

APEC EXPERT GROUP ON NEW & RENEWABLE ENERGY TECHNOLOGIES (EGNRET)

41st Meeting

Beijing, China
14-19 October, 2013

Introduction

The 41st meeting of the Expert Group on New and Renewable Energy Technologies (EGNRET) was held on October 16 to 17, 2013 at Guodian New Energy Technology Research Institute in Beijing, China. In addition, the Low-Carbon Model Town Development Model Tool Kit Workshop was held alongside the meeting on October 14-15, 2013 at Chateau Laffitte Hotel, and the APEC Forum on Energy Storage System Application and Sustainable New Energy Supply was held on October 18-19, 2013 at the Westin Beijing Financial Street Hotel.

The EGNRET 41 meeting was co-chaired by the Dr. Bing-Chwen Yang (on behalf of the new EGNRET Chair, Dr. Chung-Tsien Chen) of the Industrial Technology Research Institute (ITRI), Chinese Taipei, and Ms. Yang Yang of the National Energy Administration, China. Representatives from Hong Kong, China, Indonesia, Japan, Korea, Malaysia, Philippines, Chinese Taipei, Thailand, United States, Asia Pacific Energy Research Centre (APEREC), and International Copper Association Ltd. (ICA) participated in the meeting.

Dr. Yang welcomed the delegates and opened the meeting, and Ms. Yang gave an official welcome to the delegates on behalf of China. Following the welcome, a final agenda distributed by the Chair was reviewed and accepted.

In addition, the Vice President of China Guodian Corporation, Mr. Mi Shuhua, gave a welcome to the delegates on behalf of sponsor. Also, the Guodian host gave delegates a tour to Guodian New Energy Technology Research Institute.

Overview of New and Renewable Energy in China

Mr. Wan Lin (the Managing Director of Beijing Energy Innovation Ltd, China) gave a detailed overview of current China's renewable energy utilization in the first presentation of EGNRET 41. Mr. Wan's presentation introduced China's renewable energy potential, challenges and orientation for renewable energy development, mechanism and policy, and barriers and solutions. He also briefly introduced the project of Low-carbon Model Town (LCMT), Development Model and Tool Kit

Mr. Wan expressed that China is rich in renewable energy sources. China is working on three "waves" of renewable energy. The first wave is about manufacturing, focusing on large scale, low cost, and fast development and production. The second wave is renewable power plant integrated with grid, focused on the features of low cost, clean and convenient. The third wave is securitization which is pushed by markets and capital.

All China renewables utilized is about 10^8 tce. The ratio of renewables to primary energy in China is 11.3% and the ration of non-fossil energy to primary energy in China is about 10.3% in 2012. The percentage of the clean energy in China still keeps growing.

The total China Renewables installed Capacity: Till 2012, the installed geothermal in China was about 30.2 MW, the solar on-grid was 3,280 MW, the biomass was 8,000 MW, the wind on grid was 60,830 MW, and the hydropower was 248,900 MW.

The total China renewable power generation: Till 2012, the power generation by geothermal in China was about 100 GWh, the solar on-grid was 3,500 GWh, the biomass was 38,000 GWh, the wind on grid was 100,400 GWh, and the hydropower was 864,100 GWh.

He mentioned that the opportunity and challenge of renewables in China. The opportunities include abundant nature resources, great laboratories, and extensive markets. The challenges include immature technical solution/industry/business model and potential environment/social problems. Mr. Wan showed examples of risk and casualty of PV installation.

Mr. Wan also listed the China APEC activities in 2014 including APEC Project Meetings, EWG Meeting, Energy Ministerial Meeting, and the Leaders' Summit.

APEC economies have already possessed a great number of technologies, plans and models which apply to the Low-Carbon Model Town (LCMT), and create huge market at the same time. How to develop large scale LCMT in a short time window efficiently and properly is a big challenge to APEC member economies as a whole.

APEC Low-Carbon Model Town Development Model and Tool Kit Study (LCMT-DMTK) is aimed to provide recommendation and suggestion regarding: 1) Procedure that help to improve development efficiency, 2) Solution, from existing project, research and other industry, 3) Tool kits, especially feasibility study and planning, etc., on the basis of China-EU cooperation, and the Solar Decathlon competition held in China in August 2013. Mr. Wan listed the sessions of the project in 2014:

- . Kick-off Meeting in Beijing
- . Session 1: Low Carbon Model Town (LCMT) Development Model and Tool Kit
- . Session 2: Low Carbon Model Town (LCMT) Pilot Project Case Study
- . Session 3: Panel Discussion
- . Session 4: Onsite Investigation to LCMT Project

The deliverable achievement of this project will be a published research report and one symposium in China in 2014.

Mr. Wan's detailed presentation is available on the EGNRET website at:

<http://www.egnret.ewg.apec.org/meetings/engret41/index.html>

Recent APEC Activities

The Chair briefed the recent and upcoming APEC activities and developments that occurred after the last meeting of the EGNRET on April 2-5, 2013 in Ho Nai, Viet Nam, including Third APEC Senior Officials' Meeting(2013.7.5-6 Indonesia), Conference on Clean, Renewable Energy and Sustainability in the APEC Region (2013.9.30-10.2 Indonesia), The 25th APEC Ministers Meeting (AMM 25) (2013.10.5 Indonesia), 21st Leaders' Meeting (2013.10.1-8 in Indonesia), and EWG 46 (2013.11.18-22 in Viet Nam).

The Chair finally reported the future prospects of EGNRET in 2014. EGNRET will

continue the implementation of new and renewable energy technology workshops and projects that help build the needed human capacity to implement clean energy development across the APEC region, cooperate with EGEE&C to enhance progress in the Low-Carbon Model Town project. This can demonstrate cost effective low carbon technologies (conservation and renewable energy) integration in the urban development, cooperate with APERC to create follow-up PRLCE activities which provide the necessary technology or training workshops for the host economies to implement the recommendations by the PRLCE review team, and push forward the harmonization of testing standards for products/ system related to the new and renewable energy. This can help in reducing clean energy trade barriers in the APEC region.

The Progress of Peer Review on Low-Carbon Energy Policies (PRLCE) in APEC

Mr. Yeong-Chuan Lin, a Senior Researcher from Asia Pacific Energy Research Centre (APERC), gave the first presentation in EGNRET 41 about the detailed review of The Progress of Peer Review on Low-Carbon Energy Policies (PRLCE) in APEC.

