

**APEC Expert Group on
New and Renewable Energy Technologies**

Welcome to EGNRET 42



**Asia-Pacific
Economic Cooperation**

EGNRET

EGNRET 42

Honolulu, USA 07-08 April, 2014

Tuesday, 8 April, 2014
Morning



EGNRET 42 Day 2

09:00-09:15	Economy Presentation - Thailand	
09:15-9:30	Economy Presentation – Chinese Taipei	
9:30-10:00	Invited Presentation <i>Renewable Energy and APEC Energy Statistics</i>	
10:00-10:30	Coffee Break	
10:30-11:30	Development of Project Proposal for 2014 Funding	Chair
11:30-12:00	Progress with APEC Energy Smart Communities Initiative (ESCI) and APEC Smart Grids Initiative (ASGI)	USA
12:00-13:30	Lunch	

Tuesday, 8 April, 2014
Afternoon



EGNRET 42 Day 2

13:30-14:15	Progress / Status of Current EGNRET Projects Discussion 1 <i>Current and Projected Economy Renewable Energy Usage Through 2030</i>	Chair
14:15-15:00	Discussion 2 <i>Renewable Energy Cost and Roadmap</i>	Chair
15:00-15:30	Coffee Break	
15:30-15:45	Progress / Status of Current EGNRET Projects	Secretariat
15:45-16:00	Notes on APEC Project Submission Process	Secretariat
16:00-16:15	EGNRET Administration & Operations - Next Expert Group Meeting - Other Business	Chair
16:16	Adjourn	Chair
18:00 ~	Reception Supported by UL	

Progress/Status of Current EGNRET Projects

April 08, 2014 09:30-10:00

Vivian Hsieh

EGNRET Secretariat



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EGNRET Project Update



Status	Projects	Note
Completed	7	Project Year 2012
On-going	20	1 self-funded project; 4 for Session 1, 2013; 5 for Session 2, 2013; 6 for Session 3, 2013
New CNs submitted for approval for Session 1, 2014	14	Notification Date : April 28, 2014

Completed Projects: 7



- | | | | |
|-------|--|----------------|----------------|
| •[C1] | APEC Workshop on Best Practices on Financing Renewable Energy | EWG 21 2012A | Viet Nam |
| •[C2] | Promoting Stable and Consistent Renewable Energy Supply by Utilizing Suitable Energy Storage Systems | EWG 22 2012A | China |
| •[C3] | Research on the Application of Physical Energy Storage Technology with Renewable Energy in a Low Carbon Town | EWG 16 2012A | China |
| •[C4] | Small Hydro and Renewable Grid Integration Workshop | EWG 05 2012A | Viet Nam |
| •[C5] | Prospects for Marine Current Energy Generation in APEC Region | EWG 23 2011A | Russia |
| •[C6] | Study of Demand Response's Effect in Accommodating Renewable Energy Penetration in the Smart Grid | EWG 04 2012A | China |
| •[C7] | 2013 APEC Workshop on Geothermal Technology | SF EWG 01 2013 | Chinese Taipei |

On-going Projects: 20



Currently the EGNRET is implementing 20 projects.

- [P1] Urban Development Smart Grid Roadmap: Christchurch Recovery Project (Cooperated with EGEE&C) New Zealand EWG 08 2012
- [P2] The Comprehensive Analysis and Research of Key Technologies and Commercial Model of Low Carbon Model Town Applied in Yujiapu CBD EWG China EWG 11 2012A
- [P3] APEC Peer Review on Low-carbon Energy Policies (PRLCE) Phase 2 Japan EWG 18 2012A
- [P4] Operation Technology of Solar Photovoltaic Power Station Roof and Policy Framework China EWG 24 2012A
- [P5] Study on Measures to Reduce Energy Intensity in APEC Low Carbon Town China EWG 23 2012A

On-going Projects: 20



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(Cont'd)

