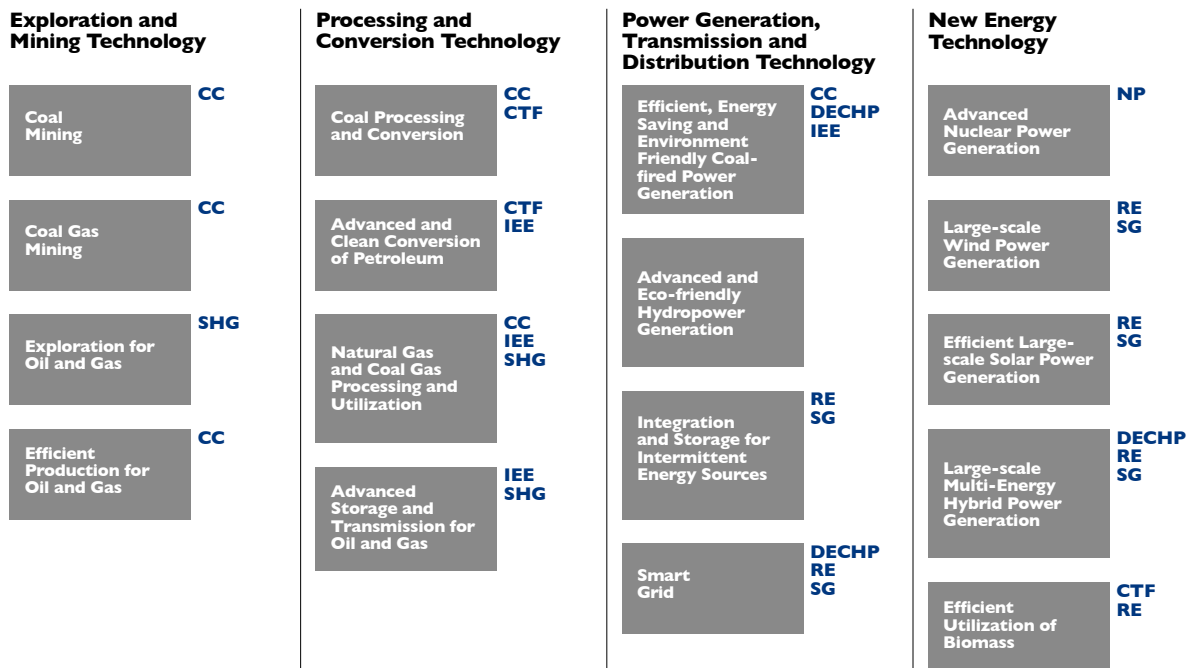
U.S.-China Joint Statement
November 17, 2009
Beijing, China

Transform the US and China's Traditional Energy Way of Life

China's 12th Five-Year-Plan for Energy Saving and Emission Reduction



China's 12th Five-Year-Plan for Energy Technology Development



Source: National Energy Administration of the People's Republic of China

Generate Sustained Clean Energy Business and Economic Growth



**Jobs
Created
by ECP
Members**

**1.6
million
jobs**



**US\$751
billion**

**Annual
Revenue
Generated
by ECP
Members**



Figures based on the publicly available 2012 data of the 2013 ECP membership. Jobs refer to global employees of ECP members.

Establish New Industries and Markets



ECP BRINGS TOGETHER GOVERNMENT AND COMMERCIAL STAKEHOLDERS TO LAUNCH GROUND-BREAKING INITIATIVES

Sustainable Aviation Biofuel

Under the leadership of members Boeing, Honeywell, and UTC Pratt-Whitney, CTF WG is implementing the Sustainable Aviation Biofuel (SAB) project in partnership with PetroChina, China National Aviation Fuel and Air China. The project is recognized by the 2011 US-China Strategic Economic Dialogue as a key area of bilateral cooperation and includes NEA, NDRC, CAAC, USTDA, DOE, DOC and DOA as the key government partners. SAB has four components:

- Strategy and Development Study: With support from USTDA, Boeing and PetroChina is working with NEA to develop policy recommendations for the aviation biofuel industry.
- Micro-Algae Development Research: Boeing with the Chinese Academy of Science Qingdao Research Institute established a Pingdu pilot facility in May 2011.
- Renewable Jet Fuel Development: Honeywell UOP initiated with PetroChina a feasibility study for the development of renewable jet fuel sector.
- Inaugural Biofuel Demonstration flight: SAB project partners successfully conducted China's first sustainable

biofuel demonstration flight on Friday, October 28, 2011. The demonstration flight used an Air China Boeing 747-400 powered by Pratt & Whitney engines, with 50 percent China-grown, jatropha-based biofuel jointly sourced and refined by Honeywell UOP and PetroChina. The biofuel was blended with traditional jet fuel by China National Aviation Fuel.