First of all Mr. Lin gave a definition of APERC's Cooperative Activities as "APERC's activities to directly cooperate with the APEC member economies in solving their energy problems or improving their energy situation". The major parts of APERC's Cooperative Activities are peer reviews and workshops.

Peer reviews are made by experts, mainly from the APEC region. They visit a host economy to review its energy situation and policies, and make recommendations for the host economy. To hold workshops, experts from within and outside of the APEC region work with host economy share information necessary for policy planning in workshop events.

Mr. Lin also presented the Mechanism, Objectives, Process, and Activities of Peer Review of Low Carbon Energy Policies (PRLCE). The PRLCE-1 from phase 1 was held in Thailand. Thailand hosted the first PRLCE-1 on 21~25 May 2012 with the focus on Alternative Energy Development Plan (2008-2022) (AEDP) for Solar, Wind, Biomass, Biogas and other renewable energy. The review team consisted of 7 experts (from China, Japan, Malaysia, Chinese Taipei, USA, Viet Nam, IRENA) and 3 APERC Researchers and the review team experts have provided 45 policy recommendations.

A critical step in the promotion of low-carbon energies at the economy level is the development of an alternative energy master plan with aggressive and clear targets. The Ministry of Energy does this through the development of the AEDP.

The PRLCE-2 of PRLCE phase 1 was held in the Philippines. The Philippines hosted the second PRLCE-2 on 19~23 November 2012 with the focus on National Renewable Energy Program (2011-2030) (including the Feed-in Tariff system for renewable energy). The review team consisted of 6 experts (from China, Japan, Malaysia, New Zealand, Thailand, and IRENA) and 3 APERC Researchers.

The review team experts have drafted policy recommendations. The first draft of Review Report for the 2nd PRLCE in the Philippines was compiled and then reviewed by the Philippines Government. The final draft will be tabled for the endorsement of EWG46 at Da Nang, Viet Nam in November.

On PRLCE phase 2, Indonesia hosted the first PRLCE-3 on 13-17 May, 2013 with the focus on Renewable Energy. The review team consisted of 5 experts (from China,

Japan, Malaysia, Thailand, and USA) and 3 APERC Researchers. The draft of review report for the PRLCE-3 in Indonesia was compiled and is now under review by the Indonesian government. The draft Review Report will be tabled for the endorsement of EWG 46 at Da Nang, Viet Nam in 2013 November.

To sum up, Mr. Lin made a conclusion that increase in energy consumption and fast economic growth in the APEC region needs a more aggressive approach and efforts for the development and application of low carbon energy.

Host economy and other APEC economies can share experiences and knowledge on best practices for efficient and effective policies to promote low carbon power supplies (such as renewable energy), including how to adapt policies and measures / technologies which have been successful elsewhere to the unique conditions of each economy.

Valuable recommendations on how to improve low carbon energy policies can be gained for host economy. APERC will act as the coordinator to promote the sustainable development of the APEC Region in cooperation with each economy in the region.

Japan representative, Mr. Satoshi Nakanishi, mentioned that PRLCE has been very successful. Japan will continue the positive participation to PRLCE from member economies. The peer review report for China has already online on APERC website. China new energy policies prepared by the expert group can be found online. On the other hand, Japan will not reduce the number of PRLCE activities per year, considering the possible participated economies number may decrease.

Mr. Lin's detailed presentation is available on the EGNRET website at:

<http://www.egnret.ewg.apec.org/meetings/engret41/index.html>

Report on Progress of APEC Low-Carbon Model Town Task force

Following the APERC's presentation was made by Mr. Lin Yeong-Chuan on behalf of Mr. Shobu Nagatani from Agency for Natural Resources and Energy METI, Japan, gave a Report on Progress of APEC Low-Carbon Model Town Task force.

There are four parts in this presentation, which is APEC LCMT Task Force Meeting, Overview of the APEC Low Carbon Model Town (LCMT) Project, Progress and Future Development of the LCMT Phase 3 Project, and Progress of the LCMT Phase 4 Project

About the background of LCMT, the three roles of the LCMT Task Force mentioned in 9th APEC Energy Ministers' Meeting (Fukui, Japan - 19 June, 2010) includes developing the concept of the Low-Carbon Town in APEC Region, conducting the Feasibility Study on selected case town, and sharing best practices for making low-carbon communities a reality

In 5th APEC LCMT Task Force Meeting (the latest meeting was on 18 March, 2013, in Samui Island, Thailand). There are 12 Economies, Lead Shepherd, EGEEC and EGNRET Chairs, and the APERC attended this meeting. In the meeting, the organization for Economic Co-operation and Development, (OECD) gave a presentation of "Green Cities Programme". The participant also discussed the plan of Actions for 2013 and collaboration with OECD and reported the progress of the APEC LCMT Phase 3 Project in this meeting.

Mr. Lin showed the mechanism of LCMT project. The three activities of LCMT project include D/S report, concept, and policy recommendation. The feasibility of study of D/S report was conducted by urban design consultants. The Study Group A conducted concept part and the Study Group B made the policy recommendation.

Mr. Lin made a progress report about LCMT phase 3. The phase 3 tasks includes the feasibility study, which the Progress Report will be presented to LCMT Task Force members and EWG members at EWG 46 in November, 2013, the concept (refinement) of "The Concept of the Low Carbon Town in APEC Region" will be tailored for Redevelopment of existing sites, and the policy recommendations which includes the recommendation on regulatory schemes, technical matters, etc. The Policy Review Report will be distributed to EWG members

Mr. Lin also showed the time table of action plan for future phase 3 project in 2013. For phase 4 project, invitation letter for nominations of LCMT Phase 4 Project was sent to eligible economies on 2nd September 2013. In October, Japan (Project Overseer) evaluates the nomination and will send out the recommendation to LCMT Task Force and EWG for endorsement. At EWG 46 on 18-22 November 2013, the official announcement of the case study for LCMT Phase 4 Project will be made.

There are three cases studies have been performed in this project. They conducted the feasibility study and policy review for particular cities. All related reports, reviews and final reports also can be found online.

Final Report for APEC Low Carbon Model Town Project Phase 2

http://publications.apec.org/publication-detail.php?pub_id=1410

The Concept of the Low-Carbon Town in the APEC Region, 2012 (2nd Ed.)

http://publications.apec.org/publication-detail.php?pub_id=1398

Policy Review for Low-Carbon Town Development Project in Koh Samui, Thailand

http://aperc.iej.or.jp/file/2013/8/21/LCMT2_PolicyReviewReport_Samui.pdf

This presentation is also available on the EGNRET website at:

<http://www.egnret.ewg.apec.org/meetings/engret41/index.html>

Mr. Satoshi Nakanishi mentioned that Japan requests to continue the positive participation of LCMT project. LCMT is a very important project to APEC.