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|--------|--|----------|--------------|
| •[P6] | APEC Smart DC Community Power Opportunity Assessment | Thailand | EWG 06 2013A |
| •[P7] | APEC Low Carbon Model Town Capacity Building Development | China | EWG 05 2013A |
| •[P8] | Promote APEC Low Carbon Town Development with District Energy System | China | EWG 07 2013A |
| •[P9] | APEC Low Carbon Town Plan and Design Contest | China | EWG 01 2013S |
| •[P10] | APEC Low Carbon Model Town (LCMT) Promotion through Eco-Point Program (LCMT-EPP) | Thailand | EWG 10 2013A |
| •[P11] | APEC Low-Carbon Model Town Development Model and Tool Kit Study (LCMT-DMTK) | China | EWG 13 2013A |
| •[P12] | APEC Photovoltaic Application Roadmap and Model Study (PVARM) | China | EWG 11 2013A |
| •[P13] | APEC Photovoltaic Communication and Cooperation Platform (PVCCP) | China | EWG 16 2013A |
| •[P14] | APEC Workshop on Promoting the Development of Wind Energy | Viet Nam | EWG 14 2013A |

On-going Projects: 20



Asia-Pacific
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(Cont'd)

- | | | | |
|--------|--|----------|--------------|
| •[P15] | Capacity building for installers and system designers for solar PV rooftop installations | USA | EWG 22 2013A |
| •[P16] | APEC Conference on Facilitating the Solar Supply Chain | Viet Nam | EWG 23 2013A |
| •[P17] | Study of APEC Low Carbon Model Town Development Index System | China | EWG 21 2013A |
| •[P18] | APEC Low-Carbon Model Town Energy Management System Development and Application Research | China | EWG 20 2013A |
| •[P19] | APEC Low-Carbon Model Town Heating System Application Model and Best Practices | China | EWG 25 2013A |
| •[P20] | District Energy Systems Development Roadmap Study in APEC Economies | China | EWG 24 2013A |

New Concept Notes Submitted for Session 1, 2014 (14 projects)



[NRE141-1]	APEC Building Integrated Photovoltaic (BIPV) 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
[NRE141-6]	Electric Cooperative as a Business Model to Harness Clean and Renewable Energy	Russia
[NRE141-7]	APEC Workshop on Promoting the Development of Biomass Energy	Viet Nam

Notification Date: 28 April, 2014

New Concept Notes Submitted for Session 1, 2014 (14 projects)



[NRE141-8]	APEC Public - Private Dialogue on Addressing Impediments in Financing Renewable Energy.	VietNam
[NRE141-9]	Workshop to support the development of methods for ensuring economically viable electricity systems for island economies	USA
[NRE141-10]	APEC Peer Review on Low-carbon Energy Policies (PRLCE) Phase 3	Japan
[NRE141-11]	APEC Network on Innovative Development of Sustainable Transportation Vehicles Using Mixture of Biohydrogen and Biomethane	Chinese Taipei
[sNRE141-12]	2014 APEC Workshop on Biodiesel Application Experiences (Self-Funded)	Chinese Taipei
[NRE141-13]	Cybersecurity for Critical Energy Infrastructure Workshop and Study: Establishing an APEC Road Map and Best Practices for Cyber-Energy Nexus Technology	USA
[NRE141-14]	Innovative business models for scale-up application of solar photovoltaic technology in APEC (PV-IBM)	China

Ranking Result of Session 1, 2014



S/N	Title	Economy
6	APEC Building Integrated Photovoltaic (BIPV) Study	China
7	Electric Cooperative as a Business Model to Harness Clean and Renewable Energy	RUS
8	APEC Workshop on Promoting the Development of Biomass Energy	VN
9	APEC Public - Private Dialogue on Addressing Impediments in Financing Renewable Energy.	VN
10	Workshop to support the development of methods for ensuring economically viable electricity systems for island economies	USA
11	APEC Peer Review on Low-carbon Energy Policies (PRLCE) Phase 3	JPN
12	APEC Network on Innovative Development of Sustainable Transportation Vehicles Using Mixture of Bio hydrogen and Bio methane	CT