Smart Grid Automatic Demand Response Pilot Project

In a partnership with Tianjin Economic-Technological Development Area (TEDA) and the China Electric Power Research Institute (CEPRI) and State Grid Corporation of China, SG WG co-chair Honeywell and member AECOM have implemented China's first smart grid automatic demand response pilot project in Tianjin. With support from USTDA, DOE, DOC, NEA and NDRC, the project seeks to reduce electricity load, cost, and emissions and improve grid stability in commercial, industrial and government buildings while improving the stability of the power grid. The project was completed in November 2012.

Dialogue on Mercury Removal Standards

Together with US EPA, USTDA and DOC, CC WG is in consultations with the Chinese Ministry of Environment Protection and power providers to engage in a dialogue about the social, environmental,

and economic benefits of stringent mercury emission standards for coal-fired power plants in China. Led by members Albemarle and Chemtura Great Lakes Solutions, the dialogue includes US technologies and best practices that can be applied in the China power-plant sector. The initiative is a follow-up to the USTDA-funded February 2012 mercury removal reverse trade mission with Chinese regulators and power providers to the United States.

Pilot Projects for Distributed Energy Cooling, Heat and Power Tri-Generation

DECHP WG is facilitating the NEA-USTDA supported feasibility studies on the two national pilot natural gas fueled combustion turbine driven tri-generation projects: The two projects are based at the Xinzhuang industry park, which is owned by Shanghai Huadian Minhang Energy Co. The other is at Tianjin CNOOC Research and Development building facility, owned by CNOOC New Energy Investment Co. Member Black & Veatch serves as the primary contractor with Beijing Huajian as the subcontractor with members providing technical feedback. To be completed by end of 2012, the study will assess the pilot projects' technical, economic, financial, and environmental performance as well as the impact on regulatory policy and Chinese domestic and international equipment suppliers. The study's findings and recommendations will be incorporated into the further development of China's national decentralized energy combined heat and power (DECHP) industry policies.

Integrated Smart Grid Communication Model Study

With support from NEA and USTDA, SG WG launched in September 2012 the Integrated Smart Grid Communication Model Study with the China Electric Power Research Institute (CEPRI) and the State Grid Corporation of China. Led by SG WG co-chair Cisco, the study will review international smart grid communication standards and explore innovative approaches to establish a common system model for both the power grid and communication networks. It will focus on developing communication interface standards for power distribution and consumption. The outcome will be a demonstration pilot for the new integrated communication model with the State Grid Corporation of China.



Power-Plant Emission Retrofit Feasibility Study and Pilot

In a partnership with Huaneng Shandong Power Company, CC WG is conducting a feasibility study and pilot project demonstrating how NOx and other harmful emissions from coal-fired power plants can be reduced by use of advanced technologies through an Engineering, Procurement and Construction (EPC) business model. With support from USTDA and MOFCOM, CC WG co-chair LP Amina will facilitate the project implementation, which will include the design and identification of various US technological products and services, as well as financing. Launched in May 2012, the pilot initiative will consist of 10 coal-fired power plants in Shandong Province. The outcome will be a commercial mechanism for the deployment of emission reduction technologies in the power sector that can be replicated in other power plants across China.

“For LP Amina, ECP has been a true partner in the growth of our business in China. ECP has enabled LP Amina to develop trusting relationships with key government stakeholders, which led to concrete business opportunities in our core business as well as accelerating strategic R&D projects.”