In addition, Dr. Yang made some comments after the presentation by Mr. Lin. He mentioned that during the LCMT, they have developed Concept Notes which highlight the guideline of how to develop LCMT in APEC region. The concept notes can be downloaded on the website.

ICA's Programs on Renewable Energy

Mr. Pierre Cazelles from International Copper Association (ICA) gave a presentation about ICA's programs on Renewable Energy.

First of all Mr. Cazelles gave an introduction about ICA Asia. ICA is an international non-profit organization dedicated to promote the use of copper. ICA has offices in Singapore, Thailand, Vietnam, Indonesia, Malaysia, Korea, Taiwan, Japan, and China. So far the most important program of ICA is Sustainable Energy (energy efficiency and renewable energy/access to energy) as copper is the most efficient electrical and thermal conductor.

Mr. Cazelles also briefed a history of cooperation with APEC, which includes that

APEC Distribution Transformers Survey: Estimate of Energy Savings Potential from mandatory efficiency standards (EGEEC, ICA co-funding: 130,700 USD), APEC-ASEAN Harmonization of Energy Efficiency Standards for Air Conditioners: Phase 1 (EGEEC, ICA co-funding: 88,000 USD), Evaluation of Harmonized Test Methods and Energy efficiency Level for Commercial Refrigeration – Prior 4 products (SEAD-CAST; ICA co-funding: 20,000 USD), Evaluation for energy efficiency improvements in installed electrical motors (SEAD-CAST; ICA co-funding: 40,000 USD), Catalyzing Monitoring, Verification & Enforcement Best Practices Exchange and Building Compliance Capacity in the APEC Region (EGEEC; ICA co-funding: 20-30,000 USD), and APEC Workshop - Market Compliance Mechanisms for Energy Efficiency Programs (EGEEC; ICA co-funding: 15,000 USD).

Mr. Cazelles explained that renewables is 12 times more copper-intensive than conventional energy systems, including wind turbines, PV, CSP, small hydro, small renewables system..., etc.

The object of ICA Asia programs on renewals is to increase copper consumption through accelerated uptake of renewable energy technologies in Southeast Asia. The overall strategy will be overcoming barriers to renewable energy deployment. Their target group includes power utilities, policy makers, regulators, financial institutions service providers, and industry associations. The ICA's target countries include Indonesia, Malaysia, Philippines, Thailand, Vietnam, China, and India. ICA's strategy aims to overcome the barriers of financial, regulatory, and technical problems.

The key output of ICA includes building the partnership with USAID, ADB, Sun Power, DOE, and others for a rural electrification program in Mindanao, 2011-2013. The results include national certification programs on solar PV design, installation, and servicing and maintenance, all women Solar PV Training (Technical and Organizational), organizational and technical training for rural electrification village enterprises, teaching renewable energy in primary schools, and development of micro-hydro projects

In addition, ICA conducts a technical cooperation with Vietnam Electricity (EVN) towards integration of wind into Vietnam power system, since 2012. The main outputs include Technical Manual for Interconnecting Wind Power to Vietnam Power System, Grid Impact Studies and Draft Wind Grid Code.

To conclude, Mr. Cazelles pointed out that ICA will move toward to strong synergies due to common goals (promotion of RE technologies and RE-based systems) and common approaches (policy and standards development, capacity building, experience sharing, support to market development). ICA is an international non-profit organization and has a strong implementation capacity; it also brings significant co-funding. Interest of APEC cooperation for ICA: forum, network, influence to accelerate RE promotion. Finally, advantage of ICA-APEC cooperation will be putting human and financial resources together for a better impact.

Mr. Cazelles also gave an update full project proposal “Capacity Building on Wind Grid Interconnection Technical Guidelines and Code” at later meeting session for new submission project.

These presentations are also available on the EGNRET website at:
<http://www.egnret.ewg.apec.org/meetings/engret41/index.html>

Member Economy Presentations: Current New and Renewable Energy Priorities in APEC Member Economies

The EGNRET has set Renewables Status Review Program as the topic to review the priorities on developing new and renewable energy technology in APEC economies every two years. The last review program was at EGNRET 37 in August 2011 in Taipei, Chinese Taipei. Therefore, the theme of member economy presentation for EGNRET 41 was “Current New and Renewable Energy Priorities in APEC Member Economies”.

All EGNRET 41 meeting presentations are available on the website at:

<http://www.egnret.ewg.apec.org/meetings/egnret41/index.html>

EGNRET Project Update

The EGNRET has a variety of projects underway to facilitate use of renewable energy technologies in the APEC region. Currently 6 EGNRET projects have been completed recently since EGNRET 41, and 17 projects including one self-funded project are on-going.

In addition, 6 project Concept Notes and one self-funded project Concept Note have been submitted for funding in Session 3, 2013.

Completed EGNRET Projects

Three EGNRET completed projects include:

- C1. Prospects for Marine Current Energy Generation in APEC Region (S EWG 23 11A) (Russia)
- C2. Best Practices in Energy Efficiency and Renewable Energy Technologies in the Industrial Sector in APEC Region (S EWG 19 11A) (Thailand) (Cooperated with EGEE&C)
- C3. 2013 APEC Workshop on Geothermal Technology (SF EWG 01/2013) (self-funded, Chinese Taipei)

The above projects are described briefly as below.

C1. Prospects for Marine Current Energy Generation in APEC Region (S EWG 23 11A) (Russia)

The objectives of the project are within the context of APEC Sustainable/Green Growth agenda, to raise awareness of the benefits of marine energy generation with particular focus to marine current energy, and to compile widely dispersed information on the deployment of marine current generating technologies and to make this information accessible to APEC economies.

The methodology of this project consists of two major components, including review of marine renewable energy technologies and stocktaking of successful deployment models, and two-day conference structured along the lines of the review and stocktaking exercise.

The project steering committee and the lead consultant of the project are now preparing to launch the review and stocktaking exercise, which corresponds to an essential component of the project work plan.

Project website: www.marineenergy-apec.ru.

The major findings of this project include:

1. The project experienced operators/developers of the renewable energy solutions (marine and wind energy) will benefit from exposure of their success stories to an APEC-wide audience comprising dynamic developing and developed economies.