Ranking Result of Session 1, 2014



S/N	Title	Economy
13	Innovative business models for scale-up application of solar photovoltaic technology in APEC	China
14	Cybersecurity for Critical Energy Infrastructure Workshop and Study: Establishing an APEC Road Map and Best Practices for Cyber-Energy Nexus Technology	USA
15	APEC PV Power Plant Design Evaluation Study (PVDE)	China
16	APEC Photovoltaic System Performance Ratio Evaluation Study (PV-PRES)	China
17	APEC Photovoltaic System Best Practices and Latest Development Comparative Study (PV-BPLD)	China
18	Roadmap Study of APEC Low Carbon Town Development (LCMT-RM)	China

Project Deadlines for Session 1, 2014



Notification Date of CNs	Apr. 28, 2014
Submission of <u>Full proposals</u> to APEC Secretariat	May 12, 2014
	May 16, 2014
	May 26, 2014
Notification Date of Full proposals	May 30, 2014
	Jun. 06, 2014
	Jun. 17, 2014

2 project sessions every year since 2014

Project Deadlines for Session 2, 2014



Submission of Concept notes (standard projects) to APEC Secretariat	Jul. 21, 2014
Notification Date	Sep. 17, 2014
Submission of <u>Full proposals</u> to APEC Secretariat	Oct. 8, 2014
	Oct. 29, 2014
	Nov. 10, 2014
Notification Date	Oct. 31, 2014
	Nov. 25, 2014
	Dec. 12, 2014

Summary of EGNRET Completed Projects

[SUMMARY] Completed Projects: 1/7



C1. APEC Workshop on Best Practices on Financing Renewable Energy (EWG 21 2012A) (Viet Nam)

- This project aims at holding an APEC Workshop on Best Practices on Financing Renewable Energy. The Workshop is scheduled to take place in Viet Nam 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;
 - Develop recommendations for more effectiveness in renewable energy financing.

The workshop summary report and presentation slides are available online:
http://publications.apec.org/publication-detail.php?pub_id=1439

C2. Promoting Stable and Consistent Renewable Energy Supply by Utilizing Suitable Energy Storage Systems (EWG 22 2012A) (China)

- The project aims to contribute to APEC's strategy for carbon reduction, sustainable energy supply and low carbon economy growth in the region.
- The project provides 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 the APEC region.

[SUMMARY] Completed Projects: 2/7 (Cont'd)



C2. Promoting Stable and Consistent Renewable Energy Supply by Utilizing Suitable Energy Storage Systems (EWG 22 2012A) (China)

- The project selects representative demonstrations integrating energy storage systems in:
 - i) Wind farms,
 - ii) Solar power generation projects, and
 - iii) Distributed energy micro-grids in APEC economies as the cases.
- In cooperation with world-leading organizations from APEC economies, the project measures and analyzes in-depth first-hand data to draw actionable recommendations. The project provides a useful platform for sharing findings, experience and recommendations with several groups of key stakeholder.

The summary report of the project study and research work is available online:
http://publications.apec.org/publication-detail.php?pub_id=1492

C3. Research on the Application of Physical Energy Storage Technology with Renewable Energy in a Low Carbon Town (EWG 16 2012A) (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. **Our 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.**

[SUMMARY] Completed Projects: 4/7



C4. Small Hydro and Renewable Grid Integration Workshop (EWG 05 2012A) (Viet Nam)

- Small hydro-electric generation systems are being utilized as part of the economy energy mix across APEC member economies. They are of special importance in developing member economies where they often provide the only firm power available in rural areas. However, as economy wide grids are established, small hydro and other small scale renewable energy systems pose unique technical problems to the economy grid operators
- At the workshop they will share experiences on best practices as well as current problems being faced in their economies associated with the integration of small hydro and other renewable energy systems into their electric grid. **Outcomes of the workshop will include a suggested road map for addressing current grid integration problems and suggested future APEC projects.**

The workshop presentation slides are available online
<http://www.egnret.ewg.apec.org/workshops/SmallHydro/>

C5. Prospects for Marine Current Energy Generation in APEC Region (EWG 23 2011A) (Russia)