Will Latta

Managing Director, LP Amina

2013 ECP Management Board Executive Committee
Co-chair and Clean Coal WG Co-chair

Influence Regulatory Policy



ECP SERVES AS A CHANNEL FOR MEMBERS TO PROVIDE RECOMMENDATIONS TO POLICY MAKERS

Dialogue on Diesel Engine Emission Regulation

In cooperation with the US-China Standards and Conformity Assessment Cooperation Program (SCACP) and the Committee of Vehicle Emission Control (CVEC), CTF WG members led by co-chair Cummins with support from members Honeywell, Corning and Tenneco organized the Diesel Emission Regulation and Control Technology Workshop in June 2011. The workshop, funded by USTDA, discussed the regulatory road map for China's intention to implement Euro VI heavy duty truck standards with Chinese government agencies, regulators and decision-makers as well as the technologies and solutions available to achieve the standards. Participants included the Ministry of Environmental Protection (MEP), National Development and Reform Commission (NDRC), Ministry of Transportation (MOT) and Beijing Municipal Environmental Protection Bureau.

Dialogue on Biofuels Technology and Industry Development

At the invitation of NEA, CTF WG members are active participants in China's biofuel technology deployment, industry planning and development

“As a Founding Member of ECP, Dow Chemical works with our peers to engage both the Chinese and US governments to develop clean energy and enhance the energy efficiency of the two countries. Our goal is to achieve business success that realizes the two governments' priorities to improve people's lives. ECP is a great platform to pursue this because we speak as the voice of industry”

Peng Ningke

Vice President, Government Affairs and Public Policy, Dow Greater China
2013 ECP Management Board Executive Committee Co-chair

and policy development. In August and October 2012, NEA's energy saving and technology equipment department invited members to join the Biomass Thermo-chemical Workshop and Non-food Biomass Feedstock Forum. During meetings, members shared their views and experiences in the biomass technology application, demonstration and commercialization to the participants, which also included the State Forestry Bureau, Ministry of Agriculture, research institutes and universities such as the National Energy Research and Development Center for Non-food Biomass (NECB), National Academy of Agricultural Sciences, and China University of Agriculture as well as Chinese firms, including PetroChina, Baosteel, and Datong. The industry dialogues are part of the Chinese government's national 12th five-year Plan for China's biofuels industry development.

National Industry Development Plans for Decentralized Energy and Combined Heat and Power

In a partnership with NEA, the DECHP WG facilitated an industry and government dialogue on China's DECHP sector development. The dialogue included bilateral workshops with key Chinese stakeholders to share experiences on the major industry issues, including grid connectivity and standards development. In August 2011, the WG organized a USTDA-supported reverse trade mission of Chinese officials including representatives from the NEA's oil and gas department, Ministry of Finance, Ministry of Housing and Urban Rural Development, Southern Grid and China National Overseas Oil Cooperation. The mission included visits to

WG member project sites and exchanges with the DOE, FERC, USTDA, State of Connecticut, USCHPA, USEA and WADE. As a result, the Chinese delegates gained a better understanding of the technologies, successful project applications and operation models in the US DECHP industry. Through this active engagement, the DECHP WG has participated in the decision-making process for the Chinese National Guideline for DE&CHP, which was issued on October 2011, and the resultant two national DECHP pilot projects.

Green Building Standards and Prototype Building Benchmark Tool Cooperation

Together with the MOHURD and China Academy of Building Research Institute (CABR), EEBD WG led by co-chair UTC participated in the technical exchanges on China's revision of its green building three standards. The review included standards for elevators and indoor lighting. In addition, co-chair ICF together with CABR and Tsinghua University's Architectural Institute developed a China prototype building benchmarking tool modeled after the US EPA ENERGY STAR Portfolio Manager tool.

Demonstration Commercial Green Building Projects to Advance Eco-City Development

In August 2012, the EEBD WG launched the Eco-City Projects – a program to promote live commercial eco-city demonstration projects that can serve as operable, sustainable, duplicable business models for Chinese eco-city development. The projects will be recommended by the EEBD WG for recognition by the MOHURD and DOE as part of the bilateral US-China eco-city initiative. Projects include single technology deployment, building retrofit, sustainable communities, and, city-wide/regions projects. The first two ECP Eco-City projects are GE's Xi'an Development Zone Comprehensive Municipal Management Platform Smart City Demonstration Project and ICF's "Quick Start" Low Carbon City Project in Yancheng, Jiangsu.