2. Private sector stakeholders/investors (both in the energy and financial sector) will learn about investment opportunities with respect to energy efficient technologies and products; it's important to involve oil & gas companies because there is currently little experience in maintenance of offshore facilities and costly infrastructures from the oil industry (ships, platform equipment) have to be used.

C2. Best Practices in Energy Efficiency and Renewable Energy Technologies in the Industrial Sector in APEC Region (S EWG 19 11A) (Thailand) (Cooperated with EGEE&C)

The key objective of this project is to develop a report which clearly identifies the examples of successful adoption of new and renewable energy technologies combined with energy efficiency in the APEC industrial sector, the obstacles that prevent the adoption of technologies, and the applicability of lesson learned from previous reports including APEC supported activities.

The final output will be suggested roadmap for the successful implementation of industrial sector new and renewable energy and energy efficiency system in APEC member economies.

The major findings of this project include:

1. The main outcome of the project is a report which clearly identifies the examples of successful adoption of new and renewable energy technologies combined with energy efficiency in the APEC industrial sector, the obstacles that prevent the adoption of technologies, and the applicability of lesson learned from previous reports including APEC supported activities. The final output will be suggested roadmap for the successful implementation of industrial sector new and renewable energy and energy efficiency system in APEC member economies.
2. The leaders and citizens in APEC economies who will take the information developed in this project to develop clean renewable energy and energy efficiency based systems in their economies that will directly improve their local environment based on industrial sector development.

The report of the project Best Practices in Energy Efficiency and Renewable Energy Technologies in the Industrial Sector in APEC Region can be found online:

http://publications.apec.org/publication-detail.php?pub_id=1404

C3. 2013 APEC Workshop on Geothermal Technology (SF EWG 01/2013) (self-funded, Chinese Taipei)

EMM9 in 2010 has instructed EWG to continue its assessment of renewable energy options for reducing carbon emissions. Abundant geothermal resources in the APEC region should be developed intensively. Therefore, the objectives of this project are to exchange the information and promote geothermal systems.

The activities of this workshop include two parts:

- (1) two days of workshop in Taipei covering exploration, drilling, reservoir engineering, and energy conversion of geothermal systems
- (2) one day of by invitation only Tatun volcanic site visit and a visit to related research institute to understand local capabilities and discuss possibilities of collaboration on exploiting geothermal energy.

The workshop was held 3 days from June 25 to 27, 2013 at NTUH International Convention Center in Taipei.

The major findings of this project include:

1. The APEC Workshop on Geothermal Energy Development has invited experts and industry heavyweights from the US, Japan and New Zealand to discuss the green energy's future trends and development.
2. Topics are to include the current status of geothermal energy, development policies and strategies, and an overview of the most advanced geothermal technologies.

The workshop serves as a pivotal step in gathering international capacities and in providing surging momentum in geothermal development. All workshop presentation can be found online:

<http://www.egnret.ewg.apec.org/workshops/GeothermalEnergy/index.html>

On-going EGNRET Projects

Currently the EGNRET is implementing 17 projects:

- P1. Urban Development Smart Grid Roadmap: Christchurch Recovery Project (EWG 08 2012) (Cooperated with EGEE&C) (New Zealand)
- P2. Research on the Application of Physical Energy Storage Technology to Enhance the Deployment of Renewable Energy in an APEC Low Carbon Town (EWG 16 2012A) (China)
- P3. The Comprehensive Analysis and Research of Key Technologies and Commercial Model of Low Carbon Model Town Applied in Yujiapu CBD EWG (EWG 11/2012A) (China)
- P4. APEC Peer Review on Low-carbon Energy Policies (PRLCE) Phase 2 (EWG 18 2012A) (Japan)
- P.5 APEC Workshop on Best Practices on Financing Renewable Energy (EWG 21 2012A) (Viet Nam)
- P.6 Promoting Stable and Consistent Renewable Energy Supply by Utilizing Suitable Energy Storage Systems (EWG 22 2012A) (China)
- P.7 Operation Technology of Solar Photovoltaic Power Station Roof and Policy Framework (EWG 24 2012A) (China)
- P.8 Study on Measures to Reduce Energy Intensity in APEC Low Carbon Town (EWG 23/2012A) (China)
- P.9 APEC Smart DC Community Power Opportunity Assessment (Thailand) (Approval in Session 3, 2012)
- P.10 APEC Low Carbon Model Town Capacity Building Development (China) (Approval in Session 3, 2012)
- P.11 APEC Low Carbon Town Development with District Energy System (China) (Approval in Session 3, 2012)
- P.12 APEC Low Carbon Town Plan and Design Contest (self- funded, China)
- P13. APEC Low Carbon Model Town (LCMT) Promotion through Eco-Point Program (LCMT-EPP) (EWG 10/2013A) (Thailand) (Session 2, 2013)
- P14. APEC Low-Carbon Model Town Development Model and Tool Kit Study (LCMT-DMTK) (EWG 13/2013A) (China) (Session 2, 2013)
- P15. APEC Photovoltaic Application Roadmap and Model Study (PVARM) (EWG 11/2013A) (China) (Session 2, 2013)
- P16. APEC Workshop on Promoting the Development of Wind Energy (EWG 14/2013A) (Viet Nam) (Session 2, 2013)
- P17. APEC Photovoltaic Communication and Cooperation Platform (PVCCP) (EWG 16/2013A) (China) (Session 2, 2013)

The above projects are described briefly as below.

P1. Urban Development Smart Grid Roadmap: Christchurch Recovery Project

(EWG 08 2012) (New Zealand lead) (Cooperated with EGEE&C)

Christchurch, New Zealand has been hit by a series of earthquakes in 2010 and 2011. The resulting damage has required demolition of significant areas of the city. The recovery and rebuilding process will take time, but offers a unique opportunity to establish cutting edge energy efficiency and renewable energy technologies in Christchurch.

The New Zealand Energy Efficiency and Conservation Authority (EECA) proposes to lead a study that will result in a 'Road Map' for establishing a 'smart electricity grid' in Christchurch, to deliver the maximum social, environmental and economic benefits to the city. The recovery of Christchurch represents a remarkable opportunity to provide learning and demonstration value to the APEC Community on integrating smart grid technologies into the rebuilt city. In addition, the PO has applied for an extension

P2. Research on the Application of Physical Energy Storage Technology to Enhance the Deployment of Renewable Energy in an APEC Low Carbon Town (China)

Energy storage is essential to utilize renewable resources and reduce CO₂ emissions considerably because of the intermittent and uncontrollable availability of renewables. It is also an acceptable method of smoothing power demand, which is a major part of our national energy security and sustainable development.

