



**Asia-Pacific  
Economic Cooperation**

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**2013/EWG46/019**

Agenda Item: 11a

## **Report of the Chair of the Expert Group on New and Renewable Energy Technologies**

Purpose: Information  
Submitted by: EGNRET Chair



**46<sup>th</sup> Energy Working Group Meeting  
Da Nang, Viet Nam  
18–21 November 2013**


## EWG 46

Agenda Item 11(a)

# Report of the Chair of the APEC Expert Group on New & Renewable Energy Technologies

Dr. Bing-Chwen Yang

18-21 November, 2013



Asia-Pacific  
Economic Cooperation  
**EGNRET**

**EWG 46** *Da Nang, Vietnam 18-21 November, 2013*

## EGNRET Activities Since EWG 45



- **EGNRET 40**
  - **EGNRET 40: April 2 to 5, 2013 in Ha Noi, Viet Nam.**
    - Meeting Theme: [Integrating New and Renewable Energy into the Grid in the APEC Member Economies](#)
    - [APEC Workshop on Small Hydro and Renewable Grid Integration](#) was held alongside the meeting on April 3-5, 2013.
    - Meeting presentations are available on the EGNRET website:  
<http://www.egnret.ewg.apec.org/meetings/engret40/index.html>

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**EGNRET**


## EGNRET Activities Since EWG 45



- **EGNRET 41**
- **EGNRET 41: October 16 to 17, 2013 in Beijing, China.**
  - Meeting Theme: [Current New and Renewable Energy Priorities in APEC Member Economies](#)
  - [APEC Low-Carbon Model Town Development Model and Tool Kit Workshop](#), and [APEC Forum on Energy Storage System Application and Sustainable New Energy Supply](#) were held alongside the meeting on October 14-15, 2013 and October 18-19, 2013 separately.
  - Meeting presentations are available on the EGNRET website: <http://www.egnret.ewg.apec.org/meetings/engret41/index.html>

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## EGNRET Activities Since EWG 45



- **EGNRET operation after 41st meeting**
  - 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.
  - Chinese Taipei assigned Dr. Chung-Hsien Chen, 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, Dr. Chang-Chung Yang and Ms. Vivian Hsieh from ITRI will hold the EGNRET Secretariat after EGNRET 41.

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## EGNRET Project Update



Status	Projects	Note
Completed	3	
On-going	17	1 self-funded project
New CN in-principle approval for Session 3, 2013	6	All Approved Full proposals will be submitted to the APEC Secretariat by 15 or 25 November, 2013.

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## Completed Projects: 3



### Three EGNRET completed projects

- 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)

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## Completed Projects: 1/3



### 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 stocktake of successful deployment models, and two-day conference structured along the lines of the review and stocktake 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](http://www.marineenergy-apec.ru)

## Completed Projects: 1/3



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

- **Major findings of this project**
- 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;
- 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;

## Completed Projects: 1/3



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

#### • Major findings of this project (cont'd)

- Regional Equipment Manufacturers and research & development entities will benefit from exploring wider perspective for commercial development and operation of their marine energy related technologies and products;
- Policymakers (in the ministries of energy, economic development and the environment, investment promotion agencies firstly in developing APEC economies) will receive a valuable input for setting up a conducive policy to enable innovative energy solutions to enter the market; in particular, they will learn how public intervention may help sharing the risks between private and public stakeholders.
- Indirectly, in case that the project encourages uptake of marine energy technologies, energy consumers and environmental groups will benefit from a greener and cost-effective energy supply.

## Completed Projects: 2/3



### 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 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](http://publications.apec.org/publication-detail.php?pub_id=1404)



## Completed Projects: 2/3



### 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)

#### • Major findings of this project

- 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.
- 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.

## Completed Projects: 3/3



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

- EMMg 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 and (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.

## Completed Projects: 3/3



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

#### • Major findings of this project

- 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
- 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.