- Energy generated from marine currents appears to be relatively reliable and mostly unexplored compared to other renewable energy sources.
- APEC economies are naturally endowed with access to vast ocean and marine resources that offer potential of tidal, wave and current energy. Technology and expertise to utilize marine current energy exist in a number of APEC and non-APEC economies, but the industry is in its infancy. Information/technology sharing is needed to advance the understanding of options for marine energy production at large and marine current energy in particular.
- The main activity of the project, a conference in Russia in April/May 2012, will bring together the experienced operators and potential interested investors/users of marine energy generating facilities.
- The project is expected to encourage trade in marine energy products and services and investment in related technology to build capacity for its commercial application.
- The final report could be download http://publications.apec.org/publication-detail.php?pub_id=1408

C6. Study of Demand Response's Effect in Accommodating Renewable Energy Penetration in the Smart Grid (EWG 04 2012A) (China)

- The penetration of large-scale centralized renewable energy has become a global issue with more and more attention on renewable energy development for the shortage of conventional energy source and climatic change, that the volatility and intermittent of renewable generation not only makes inefficient use of renewable resources, but also adds uncertainty to the power system planning and operation, which goes against the stable and economic operation of power grid.
- Demand response can promote the interaction of “Source-Load” through incentives and price signals on the basis of real-time output status of renewable generation, encouraging demand side to participate in power grid operation actively to accommodate renewable energy penetration effectively.
- **This project is composed of four parts:**
 - 1) Feasibility analysis of demand response's effect in accommodating renewable energy penetration
 - 2) Study the business operational mode and policy mechanism of demand response
 - 3) Study the implementation program of demand response pilot
 - 4) Host a workshop about DR business operational mode and project implementation mode

C7. 2013 APEC Workshop on Geothermal Technology (SF EWG 01/2013) (self-funded, Chinese Taipei)

- The APEC Workshop on Geothermal Energy Development was held 3 days from June 25 to 27, 2013 at NTUH International Convention Center in Taipei.
- The speakers includes the director of the Geothermal Technologies Office at the US Department of Energy, professor at Japan's Tohoku University, department head of Geothermal Sciences at the New Zealand-based GNS Science.
- 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.

Thank you for your attention!



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

A screenshot of the EGNRET website homepage. The header includes the APEC Energy Working Group logo and the text 'EXPERT GROUP ON NEW AND RENEWABLE ENERGY TECHNOLOGIES'. A navigation menu lists: Home, Representatives, Projects, Meetings, Workshops, Reports, Publications, Reference. The main content area features a 'WELCOME' message, a description of the group's mission, and three image-based buttons for 'News', 'Meetings', and 'Contacts'. The footer contains copyright information and host details.

APEC Energy Working Group
EXPERT GROUP ON NEW AND RENEWABLE ENERGY TECHNOLOGIES

Home Representatives Projects Meetings Workshops Reports Publications Reference

WELCOME

Welcome to the official website of the APEC Expert Group on New and Renewable Energy Technologies (EGNRET)

The EGNRET has been established by - and reports - to the APEC Energy Working Group (EWG)

The mission of the EGNRET is to facilitate an increase in the use of new and renewable energy technologies in the APEC region

News **Meetings** **Contacts**

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Summary of EGNRET On-going Projects

P1. Urban Development Smart Grid Roadmap: Christchurch Recovery Project (EWG 08 2012) (New Zealand) (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.

P2. The Comprehensive Analysis and Research of Key Technologies and Commercial Model of Low Carbon Model Town Applied in Yujiapu CBD (EWG 11 2012A)(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.

P3. APEC Peer Review on Low-carbon Energy Policies (PRLCE) Phase 2 (EWG 18 2012A) (Japan)

- The Peer Review on Low-Carbon Energy Supply (PRLCE) was established in response to the Energy Ministers' instruction at their meeting in Fukui, Japan in 2010, which called for exploratory mechanisms among APEC economies to set individual goals and action plans for introducing low-emission power sources.
- As with APEC's PREE, a peer review team comprised by low-carbon energy experts from APEC member economies will assess the host economy's conditions to design effective low-carbon energy goals and action plans to propose recommendations that might be voluntarily adopted to strengthen the policies adopted and monitor their progress. Although renewable power supply is accentuated, low-emission power sources also encompass nuclear and fossil fuels with carbon capture and storage.
- Two PRLCE are expected in Mexico and other economy to be defined, to be held during the second half of 2013.