With the research and demonstration of energy storage technology, energy consumption of buildings will be reduced by 20%. The technology offers substantial benefits in terms of reducing the need for traditional air conditioning and it allows for the shifting of electricity usage from on-peak to off-peak hours.

This research will provide a base for policy and the criteria of energy storage system which will contribute to the exploitation of energy storage technology and promote its application in APEC regions.

P3. The Comprehensive Analysis and Research of Key Technologies and Commercial Model of Low Carbon Model Town Applied in Yujiapu CBD (China)

This project will propose a smart energy network system that encompasses the entire circle for sustainable and low-carbon development in Yujiapu financial district, Tianjin city.

Smart grid (SG) which could achieve deployment and integration of distributed resources such as solar and wind energy and area energy supply network (cooling, heating) have been extensively discussed independently.

In this study, the Smart Energy Network system proposed will integrate those two systems together in order to promote use of renewable energy and consequently reduce CO₂ emission of entire city.

The smart energy network makes it possible to collect real-time data from both demand side of energy use and operation status of energy supply side within Yujiapu district, which could substantially support the management staff to achieve an efficient operation.

P4. APEC Peer Review on Low-carbon Energy Policies (PRLCE) Phase 2 (EWG

18 2012A) (Japan)

The PRLCE responds to the Energy Ministers' instruction from their meeting in Fukui, Japan in 2010; to explore mechanisms to encourage APEC economies to set individual goals and action plans for introducing low-emission power sources.

As with the APEC Peer Review on Energy Efficiency (PREE), a peer review team comprised of experts on low-carbon energy supply policy from APEC member economies will review goals and policies to promote low-carbon energy supply. The review team will provide recommendations based on this and assist with effective policy making in this area as well as the effective formulation of action plans etc.

Low-emission power sources include renewable, nuclear and fossil-fuel with carbon capture and storage. The scope of review will be decided depending on the host economy's priorities. Two additional PRLCE's are planned in 2013.

P5. APEC Workshop on Best Practices on Financing Renewable Energy (EWG 21 2012A) (Viet Nam) (Approval in Session 3, 2012)

This Project aims at holding an APEC Workshop on Best Practices on Financing Renewable Energy. The Workshop is scheduled to take place in Vietnam in March 2013.

The key objectives of the proposed project are to analyze the current situation and best practices on financing renewable energy in the APEC region; present best practices and exchange views of policy-makers, regulators, academia and business representatives on financing renewable energy; and develop recommendations for more effectiveness in renewable energy financing.

P6. Promoting Stable and Consistent Renewable Energy Supply by Utilizing Suitable Energy Storage Systems (EWG 22 2012A) (China)

The project will provide key findings and recommendations regarding the construction, operation and management of energy storage utilization in three different types of renewable energy generation systems. It will detail suitable technology solutions, outline essential business model parameters, and develop policy recommendations – all aimed at promoting widespread understanding and deployment of renewable energy storage systems that supply affordable, stable, and consistent electricity in APEC region.

The project will select representative demonstrations integrating energy storage systems in wind farms, solar power generation projects, and distributed energy micro-grids in APEC economies as the test cases. The project will measure and analyze in-depth first-hand data in cooperation with world leading organizations from APEC economies. Also, the project will provide a useful platform for sharing findings and experience and recommendations with all key stakeholders.

P7. Operation Technology of Solar Photovoltaic Power Station Roof and Policy Framework (EWG 24 2012A) (China)

Central cities of many APEC economies have sufficient space resource for solar photovoltaic power station roof, which is a realization way of APEC low carbon model town. Solar photovoltaic power station roof is an emerging electricity market model that has already proved its efficiency of transforming the electric supply industry into a centralized, producer-controlled network.

Can this model be an effective solution to the PV stations? Does it require a special policy in combining to the grid? What design a pilot project should follow to introduce solar photovoltaic power station roof to APEC economies where urban space resources are abundant? These are the questions that the project seeks to address through analytical and physical meeting activities.

Official website and expert database will be established before July 2013. A congress is arranged in Beijing in Aug 2013.

P8. Study on Measures to Reduce Energy Intensity in APEC Low Carbon Town (EWG 23/2012A) (China)

This project, submitted from Shanghai, China, is intended to quantitatively investigate the measures to reduce energy intensity of economic output in APEC Low Carbon Town (LCT). These measures include establishing low carbon industries, applying low carbon urban layouts, generating low carbon energy, developing low carbon buildings, establishing low carbon transportation and promoting resources recycling. The objective of the project is to provide a practical framework for developing LCTs under the context of developing APEC economies in terms of its economic level, energy sources, climatic conditions and investment capabilities.

The project activities will mainly include:

- 1) Investigation on the effect and effectiveness of the various measures,
- 2) Identification of best practices thereof and their benefits in terms of reducing energy intensity,
- 3) Organization of a workshop to disseminate the practices of the new town of Songhua River Farm in Heilongjiang province, China.

P9. APEC Smart DC Community Power Opportunity Assessment (Thailand)

Smart direct current (DC) community power systems have the capability to provide energy services at the community level at a reduced cost and higher reliability than conventional fossil fuel based microgrid systems. Such systems are particularly suited for the rural areas of developing APEC member economies that often lack grid connected electrical service.

Smart DC power systems link together electricity produced from renewable energy systems (photovoltaic (PV), wind, biomass, or small hydro) and efficient DC appliances including electric vehicles (EVs) without the need for costly conversion of the power from DC to AC via an inverter which is typically utilized in fossil energy based microgrids. This project will include a report which identifies the current DC community power landscape and opportunities in the APEC region and a project workshop which will bring representatives from the research community, industry, and government officials in the APEC region to help develop an overall roadmap for smart DC community power systems development in the APEC region.

P10. APEC Low Carbon Model Town Capacity Building Development (China) (Approval in Session 3, 2012)

Smart direct current (DC) community power systems have the capability to provide energy services at the community level at a reduced cost and higher reliability than

conventional fossil fuel based microgrid systems. Such systems are particularly suited for the rural areas of developing APEC member economies that often lack grid connected electrical service.