## On-going Projects: 17



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)
- P.3 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)



## On-going Projects: 17

(Cont'd)



- 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)

## On-going Projects: 17

(Cont'd)



- 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)*

## New Concept Notes Submitted for Session 3, 2013 (6 projects)



- [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)


## Future Prospects in 2014



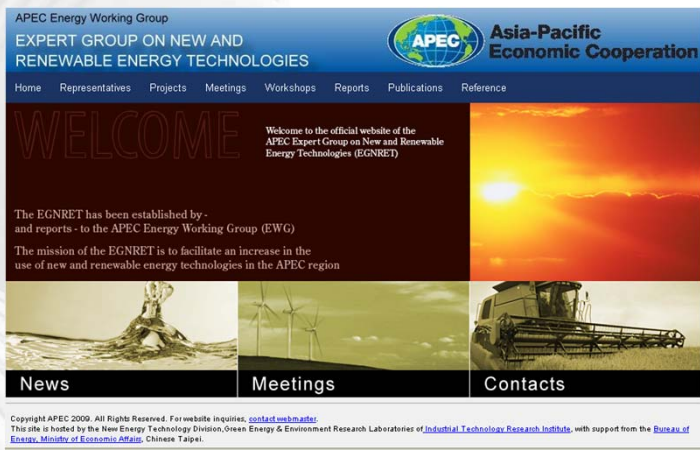
In 2014, the EGNRET will focus on the following tasks:

1. 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.
2. 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.
3. 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.
4. 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.

## Thank you for your attention!



EGNRET website: <http://www.egnret.ewg.apec.org/>



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## On-going Projects: 1/17



**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.

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## On-going Projects: 2/17



### **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 CO<sub>2</sub> 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.

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## On-going Projects: 3/17



### **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 CO<sub>2</sub> 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.

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## On-going Projects: 4/17



### **P4. APEC Peer Review on Low-carbon Energy Policies (PRLCE) Phase 2 (EWG 18 2012A) (Japan) (Approval in Session 3, 2012)**

- 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.

## On-going Projects: 5/17



### **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.



## On-going Projects: 6/17



### **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.

## On-going Projects: 7/17



### **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.

## On-going Projects: 8/17



### **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.

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## On-going Projects: 9/17



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

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## On-going Projects: 10/17



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

- This LCMT-CBD project refers to St. Petersburg Declaration publicized in 2012 APEC Energy Ministerial Meeting, where the successful progress of APEC Low Carbon Model Town (LCMT) was been underlined. So far two LCMT projects have been processed in Yujiapu, Tianjin and Samui, Thailand.
- However, towns in APEC region have varying degrees of land use patterns observed in towns as well as many specific conditions, as LCMT Task Force mentioned. Therefore, it is necessary to carry out capacity building development on LCMT system. Furthermore, how to deploy the approaches to apply LCMT as useful tools into the developing area is valuable to investigated. The project will invite the APEC economies to share experiences on low carbon model town projects such as Yujiapu and Samui. Coaching seminars, research activities and forum will hold to discuss the applicable Low Carbon approaches to the case study areas. The gain from the project will be reported on APEC website. The project will formally start at May 2013 and will finish at April 2014. Project locations will include LCMTs area, case studies areas etc.

## On-going Projects: 11/17



### **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 CO<sub>2</sub> emission, it is beneficial to assess energy policies of APEC member economies and achieve the goal of APEC's meeting.

## On-going Projects: 12/17



### 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.

## On-going Projects: 13/17



### 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.

## On-going Projects: 14/17



### 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.

## On-going Projects: 15/17



### 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.



## On-going Projects: 16/17



### 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:
  - (i) identify obstacles for a wide application of wind energy;
  - (ii) 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;
  - (iii) explore further cooperation opportunities among APEC member economies, with the ultimate goal of ensuring energy security for the sake of APEC's sustainable growth

## On-going Projects: 17/17



### 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 CN for Session 3, 2013: 1/6



### [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

## New CN for Session 3, 2013: 2/6



### [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.

## New CN for Session 3, 2013: 3/6



### [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.

## New CN for Session 3, 2013: 4/6



### [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.

## New CN for Session 3, 2013: 5/6



### [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.

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## New CN for Session 3, 2013: 6/6



### [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, leaded 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

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## New Concept Notes Submitted for Session 1, 2014 (5 projects)



[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)

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## New Concept Notes Submitted for Session 1, 2014 (5 projects)



[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 AEPC Area.

Stage 3: organize the meeting for information exchange and experience sharing among APEC economies.

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## New Concept Notes Submitted for Session 1, 2014 (5 projects)



### [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.

## New Concept Notes Submitted for Session 1, 2014 (5 projects)



### [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 fulfill 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.

## New Concept Notes Submitted for Session 1, 2014 (5 projects)



### [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.

## New Concept Notes Submitted for Session 1, 2014 (5 projects)



### [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.