2012 Microgrid Roundtable



US Secretary of Energy Stephen Chu with ECP members in 2011

Consultations on Nuclear Energy Industry Safety, Best Practices, Standards and Protocols

NP WG members Westinghouse, GE, Duke, Curtiss-Wright Flow Control and Rosemount Nuclear Instruments are establishing an industry-government consultation pipeline with the Chinese industry regulators, such as NEA, the National Nuclear Safety Administration and the Chinese Atomic Energy Authority, and commercial stakeholders on the promotion of safe nuclear energy practice. The consultations include the application of safe and advanced US nuclear technologies, such as AP1000, industry best practices and technological applications, such as spent fuel upgrades and probabilistic risk assessment. Supported by DOE, DOC, DOS, and the US Embassy's Environment, Science, Technology and Health Section, the NP WG consultations will support the larger US-China government nuclear power dialogue.

Nuclear Liability Compensation Legislation Communication Channel

With the support of DOE, DOC, and DOS, the NP WG will build a coordinated and systematic communication channel to provide industry recommendations for US and Chinese governmental cooperation on China's legislative and technical efforts to comply with standards and practices prescribed in the 1997 Vienna

Convention on Supplemental Compensation for Nuclear Damage within the framework of the US-China Strategic and Economic Dialogue. The Chinese counterparts include the Chinese National Energy Administration, National Nuclear Safety Administration and the Chinese Atomic Energy Authority. The objectives are to create a standardized and more transparent nuclear liability regime that will provide stronger assurance for technologies to deploy in China's commercial nuclear energy industry. The NP WG's bilateral consultations will include first-hand market assessment and operating experiences that will strengthen the bilateral nuclear assurance regime.

Global Photovoltaic Grid Integration Standards Comparative Study

Together with the China Electricity Council (CEC) and China Electric Power Research Institute (CEPRI), RE WG led by UL is implementing a comparative study of photovoltaic (PV) grid integration standards in China, the United States and the European Union. The global comparison will assess industry and regulatory norms and compare technical issues, such as the utility permission procedure for PV power systems. Launched in September 2012, the study's objectives are to serve as a reference for China's development of policies, standards and utility permission procedures for PV power systems as well as to recommend potential international standards based on Chinese technical specifications.

US-China Smart Meter Standards Comparison Study

SG WG is participating in a comparison study of US-China smart meter standards that is led by National Electrical Manufacturers Association and China Electrical Equipment Industry Association. With support from USTDA and NEA, the study is focused on comparing the functional requirements of smart meter standards developed by the State Grid Corporation of China and Chinese national standards with those of the International Electrotechnical Commission and the standards in the United States. The study outcome will form recommendations for a smart meter standard harmonization road map for the Chinese government and industry. The study is to be completed by the first half of 2013.

US Wind Power Investment Manual

EFI WG co-chair Baker Botts and RE WG co-chair UPC Renewables produce the “Manual on Wind Power Investment in the USA,” a bilingual guide for Chinese investors seeking to pursue wind power investment opportunities in the United States. With support from member Tang Energy and Chinese partner Longyan Power Group, the guide features case studies of wind power investment projects in Texas and California by highlighting the regulatory process for investment execution. The manual was officially released at the Second US-China Renewable Energy Industry Forum held in Washington, DC, in September 2011 and is officially endorsed by the US Department of Energy and the Chinese National Energy Administration.

US Wind Farm Operation Best Practices

Led by co-chair UPC Renewables with support from UL and GE, the RE WG is conducting a study of successful cases of wind farm operation and management in the United States. The study’s objectives are to introduce to Chinese industry stakeholders the key standards related to preliminary work of wind farm development, construction, operation and management as well as the standards of wind turbines and control systems. In addition, it analyzes the wind power industry development,



market conditions and policies with a focus on wind power grid connection. The study was completed in November 2012.

Wind Power Grid Integration Policy Exchange

At the invitation of the grid division of NEA’s Electric Power Department, the SG WG has provided policy briefings on global wind power grid connection and dispatch mechanisms and rules. Member companies led by UL, GE and FloDesign presented the findings, which will serve as a reference for NEA’s renewable energy grid integration policy development.