Smart DC power systems link together electricity produced from renewable energy systems (photovoltaic (PV), wind, biomass, or small hydro) and efficient DC appliances including electric vehicles (EVs) without the need for costly conversion of the power from DC to AC via an inverter which is typically utilized in fossil energy based microgrids. This project will include a report which identifies the current DC community power landscape and opportunities in the APEC region and a project workshop which will bring representatives from the research community, industry, and government officials in the APEC region to help develop an overall roadmap for smart DC community power systems development in the APEC region.

P11. Promote APEC Low Carbon Town Development with District Energy System (China)

This proposed project is designed to establish a framework of District Energy System with Multiple Forms of Supply in the low-carbon town, including CCHP (combined cooling, heating and power), roof solar energy and water source heat pump. The low-carbon town here will be the efficient and sustainable stepped utilization model of planned energy resources as well as diversified and clean energy utilization structure, with low carbon emission and the principle of scientific energy using, comprehensive energy using and systematic planning.

With enormous potential in terms of energy intensity reduction and CO₂ emission, it is beneficial to assess energy policies of APEC member economies and achieve the goal of APEC's meeting.

P12. APEC Low Carbon Town Plan and Design Contest (self-funded, China)

To promote the concept of low-carbon towns, enhance the public awareness of low-carbon buildings, demonstrate the effectiveness of green building design, share knowledge on low-carbon town design, the organizer will hold an international contest on low-carbon building and towns design for selected demonstrative buildings and towns in China. The winner of the contest will get the contract for the projects. The organizer will assist the winner to start business in China. The contest will also align with other international organizations like EU, World Energy Council, IEA and Energy Charter.

This contest is a process of exploring and sharing knowledge of energy-efficient buildings and low-carbon towns. Contest will be held within different groups: college students, professionals and the public. The project will consist of three phases: (1) May 2013, contest rules to compose and start to invite teams (2) Jul 2013, team start design process with support from the organizer, (3) Oct 2014, board members to choose outstanding teams and award will be announced.

P13. APEC Low Carbon Model Town (LCMT) Promotion through Eco-Point Program (LCMT-EPP) (Thailand)

The project will develop a guideline (including the identification of goal and scope definition, certification criteria, an institutional framework, short- and long-term benefits) of an eco-point program for supporting the implementation of low carbon measures previously proposed in the APEC projects. It will also build up an Eco-Point Program (EPP) Forum which is an on-line networking system for sharing experiences

and knowledge on low carbon technologies and society among the APEC member economies.

A roadmap for the guideline implementation will be developed using Samui Island as a case. Planned project activities include the guideline, roadmap and EPP Forum development, public consultation via the EPP Forum, meetings and seminars. The project will be carried out over 1 year period from May 2013 to April 2014 in Thailand. Nonetheless, the EPP Forum will broaden the physical boundary of project results to be capable for wide applications in APEC member economies.

P14. APEC Low-Carbon Model Town Development Model and Tool Kit Study (LCMT-DMTK) (China)

The APEC economies have already possessed a great number of technologies, plans and models which apply to the Low-Carbon Model Town (LCMT), and create huge market at the same time. How to develop large scale LCMT in a short time window efficiently and properly is a big challenge to APEC member economies as a whole.

APEC Low-Carbon Model Town Development Model and Tool Kit Study (LCMT-DMTK) is aimed to provide recommendation and suggestion regarding: 1) Procedure that help to improve development efficiency, 2) Solution, from existing project, research and other industry, 3) Tool kits, especially feasibility study and planning, etc., on the basis of China-EU cooperation, and the Solar Decathlon competition held in China in August 2013. The deliverable achievement of this project will be a published research report, and one symposium in China in 2014.

P15. APEC Photovoltaic Application Roadmap and Model Study (PVARM) (China)

The Photovoltaic Application Roadmap and Model Study (PVARM) project responds to the 20th APEC Economic Leaders' Meeting and 10th APEC Ministerial Meeting in Russia in 2012; to explore potential field and model for large scale application of Photovoltaic in future. The key activities are:

1. To carry out case study and SWOT analysis to typical PV project, including casualty and losses, in different area and environment,
2. To bring suggestion of possible PV application roadmap for APEC economies' reference,
3. To compare and discuss the advantages and weakness of different PV development models, including large size ground-mounted power plant, industrial and commercial project, residential project, and application in agriculture, transportation, etc.

A workshop will be held in China as APEC chair in 2014 and a written report will be shared in EWG website.

P16. APEC Workshop on Promoting the Development of Wind Energy (Viet Nam)

In the context of significant industrial and population growth, increasing shortages of conventional energy and sharp fluctuation of price, renewable energy, including wind energy appears to be an efficient and sustainable alternative.

The APEC Workshop on Facilitating the Development of Wind Energy aims to:

1. Identify obstacles for a wide application of wind energy;
2. Exchange and discuss current strategies, policies and technologies in the APEC region which also creates a platform for member economies, especially developing ones to build up capacity for government officials in the process of policy making and implementation of wind energy projects;
3. Explore further cooperation opportunities among APEC member economies, with the ultimate goal of ensuring energy security for the sake of APEC's sustainable growth.

P17. APEC Photovoltaic Communication and Cooperation Platform (PVCCP) (China)

The Photovoltaic Communication and Cooperation Platform (PVCCP) project is:

- 1) To establish a PV System Life-cycling Risk Management Scheme, to identify and control potential risks of different period including planning, design, manufacturing, construction, maintenance, etc
- 2) To develop tool kits to carry out risk analysis and provide compatible and consistent evaluation systems, standards, evaluation methods, and database,
- 3) To provide support to EGNRET and related stakeholders who wish to evaluate the risk and quality of specific PV project,
- 4) To provide content and tool support concerning PV to the Knowledge Sharing Platform (KSP) of Energy Smart Communities Initiative (ESCI). A workshop will be organized in China in 2014.

New Project Proposals for Funding in Session 3, 2013

The EGNRET submitted 6 project Concept Notes for funding in Session 3, 2013, and all received BMC in-principle approval. These full proposals will be submitted to the APEC Secretariat by 15 or 25 November, 2013:

- [NRE133-1] Capacity building for Installers and System Designers for Solar PV Rooftop Installations (USA)
- [NRE133-2] APEC Conference on Facilitating the Solar Supply Chain (Viet Nam)
- [NRE133-3] APEC Low Carbon Model Town Building Index System Research (China)
- [NRE133-4] APEC Low-Carbon Model Town Energy Management System Development and Application Research (China)
- [NRE133-5] APEC Low-Carbon Model Town Heating System Application Model and Best Practices (China)
- [NRE133-6] District Energy Systems Development Roadmap Study in APEC Economies (China)

The above projects are described briefly as below.