P4. 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 was established before July 2013. A congress is arranged in Beijing in Aug 2013.

P5. 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.

[SUMMARY] On-going Projects: 6/20



P6. APEC Smart DC Community Power Opportunity Assessment (EWG o6 2013A) (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.**

[SUMMARY] On-going Projects: 7/20



P7. APEC Low Carbon Model Town Capacity Building Development (EWG 05 2013A) (China)

- 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.

P8. Promote APEC Low Carbon Town Development with District Energy System

(EWG 07 2013A) (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.

P9. APEC Low Carbon Town Plan and Design Contest **(EWG 01 2013S) (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.

P10. APEC Low Carbon Model Town (LCMT) Promotion through Eco-Point Program (LCMT-EPP) (EWG 10 2013A) (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.

P11. APEC Low-Carbon Model Town Development Model and Tool Kit Study (LCMT-DMTK) (EWG 13 2013A) (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.

P12. APEC Photovoltaic Application Roadmap and Model Study (PVARM) (EWG 11 2013A) (China)

- The key activities of this project 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, and to summarize the **best practices**.
- A workshop will be held in China as APEC chair in 2014 and a written report will be shared in APEC and EGNRET website.

P13. APEC Photovoltaic Communication and Cooperation Platform (PVCCP) (EWG 16 2013A) (Viet Nam)

- The Photovoltaic Communication and Cooperation Platform (PVCCP) project is to meet the mission for the increase of renewable energy usage, which was addressed by 10th APEC Ministerial Meeting in Russia in 2012. **The PVCCP project's goals including:**
 - 1) establish a **PV System Life-cycling Risk Management Scheme**, to identify and control potential risks of different periods including planning, design, manufacturing, construction, maintenance, etc,
 - 2) develop **PV Risk Analysis Tool Kits** to carry out risk analysis, mainly focus on three stages: design, construction and maintenance ,
 - 3) provide support to EGNRET and related stakeholders who wish to evaluate the risk and quality of specific PV project,
 - 4) 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.

P14. APEC Workshop on Promoting the Development of Wind Energy **(EWG 14 2013A) (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

P15. Capacity building for installers and system designers for solar PV rooftop installations **(EWG 22 2013A) (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.
- As market recognition of installers and system designers' skills and competency is essential, a certification program will be developed and relevant government institutions will be trained and assisted by experts to establish their own national certification program.
- 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.

[SUMMARY] On-going Projects: 16/20



P16. APEC Conference on Facilitating the Solar Supply Chain (EWG 23 2013A) (Viet Nam)

- **This project proposes to hold a 2-day APEC Conference on Facilitating the Solar Supply Chain in Viet Nam in the 3rd quarter of 2014.**
- **The main objectives of the projects are:**
 - To update information on trends of solar panel source and possible changes in demographics on supply chains in the future;
 - To create a platform for APEC member economies to discuss current supply chain management procedures and networks in the solar industry;
 - To discuss opportunities and challenges in the solar equipment industry, with possible recommendations to tackle with such challenges;
 - To explore potential cooperation opportunities among APEC member economies in facilitating the solar supply chain

P17. Study of APEC Low Carbon Model Town Development Index System (EWG 21 2013A) (China)

- In 2010, China and Japan in the 9th APEC Energy Ministers meeting jointly proposed the construction of Low Carbon Model Town projects. Two test-cases have been carried out in Yujiapu, China and Samui, Thailand. China's National Energy Administration (NEA) has carried out APEC LCMT promotion activities from 2013. But the technical guidance and Index system of LCMT construction still hasn't been studied systematically.
- The Index system (such as tourism type, industry type, etc.) relate to the low carbon town plan, low carbon industry, low carbon building, low carbon transportation, low carbon energy, resource recycling, etc.
- **In the course of project implementation, desk analysis and field surveys will be conducted, relevant low-carbon town experts in APEC economies will be engaged through participation of seminars and peer reviews, and the views from key players such as construction contractors, designers, and device providers will be solicited.**

[SUMMARY] On-going Projects: 18/20



P18. APEC Low-Carbon Model Town Energy Management System Development and Application Research (LCMT-EMSDA) (EWG 20 2013A) (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.