Electric Power Demand Side Management Policies Workshop

Together with member AECOM, SG WG co-chair Honeywell organized a September 2012 workshop with NDRC’s Economic Operation Bureau, the State Grid Corporation of China, and China Electric Power Research Institute to report on the progress of the USTDA-funded smart grid automatic demand response pilot project in Tianjin. The meeting also included a sharing of global experience in demand side management policies and an exchange regarding the Demand Side Management Comprehensive Pilot Cities program to be jointly issued by the NDRC and Ministry of Finance.

Serve as Industry Voice in Bilateral Dialogue



ECP EMPOWERS MEMBERS TO REPRESENT INDUSTRY IN CHINESE AND US GOVERNMENT COLLABORATION

US-China Renewable Energy Partnership

RE, SG and EFI WGs are strong supporters of the US-China Renewable Energy Partnership, the bilateral cooperation program established by the DOE and NEA to accelerate the development and adoption of renewable energy and advanced grid solutions. Members participate in the partnership's formal dialogue and advisory groups on issues such as renewable energy policy and financing best-practices, grid modernization and advanced technologies. The highlight is ECP's engagement is the annual Renewable Energy Industry Forum (REIF). At the May 2010 REIF, ECP members served as the industry representatives in the bilateral dialogue that included more than 150 officials

from government agencies and top research centers. During the September 2011 REIF held in Washington, DC, the EFI and RE WGs organized a workshop on the release of the ECP "Manual on Wind Power Investment in the USA" – a bilingual guide for Chinese investors seeking wind power investment opportunities in the US and held a bilateral workshop on Chinese investment in the US with Chinese government and industry leaders.

US-China Advanced Biofuels Forum

CTF WG members are active participants in the US-China Advanced Biofuels Forum established by NEA and the DOE and DOA to facilitate cooperative research and commercial deployment of biofuels. The CT WG's Sustainable Aviation Biofuels project is supported by the forum. Members are currently planning to launch a new biofuels initiative through the forum focused on facilitating commercial partnerships with the major Chinese industry players.

US-China Energy Efficiency Action Plan

Since 2010, EEBD, IEE, and EFI WGs are actively involved in the US-China Energy Efficiency Action led by DOE and the NDRC through their participation in the annual US-China Energy Efficiency Forum (EEF) and facilitation of site visits to the United States. At the May 2011 EEF in San Francisco, ECP members served as the industry speakers and hosted site visits for the visiting Chinese officials from NDRC, MIIT, and MOHURD. During the June 2012 EEF held in Beijing, ECP members served as panelists on the sessions regarding industry efficiency, low energy consumption building technologies, codes and rating system, energy efficiency financing and energy efficiency standards, and labeling for equipment and appliances.

US-China Smart Grid Dialogue

SG WG joined the discussion at the US-China bilateral Smart Grid Dialogue co-sponsored by NEA, the US Federal Energy Regulatory Commission (FERC), and USTDA held on June 2012 in Shenzhen with Southern Grid as hosts. Members shared their expertise in smart grid implementation, integration of renewable energy and storage, micro-grids, distributed generation and EV charging, demand response and system optimization. In addition, they explored

cooperation opportunities with the more than 100 Chinese participants to develop smart grid commercial projects in China.

Chinese Mayors Training in Green Building Deployment

Since 2010, the EEBD WG is an active supporter of the Chinese Mayors Training program under The Mayors' Sustainable Cities Program facilitated by DOE, MOHURD and MOFCOM. The program's objectives are to organize exchanges of local officials from the two countries to visit each other's cities to share experiences and best practices in sustainable urban development and planning. Members have organized technical seminars and site visits to demonstration green building projects for the visiting Chinese mayor delegations across the United States, including Denver, Portland, and San Francisco. In addition, members have received visiting US delegations in China and shared their perspectives on Chinese green building investment opportunities for US cities. US cities participants include Birmingham, Alabama; Charlotte, North Carolina; Columbus, Ohio; Denver, Colorado; Fort Worth, Texas; Honolulu, Hawaii; New York, New York; Oak Ridge, Tennessee; Richmond, Virginia; San Francisco, California; and Washington, DC.



2012 US-China Smart Grid Dialogue

“ECP serves as an invaluable channel for companies, such as UL, to both the Chinese and US government agencies to timely share market and regulatory information – which allows UL to make the right business decisions. UL increasingly regards ECP as our extended team.”