[NRE133-1] Capacity building for Installers and System Designers for Solar PV Rooftop Installations (USA)

This Project is proposed to overcome important barriers in the form of lack of or inadequate competency of rooftop solar PV installers and system designers, through appropriate training and certification programs.

The training will focus on aspects insufficiently addressed and often overlooked: selection of appropriate materials and products, proper installation practices, rooftop fire safety hazards during installation and overall safety of installation during operation, wiring and connection to the grid.

The long-term objective of this project is therefore to increase the performance/output of rooftop solar PV systems and facilitate connection to the grid for rooftop solar PV systems, as a means to support APEC economies' efforts in increasing the share of electricity from renewable energy sources

[NRE133-2] APEC Conference on Facilitating the Solar Supply Chain (Viet Nam)

This project proposes to hold a 2-day APEC Conference on Facilitating the Solar Supply Chain in Viet Nam in the 2nd quarter of 2014. The main objectives of the projects are:

1. To update information on trends of solar panel source and possible changes in demographics on supply chains in the future;
2. To create a platform for APEC member economies to discuss current supply chain management procedures and networks in the solar industry;
3. To discuss opportunities and challenges in the solar equipment industry, with possible recommendations to tackle with such challenges;
4. To explore potential cooperation opportunities among APEC member economies in facilitating the solar supply chain.

[NRE133-3] APEC Low Carbon Model Town Building Index System Research (China)

This project proposes to hold a 2-day APEC Conference on Facilitating the Solar Supply Chain in Viet Nam in the 2nd quarter of 2014. The main objectives of the projects are:

1. To update information on trends of solar panel source and possible changes in demographics on supply chains in the future;
2. To create a platform for APEC member economies to discuss current supply chain management procedures and networks in the solar industry;
3. To discuss opportunities and challenges in the solar equipment industry, with possible recommendations to tackle with such challenges;
4. To explore potential cooperation opportunities among APEC member economies in facilitating the solar supply chain.

[NRE133-4] APEC Low-Carbon Model Town Energy Management System Development and Application Research (China)

APEC Low Carbon Model Town (LCMT) related projects have provided lots of valuable reference information concerning policy, model and best practices to APEC member economies. Energy Management System (EMS) is an important tool and approach to push forward LCMT

The LCMT-EMSDA project's goals including:

1. Briefly review the latest development, technology, solution and research concerning EMS in APEC region.
2. Analysis the advantages and potential risks or weakness of EMS application.
3. Summary the proper procedure and process, key points to develop EMS.
4. Best practices of different EMS development and application, including residential house, building, renewable energy power plant, harbour, etc.
5. A final report will be published and special workshop will be organized as part of APEC China year 2014.

[NRE133-5] APEC Low-Carbon Model Town Heating System Application Model and Best Practices (China)

The central and distributed heating system is an important component of energy system in Low Carbon Model Town (LCMT). Poor planning, design, operation and maintenance of Heating System would not only waste lots of energy and money, but could also cause serious safety risk and pollution to the city and wide region around. The APEC Low-Carbon Model Town Heating System Application Model and Best Practices (LCMT-HSAM) project is aimed to:

1. Summarize the latest development of research, product and solution of different economic heating system.
2. Analysis best practices, advantage and weakness of different heating system.
3. Provide application model to help related stakeholders to choose or analysis different heating system.
4. Organize a workshop in APEC China year 2014 to share LCMT-HSAM project outputs and exchange knowledge and experiences among participants. A written report will be prepared as part of workshop materials.

[NRE133-6] District Energy Systems Development Roadmap Study in APEC Economies (China)

It is proved in many economies that District Energy System (DES) is a cost-effective measure to increase energy efficiency and reduce carbon emission. This project aims to share DES techniques and practice experiences to all APEC economies. The following activities are planned:

1. Case studies including site visits and interviews, seminars, and campaigns shall be organized to study a number of selected DES cases in and around APEC economies, led by an expert team. A comprehensive research report shall be created to summarize and categorize the case studies.

2. A set of practice guidelines shall be developed by the expert team to specify the techniques and protocols of certain DES systems.
3. An international DES symposium shall be organized to involve stakeholders from main APEC member economies for technique and policy communication to share the research fruits.

The guideline development and symposium shall both take place in China in 2014.

Note on APEC Project Submission Process

The EGNRET Secretariat presented the new development of APEC project submission.

According to the BMC record, the approval rates of project submission in the past 5 years were 76% (2008), 53% (2009), 53% (2010), 73% (2011), and 48% (2012), respectively, and the average success rate was 58%. The approval rate of EGNRET projects for Session 3, 2012 was 83.3%, BMC in-principle approval rate of EGNRET Concept Notes for Session 1, 2013 was 50%, and for Session 2, 2013 was 100%.

The EGNRET Secretariat emphasized that each Concept Note (including title page) should be less than 3 pages, and each project full proposal should be no more than 12 A4 pages, including the budget. The templates of Concept Notes and Full Project Proposals are shown in the Guidebook on APEC Projects (8th edition) published in June, 2013. The useful information for project submission including 8th ed. Guidebook, forms, and resources (including Project Quality Training Materials) can be found at APEC Project website directly:

<http://www.apec.org/Projects/Forms-and-Resources.aspx>

Also, if EGNRET members would like to propose other new concept notes for Session 1, 2014, the deadline will be announced by BMC in late 2013. All concept notes for standard projects must be endorsed by EGNRET before sending to EWG for further endorsement and ranking. Therefore, the concept notes should be sent to EGNRET before 2 weeks of the APEC deadline.

In addition, Since EGNRET project submission has been booming recently, in order to assist member economies in project management for submission and implementation, EGNRET Secretariat would appreciate if member economies could cooperate with the following actions:

- . When proposed member economies submit full proposal to APEC Secretariat, Please also send a copy to EGNRET Secretariat.
- . When proposed member economies submit Monitoring Reports and the Completion Report, please inform EGNRET Secretariat with a copy.
- . When the project is completed, please send two-page project summary to EGNRET Secretariat. This summary will be reported to the EWG meeting by EGNRET Chair.
- . Please inform EGNRET Secretariat, when you upload the final report to APEC. EGNRET Secretariat will also inform all EGNRET members.

If it would be possible, please present your project final outcome at EGNRET meeting, when project is completed.

Development of New Projects for Session 1, 2014 Funding

Four new Concept Notes were proposed at the Meeting for endorsement for applying funding for Session 1, 2014.