P19. APEC Low-Carbon Model Town Heating System Application Model and Best Practices (LCMT-HSAM) (EWG 25 2013A) (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.

P20. District Energy Systems Development Roadmap Study in APEC Economies (EWG 24 2013A) (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 workshops shall be organized to study a number of selected DES cases in APEC economies, led by an expert team. A comprehensive research report shall be created to summarize and categorize the case studies in selected APEC economies.
 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.

Summary of EGNRET Proposed Projects on Session 1, 2014

**[NRE141-1] APEC Building Integrated Photovoltaic (BIPV)
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 AEPD 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:
 - To develop standard and regulatory list as reference for PV system Performance Ratio (PR) evaluation.
 - To provide a set of testing method and quantitative calculation formula of PR evaluation.
 - To propose core requirement and Key Performance Index (KPI) of equipment and instrument to test PR.
 - 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 a sustainable, efficient and proper way is a big challenge to APEC.
- **Roadmap Study of APEC Low Carbon Town Development (LCMT-RM) aims to outline the goals, barriers, and 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.,
 - (3) How can we get there? Through the scenario-based design, i.e. policy measures, action plans, energy technology, R&D programs, long-term & short-term strategies etc.
- At least ten mini-conferences in various regions and a large scale workshop later 2-3 days' in Tianjin, 2014, China would be hold, to discuss the LCMT-RM based on the different scenario.

[NRE141-6] Electric Cooperative as a Business Model to Harness Clean and Renewable (Russia)

- Electric cooperatives have been largely overlooked as a business model of nonprofit customer shareholding to run renewable energy projects. Meanwhile, there's well documented experience in APEC region showing that cooperatives may be a significant innovators and producers of renewable electricity. Many electric cooperatives are also involved in economic and community development activities, bringing about better social outcomes.
- **The proposed activities will review this experience and examine why the (renewable) electric cooperative model has been rather successful in some APEC economies and has been entirely nonexistent in others.** The project will seek advice from global experts on the ways to enhance the understanding of policy, technology and business options for wider adoption of the cooperative model to explore renewable power where feasible.
- The project includes an investigation and a conference to discuss the results (tentatively in Russia, in April/May 2015).

[NRE141-7] APEC Workshop on Promoting the Development of Biomass Energy (Viet Nam)

- Viet Nam is proposing to hold a 2-day Workshop on Promoting the Development of Biomass Energy.
- The Workshop is scheduled to take place in Viet Nam in 2014 with following objectives:
 - Provide the opportunities for renewable energy experts, especially those in biomass energy from APEC member economies, biomass energy producers and investors (business sector) to share advantages, disadvantages, obstacles and recommendations on how to remove the obstacles and facilitate the development of biomass energy.
 - Create a platform for APEC member economies to discuss, exchange on experiences, current strategies, policies, regulations and technologies on biomass energy facilitation and development.
 - **Explore potential cooperation opportunities among APEC member economies in developing biomass energy**

[NRE141-8] APEC Public - Private Dialogue on Addressing Impediments in Financing Renewable Energy (Viet Nam)

- This project aims at holding an APEC Public - Private Dialogue on Addressing Impediments in Financing Renewable Energy. The Dialogue is scheduled to take place in Viet Nam in the 1st quarter of 2015.
- The key objectives of the proposed project are to:
 - Exchange information on impediments in financing renewable energy in APEC economies;
 - Develop recommendations as a reference tool for APEC economies to tackle the above-mentioned impediments;
 - **Continue the good cooperation and coordination among attendants who participated in the APEC Workshop on Best Practices on Financing Renewable Energy in June 2013.**

[NRE141-9] Workshop to support the development of methods for ensuring economically viable electricity systems for island economies (USA)