Johnson Zhang

Global Wind Strategy Lead
Power Transmission & Distribution

Benjamin Shi

Director, China Government Affairs
UL

Renewable Energy WG and Smart Grid WG member

Facilitate Commercial Deals

ECP SEEKS BUSINESS OPPORTUNITIES THROUGH MARKET DEVELOPMENT, CUSTOMER ENGAGEMENT AND PROJECT IDENTIFICATION

Shandong Clean Energy Market Development

US Ambassador Gary Locke leads an exclusive mission with 10 ECP members companies to Shandong province in November 2011, which culminated in the signing of six MOUs valued at RMB3 billion (US \$470 million). The delegation met with more than 100 Shandong companies and members were guests at a dinner given by Governor Jiang Daming. US Minister for Commercial Affairs in China William Zarit led a follow-up ECP mission to Shandong province in September 2012 with seven ECP members to sign an MOU with the US Foreign Commercial Service and the Shandong Provincial Department of Commerce to promote clean energy development. During the meeting hosted by Vice Governor Xia Geng, ECP members LP Amina and Cummins respectively signed commercial agreements with Huaneng Huangtai Power Generation Company and Shandong

Zhenlong. In addition, the ECP delegation met with the leadership and companies of Dongying City to discuss technology deployment projects in the region.

Energy Efficiency Solutions for China's Energy Intensive Industries

At the invitation of Qingdao City Development and Reform Commission, IEE WG introduced US energy efficiency solutions for China's major industries at the June 2012 China International Cyclic Economy Exposition. During the US-China Industrial Energy Efficiency Forum, ECP members gave presentations to an audience of more than 150 representatives of central and provincial government agencies and business leaders.

Energy Efficiency Building Design Market Development in Chongqing

EEBD WG, together with the Chongqing Foreign Trade and Economic Relations Commission, Chongqing Construction Committee, and Chongqing Green Building Council, co-hosted the US-China Green Building Workshop on May 2012 during the Chongqing International Investment and Global Sourcing Forum. Led by Xiao Shaocheng, President of United Technology



2011 Commercial Signings with Shandong Governor Jiang Daming and US Ambassador Gary Locke



US Secretary of State John Kerry at 2013 US-China Energy Cooperation Meeting

Corporation (China) and member of the ECP Management Board Executive Committee, member companies shared best practices on green building design, low carbon city management and technology deployment.

Energy Efficient Building Design Collaboration with Architects and Designers

EEBD WG members organized technical exchanges to facilitate the deployment of advanced green building technologies with leading Chinese green building designers. Activities include workshops with Tsinghua Architectural Institute and Shanghai Xiandai Architectural Design Group. In December 2011, members agreed to collaborate with the China Green Building Council's (ChinaGBC) Building Plan and Design Group to deploy green building technologies and solutions. The collaboration was established after the members met with China Green Building and Energy Conservation Committee and 10 of the top Chinese architectural design institutes during the ChinaGBC annual meeting, which was also attended by representatives from the US Consulate in Shanghai.

Facilitating Biofuels Commercial Partnerships

NEA's biofuels section facilitated commercial matchmaking with CTF WG for 35 Chinese biofuel projects seeking international partners. Projects include cellulosic ethanol, biodiesel, thermochemicals, and microalgae.

“The innovations that we have developed through the Energy Cooperation Program are the kind of critical immediate innovations that are going to make us take advantage of this extraordinary opportunity that is staring us in the face.”

John Kerry
US Secretary of State

Renewable Energy Project Development in Qinghai

RE WG identifies potential collaborative solar energy deployment projects during commercial dialogue with Qinghai provincial government leaders and companies in June 2012 Qinghai Green Economy Investment and Trade Fair. The ECP delegation, led by US Minister for Commercial Affairs in China William Zarit, was hosted by Qinghai Vice Governor Gao Yunlong.

Industrial Energy Efficiency Project Development in Hebei

The IEE WG is currently working with the Hebei Provincial Development and Reform Commission's Power Demand Side Management and Instruction Center to implement energy efficiency projects in the province's heavy industry sectors, such as steel and cement. Facilitated by the Lawrence Berkeley National Lab, the collaboration is focused on deploying ECP member energy efficiency solutions through an energy service company established by the provincial government.