- [NRE141-1] APEC Building Integrated Thin-film PV Promotion Study (China)
- [NRE141-2] APEC PV Power Plant Design Evaluation Study (PVDE) (China)
- [NRE141-3] APEC Photovoltaic System Performance Ratio Evaluation Study (PV-PRES) (China)
- [NRE141-4] APEC Photovoltaic System Best Practices and Latest Development Comparative Study (PV-BPLD) (China)
- [NRE141-5] Roadmap Study of APEC Low Carbon Town Development (LCMT -RM) (China)

These projects are described briefly as below.

[NRE141-1] APEC Building Integrated Thin-film PV Promotion Study (China)

The project will be divided into 3 stages. Stage 1: make the research survey about APEC economies' technology standard, construction environment, policies and application situation of building integrated with thin-film PV (thin-film BIPV). Stage 2: make the summary and analysis from the outcome of the research survey into Development Report of Thin-film PV in APEC Area. Stage 3: organize the meeting for information exchange and experience sharing among APEC economies.

[NRE141-2] APEC PV Power Plant Design Evaluation Study (PVDE) (China)

The APEC PV Power Plant Design Evaluation Study (PVDE) responds to the APEC 2013 Leaders' Declaration 'invigorate work to develop clean and renewable energy'. The PVDE project is to

- 1) Identify and collect various problems, failures and risks during PV power plant design.
- 2) Prepare PV design standard and regulatory list and database.
- 3) Recommend basic framework of PV power plant feasibility study and design documentation list.
- 4) Recommend design evaluation framework and main content concerning PV, electric and mounting parts.

An APEC PV Design Evaluation Guidebook will be shared among APEC member economies and a workshop will be hosted in China in 2014.

[NRE141-3] APEC Photovoltaic System Performance Ratio Evaluation Study (PV-PRES) (China)

The APEC Photovoltaic System Performance Ratio Evaluation Study (PV-PRES) is designed to fulfil following four goals:

- 1) To develop standard and regulatory list as reference for PV system Performance

Ratio (PR) evaluation.

- 2) To provide a set of testing method and quantitative calculation formula of PR evaluation.
- 3) To propose core requirement and Key Performance Index (KPI) of equipment and instrument to test PR.
- 4) To recommend framework and main content of PR evaluation report.

A Guidebook of how to evaluate PV system PR will be published and shared among APEC member economies and a workshop will be organized in China in 2014.

[NRE141-4] APEC Photovoltaic System Best Practices and Latest Development Comparative Study (PV-BPLD) (China)

The APEC Photovoltaic System Best Practices and Latest Development Comparative Study (PV-BPLD) project responds to the 25th APEC Ministers Meeting and 21st APEC Economic Leaders' Declaration, to develop clean and renewable energy within APEC region. The objects of PV-BPLD projects are:

- 1) To carry out comparative study of different PV system practices, including most popular large scale PV system, high concentrated PV system (HCPV), low concentrated PV system (LCPV), PV system with optimizer or micro-inverter, etc.
- 2) To recommend best practices in different APEC member economies to increase safety and efficiency, and reduce cost.
- 3) To prepare a written report and host a workshop in China during APEC China year 2014.

[NRE141-5] Roadmap Study of APEC Low Carbon Town Development (LCMT-RM) (China)

The APEC economies have already proposed numerous technologies, plans which apply to the Low-Carbon Model Town (LCMT), such as Yujiapu and Samui Island. How to develop large scale LCMT in the sustainable, efficiently and properly way is a big challenging to APEC economies as a whole.

Roadmap Study of APEC Low Carbon Town Development (LCMT-RM) is aim to outline the goals, barriers, strategies necessary for achieving LCMT. It is used to answer three fundamental questions of LCMT: (1) Where are we going? i.e. what are our vision, mission, objectives, goals and targets etc. (2)Where are we now? i.e. present state of town, technology, markets etc., and (3) How can we get there? i.e. policy measures, action plans, R&D programs, long-term & short-term strategies etc.

At least ten mini-conferences in various regions and a large scale workshop later 3 days' in Tianjin, 2014, China would be hold, to discuss the LCMT-RM based on the different scenario.

After briefing discussion, the EGNRET Representatives supported these projects, and also agreed that all economies participated in the EGNRET 41 meeting would be these projects' co-sponsors.

The revised concept notes should be sent back to EGNRET Secretariat as soon as possible, and will be submitted to EWG for further ranking and endorsement by the deadline (to be announced by BMC, late 2013).

Administration and Operation

In EGNRET 40, the Chair Dr. Tom Lee announced that he would be having a new assignment at Industrial Technology Research Institute (ITRI) that results in the difficulty for him to continue taking the chairship of EGNRET. Later, Chinese Taipei assigned Dr. Chung-Hsien Chen (ctchen@moeaboe.gov.tw), the Chief of the Renewable Energy Section, Energy Technology Division at Bureau of Energy, Chinese Taipei to hold the Chair position from EGNRET 41 in October, 2013. Also, a new working team, Dr. Bing-Chwen Yang (bcyang@itri.org.tw), Director of Planning and Business Development Division at Green Energy and Environment Research Laboratories at ITRI, and Dr. Chang-Chung Yang (ccyang@itri.org.tw) Ms. Vivian Hsieh (vivianhsieh@itri.org.tw) also from ITRI will hold the EGNRET Secretariat after EGNRET 41.

In addition, after discussion, the venue and date of the next meeting (EGNRET 42) will be determined later.

The Chair asked if there was any additional new business. There being none, the Chair and EGNRET delegates thanked China for hosting the meeting and closed the 41st meeting of the APEC Expert Group on New and Renewable Energy Technologies. Meeting minutes will be distributed and approved out of session.

Special gratitudes are due to Ms. Yang Yang from National Energy Administration, Mr. Wan Lin, Managing Director of Beijing Energy Innovation Ltd, China and Ms. Dingjing, Deputy Director of Guodian New Energy Technology Research Institute, and their colleagues for their kind assistance and arrangement on meeting affairs.

The EGNRET 41 meeting presentations are available on the website at:

<http://www.egnret.ewg.apec.org/meetings/egnret41/index.html>

and the presentations of Low-Carbon Model Town Development Model Tool Kit Workshop on October 14-15, 2013 and the APEC Forum on Energy Storage System Application and Sustainable New Energy Supply on October 18-19, 2013 will be updated online soon.

LIST OF PARTICIPANTS

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