- Partnerships between agencies, industries, and universities to address significant electricity power quality and availability issues for island economies in Asia-Pacific region are critical to societal, environment, and economic well-being. APEC groups can make significant differences for island economies. University and private sector groups already work on improving electricity supply and power quality on Maui, Jesu, Dongao, and Indonesian islands (Sumba Island), among others.
- To meet development goals through development, demonstration, outreach, and education activities in partnership with utilities, technology providers, end users, researchers, and government agencies, this project will support a workshop held with an EGRNET meeting that would bring together representatives from successful RDD&D activities to share lessons learned and include leading researchers and government representatives from APEC member economies.
- The workshop will target best practices and next steps in assisting island economies in improving electricity delivery and quality.

[NRE141-10] APEC Peer Review on Low-carbon Energy Policies (PRLCE) Phase 3 (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. One PRLCE is planned in 2014.

[NRE141-11] APEC Network on Innovative Development of Sustainable Transportation Vehicles Using Mixture of Biohydrogen and Biomethane (Chinese Taipei)

- BioHydrogen-Methane Vehicles (BHMVs) are great sustainable transportation tools which fueled by green hydrogen and methane. BHMVs can displace fossil fuel vehicles in APEC region and increase demand of renewable energy; reduce pollutant emissions and climate change; have energy efficiency better than LPG and CNG vehicles; improve flexible use of automobile fuels.
- The objective is to enhance understanding of BHMVs, clean gas station, and biohydrogen-methane production technologies and identify opportunities to promote the deployment and integration of BHMVs and clean fuels technologies in APEC economies. The activities are
 - To assess clean gas station and vehicle interconnection standards for BHMV deployment across interested APEC economies and evaluation of BHMVs smart clean gas station deployment projects and policies;
 - To establish a communication platform, to organize forum event sharing information among entrepreneurs and academia, to reduce gaps for trade and promote distribution.
- To hold a forum in Chinese Taipei in August/September 2015.

[sNRE141-12] 2014 APEC Workshop on Biodiesel Application Experiences (Self-Funded) (Chinese Taipei)

- The practical benefits of effective biodiesel supply chain management and the ascertainment of biodiesel quality control are the key factors to biofuel promotion policy on consumers. It is expected one day event will be hold in the middle of August, 2014 in Taipei, Chinese Taipei.
- This project aims to help forward the applications of biodiesel in the APEC region by sharing the international practical experience and enhancing the quality control of the supply chain management.

[NRE141-13] Cybersecurity for Critical Energy Infrastructure Workshop and Study: Establishing an APEC Road Map and Best Practices for Cyber-Energy Nexus Technology (USA)

- Networked energy systems are becoming integral parts of the energy value chain, including oil and gas, power sector and building controls. These systems are critical energy infrastructure assets, but remain vulnerable to cyber attacks and intrusions and lack their full efficiency potential. Establishing an APEC energy-cyber nexus road map that guides the formulation of international standards and definitions and helps balance the potential efficiency gains and cyber security requirements is critical to realizing the shared energy security and economic goals of APEC economies.
- The U.S. together with Singapore and Thailand will lead an effort under APEC's Energy Smart Communities' (ESCI) smart grid pillar to convene a public/private workshop and a policy/standards road map that will realize the following goals:
 - Define the energy-cyber nexus landscape;
 - Identify relevant standards and current gaps in standards development;
 - Share best policy practices; and,
 - Provide guidance to help APEC economies implement cyber-energy nexus plans in way that optimizes shared security, efficiency and interoperability goals.

[NRE141-14] Innovative business models for scale-up application of solar photovoltaic technology in APEC (PV-IBM) (USA)

- This one-year project is aimed to boost the investments on solar photovoltaic (PV) in APEC economies through establishing innovative business models, taking considerations into continuing cost reductions and incentives policies in increasing economies in recent years.
- The main activities are to identify the PV-related business models that have been applied successfully and not in APEC and non APEC, establish criteria and indicators for assessing applicability of such business models to other economies, and develop an innovative model targeted at the distributed PV application in Chinese market, as well as organize an international workshop tentatively in China for sharing the outcomes and findings which are also disseminated via websites available.