“As a member-driven public private platform, ECP enables Duke Energy to work more closely with our US and Chinese partners to launch and execute our business development objectives. We are proud to be part of the ECP platform.”

River Lu
China Country Director, Duke Energy
Energy Financing and Investment WG Co-chair

Moving Forward



Building on the power of our bilateral, public-private and sector-focused platform, ECP will strengthen our current programs and launch new initiatives, which transform the clean energy markets of the United States and China and promote lasting bilateral commercial cooperation. ECP will expand:

- New market opportunities – including the establishment of new working groups.
- Deeper bilateral cooperation – facilitating US-China commercial energy partnerships around the globe.
- Value added programs – capacity building initiatives that enhance US-China commercial energy partnerships.

An important initiative is the Clean Energy Acceleration Program (CENAP) – an ECP platform-based systematic process that advances:

- Clean energy technology deployment and large-scale commercialization in both China and the United States.
- Chinese foreign direct investment in the US clean energy sector.

Partnership Development: ECP directly engages with Chinese organizations and firms to foster commercial opportunities for the working groups.

Organizations include:

- China Academy of Building Research Institute
- China Chemical Industry Energy Efficiency Association
- China Electric Power Research Institute
- China Electrical Equipment Industry Association
- China Electricity Council
- China Green Building Council
- China Industrial Overseas Development & Planning Association
- China Industrial Energy Conservation and Cleaner Production Association
- China National Coal Association
- China Renewable Energy Industry Association
- China Renewable Energy Society
- China Wind Energy Association
- Energy Research Institute Center for Renewable Energy Development of the National Development & Reform Commission
- National Energy Research and Development Center for Non-food Biomass (NECB)
- Tsinghua University Architectural Design and Research Institute

Firms include:

- Baosteel Corporation
- China Energy Conservation and Environmental Protection Group
- China Guodian Corporation
- China Huadian Corporation
- China Huaneng Group
- China National Aviation Fuel
- China National Coal Group Corporation
- China National Offshore Oil Corporation
- China National Petroleum Corporation
- China Power Construction Corporation
- China Power Engineering Consulting Group Corporation
- China Power Investment Corporation
- ENN
- Goldwind Science & Technology Corporation
- Longyuan Power Group Corporation
- National Development Bank
- Petrochina
- Shenhua Group Corporation
- SINOPEC
- State Grid Corporation of China
- Suntech Power
- Wangxiang Group
- ZTE Energy

ECP Member Project Highlights

ECP Member	Partners	Project
Applied Materials	ENN, CECEP	Support for the 5MW US-China thin film utility solar demonstration project in Inner Mongolia
Boeing, Honeywell UOP, UTC Pratt & Whitney	NEA, MOFCOM, CAAC, USTDA, Air China, PetroChina, CNAF	Execution of inaugural biofuel flight demonstration on October 28, 2011 in Beijing, which featured an Air China Boeing 747-400 powered by Pratt & Whitney engines, with 50% China-grown, jatropha-based biofuel jointly sourced and refined by Honeywell/ UOP and PetroChina
Boeing	China Academy of Science Qingdao Research Institute	Establishment of an micro-algae research development project
Black and Veatch	NEA, MOFCOM, USTDA, Beijing Huajian, CNOOC New Energy, Huadian Minhang Energy	Primary contractor for the NEA-USTDA supported feasibility studies on the two national pilot natural gas fueled combustion turbine driven tri-generation projects
Caterpillar Solar Turbines	Shandong Jinneng Coal Gasification	Deployment of gas turbine generators that has reduced carbon-dioxide emission equivalent of the annual emission of 6,600 auto-vehicles
Caterpillar	Sihe Coal Mine Methane Power Plant	Deployment of power generators to capture hazardous methane gas waste from coal mines
Chartis Insurance	China Industrial Overseas Development & Planning Association (CIODPA)	Provides risk management training for CIODPA's members in their overseas energy investment projects
Cisco	NEA, MOFCOM, USTDA, China Electric Power Research Institute, State Grid Corporation	Lead study that will review international smart grid communication standards, explore innovative approaches to establish a common system model for both the power grid and communication network a focus on studying communication interface standards for power distribution and consumption
Cummins	Shandong Zhenlong Biochemical	Partnership to deploy energy efficient technology development of combined cooling, heating and power tri-generation systems for biogas produced by anaerobic digestion of alcohol residues and wastewater
	Institute of Engineering and Thermophysics, Chinese Academy of Science	Deployment of combined cooling, heating and power tri-generation systems and solutions at the Beijing South Railway Station
	ENN	Partnership to deploy heating and cooling systems at Changsha Huanghua Airport
Duke Energy	Huaneng Group, US-China Clean Energy Research Center	Agreement to conduct joint research into advanced coal and carbon capture sequestration technologies that will be deployed at Duke Energy's Gibson Station in Indiana
	Bank of China, Industrial Bank of China and Merchants Bank	Collective agreement with Bank of China, Industrial and Commercial Bank of China and China Merchants Bank to provide a credit facility that is the highest level of Chinese share in a US electric utility financing
First Element Energy	China Railway Group	Fuel cell demonstration pilot project in Yunnan province
	USTDA, Jiangsu Communications Services Co	Feasibility study for the deployment of fuel cell products in telecommunication systems
FXXC	CEPRI's Communication and Power Consumption Department	Agreement to conduct cooperative research and development in PLC chips
GE	China Electric Power Research Institute, State Grid Corporation	Agreement to jointly develop smart distribution and power utilization standards
	Xi'An High-tech Industrial Development zone	Commercial pilot project to deploy GE digital energy, intelligence platform, and third party integrator systems
Greentech Capital	Wanxiang, GreatPoint	Placement agent and financial advisor to GreatPoint Energy on its investment and partnership commitment from Wanxiang
Honeywell, AECOM	NEA, MOFCOM, USTDA, Tianjin TEDA, China Electric Power Research Institute, State Grid Corporation	Implementation of China's first smart grid automatic demand response pilot project in Tianjin, which seeks to reduce electricity load, cost, and emissions and improve grid stability in commercial, industrial and government buildings while improve the stability of power grid
Honeywell	China Environmental Science Press	Agreement to jointly cooperate on projects that facilitate environmental protection and energy efficiency in the buildings and industrial sectors
	Beijing Municipality	Installation of solar pool system integration monitoring system that will integrate solar hot water systems and whole building automation management platform and control functions
	Walmart	Installation of energy efficient solar remote monitoring applications at WALMART facility in Anyang City, Henan
Honeywell-UOP	PetroChina	Agreement to cooperate on a renewable jet fuel technology commercial demonstration project
ICF	Yancheng City Mayor's office	Design of an energy GHG reductions and cost saving plans for the city through building operation and management measures
Intel	State Grid Corporation	Strategic cooperation with State Grid Information & Telecommunication Company to deploy home energy management systems
LanzaTech	Shanghai Baosteel Gases Co, Chinese Academy of Science	Joint ventured to deploy advanced biomass thermo-chemical technology that can produce fuel ethanol from steel mill off-gases at Baosteel plant in Shanghai
	Shougang, Shougang TangMin	Joint venture agreement to construct a commercial demonstration plant that employs biological fermentation technologies to produce fuels and chemicals at one of Shougang's steel mills in China
	Yankuang Group	Agreement to use biological fermentation technology to produce fuels and chemicals from Yankuang's coal gasification unit
LP Amina	USTDA, MOFCOM, Huaneng Shandong Power	Feasibility study and pilot project demonstrating how NOx and other harmful emissions from coal-fired power plants can be reduced by advanced technologies through an Engineering, Procurement and Construction (EPC) business model
	Gemeng International Energy Co	Agreement to deploy poly generation technology to convert coal-based feedstock into petro-chemicals
Rockwell Automation	ChinaCoal Electric	Agreement to deploy energy efficient automation drives
	Harbin Jiuzhou Electric Co	Agreement to acquire the high voltage drives business of Harbin Jiuzhou Electric Co
UL	Yunnan Grid	Partnership to provide wind power grid integration standard consultation in southwestern China
	BYD	Partnership with BYD's Asia Testing Center to provide solar product certification services
	SANY	Partnership to provide certification services for SANY's wind turbine gearbox products
UPC Renewables, Baker Botts, Tang Energy	NEA, DOE, Longyuan	Production of the "Manual on Wind Power Investment in the USA" – bilingual guide for Chinese investors seeking to pursue wind power investment opportunities in the US that is officially endorsed by NEA and DOE



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