

APEC Expert Group on
New and Renewable Energy Technologies

Welcome to EGNRET 44



Asia-Pacific
Economic Cooperation

EGNRET

EGNRET 44 *Laoag, Ilocos Norte, The Philippines 13-14 April, 2015*

Progress/Status of Current EGNRET Projects

April 14, 2015

Vivian Hsieh

EGNRET Secretariat



Asia-Pacific
Economic Cooperation

EGNRET

EGNRET Project Update (2013-2015)



Status	Projects	Note
Completed	16	2013: 15 2014: 1 (self-funded)
On-going	4	4 projects in 2014;
Concept Note sent for Session 1, 2015	11	1 self-funded projects

EGNRET new Project for Session 1, 2015 (10 projects, 1 self-funded)



Project Number	Project Title	Proposed Economy
[NRE151-1]	Research of Power Generation with Groundbreaking Biomass Fuel Cell Technology	China
[NRE151-2]	APEC Building Mounted PV Best Practices and Latest Development Comparative Study (BMPV-BPLD)	China
[NRE151-3]	Best Practices for Developing the Green Energy Smart Farm in the APEC Region	Chinese Taipei
[NRE151-4]	Long term reliability study of PV systems for installation on islands	Chinese Taipei
[NRE151-5]	Profiling and Failure Detection of Photovoltaic Modules in Malaysian Field Conditions	Malaysia

EGNRET new Project for Session 1, 2015 (cont.)



Project Number	Project Title	Proposed Economy
[NRE151-7]	Energy Safety in APEC	Thailand
[NRE151-8]	Small and Medium PV system database in the APEC Region	Thailand
[NRE151-9]	Ethanol Trade Development as part of APEC's renewable fuel strategy	USA
[NRE151-10]	APEC Workshop on Promoting the Development of Biomass Energy	Viet Nam
[NRE151-11]	APEC Workshop on Promoting the Development of Wind Energy, phase 2 – Public Private Partnership for Wind Energy Development	Viet Nam
[sNRE151-12]	Development of the market for fuel ethanol as part of APEC's renewable fuel strategy	USA

2013 Projects (Completed)



APEC Low Carbon Town Plan and Design Contest	China	EWG 01 2013S
APEC Low Carbon Model Town Capacity Building Development	China	EWG 05 2013A
Promote APEC Low Carbon Town Development with District Energy System	China	EWG 07 2013A
APEC Photovoltaic Application Roadmap and Model Study (PVARM)	China	EWG 11 2013A
APEC Low-Carbon Model Town Development Model and Tool Kit Study (LCMT-DMTK)	China	EWG 13 2013A
APEC Photovoltaic Communication and Cooperation Platform (PVCCP)	China	EWG 16 2013A
Study of APEC Low Carbon Model Town Development Index System	China	EWG 21 2013A
District Energy Systems Development Roadmap Study in APEC Economies	China	EWG 24 2013A
APEC Low-Carbon Model Town Heating System Application Model and Best Practices	China	EWG 25 2013A
APEC Low-Carbon Model Town Energy Management System Development and Application Research	China	EWG 20 2013A

2013 Projects (Completed)



Reported in EGNRET 43

Workshops with EGNRET 43

APEC Low Carbon Model Town (LCMT) Promotion through Eco-Point Program (LCMT-EPP)	Thailand	EWG 10 2013A
APEC Smart DC Community Power Opportunity Assessment	Thailand	EWG 06 2013A
Capacity building for installers and system designers for solar PV rooftop installations	USA	EWG 22 2013A
APEC Workshop on Promoting the Development of Wind Energy	Viet Nam	EWG 14 2013A
APEC Conference on Facilitating the Solar Supply Chain	Viet Nam	EWG 23 2013A

2014 Projects (on-going projects)



APEC Peer Review on Low-Carbon Energy Policies (PRLCE), Phase 3	Japan	EWG 01 2014A
APEC Public-Private Dialogue on Addressing Impediments in Financing Renewable Energy	Viet Nam	EWG 02 2014A
APEC Photovoltaic System Best Practices and Latest Development Comparative Study (PV-BPLD)	China	EWG 03 2014A
Realization of APEC Low Carbon Model Town through Smart Grid Development (LCMT-SGD)	Thailand	EWG 07 2014A

Completed

2014 APEC Workshop on Biodiesel Application Experiences	Chinese Taipei	EWG 01 2014S
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Following Deadlines of Session 1 in 2015



Notification Date of Session 1 Concept Notes	May. 12
Submission of <u>Session 1 Full proposals</u> to APEC Secretariat	May. 8
	May. 22
	June. 8
Notification Date of Full proposals	May. 29
	Jun. 12
	Jul. 3

CN submission to EGNRET: 2 weeks before APEC deadline

Following Deadlines of Session 2 in 2015



Submission of <u>Session 2 Concept notes</u> to APEC Secretariat	Jul. 1
Notification Date of <u>Session 2 Concept notes</u>	Sep. 15
Submission of <u>Session 2 Full Proposal</u> to APEC Secretariat	Sep. 14 Oct. 6 Oct. 26
Notification Date of <u>Session 2 Full Proposal</u>	Oct. 6 Oct. 30 Nov. 19

2 project sessions every year since 2014

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 logo and the text 'APEC Energy Working Group' and 'EXPERT GROUP ON NEW AND RENEWABLE ENERGY TECHNOLOGIES'. A navigation menu lists 'Home', 'Representatives', 'Projects', 'Meetings', 'Workshops', 'Reports', 'Publications', and 'Reference'. The main content area features a large 'WELCOME' text, a welcome message, and a mission statement. Below this are three image-based sections: 'News' (water splash), 'Meetings' (wind turbines), and 'Contacts' (combine harvester). The footer contains copyright information and hosting 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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EWG's prioritization and scoring results for Project Approval Session 1 of 2015



Prioritization	Project Title	Proposing Economy	Average (Scoring)	Average (Priority)
11	Long term reliability study of PV systems for installation on islands	Chinese Taipei	14.9	12.4
12	APEC Workshop on Promoting the Development of Wind Energy, phase 2 – Public Private Partnership for Wind Energy Development	Viet Nam	14.9	12.4
13	Ethanol Trade Development as part of APEC's renewable fuel strategy	USA	14.8	12.5
14	Promoting Safety in Using Renewable Energy	Thailand	15.5	12.7
15	APEC Workshop on Promoting the Development of Biomass Energy	Viet Nam	14.9	13.4

EWG's prioritization and scoring results for Project Approval Session 1 of 2015 (cont.)



Prioritization	Project Title	Proposing Economy	Average (Scoring)	Average (Priority)
16	Best Practices for Developing the Green Energy Smart Farm in the APEC Region	Chinese Taipei	15.1	13.9
17	Power Generation with Groundbreaking Biomass Fuel Cell Technology	China	14.2	14
18	Small and Medium PV system database in the APEC Region	Thailand	15.2	14.1
20	A Comparative Study on Multi-field Applications of BMPV in the APEC Region	China	14.7	15.9
21	Profiling and Failure Detection of Photovoltaic Modules in Malaysian Field Conditions	Malaysia	13.8	17.1

Summary of EGNRET Completed Projects

[SUMMARY] Completed Projects: 1/3



C1. 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

[SUMMARY] Completed Projects 3/3



C2. 2014 APEC Workshop on Biodiesel Application Experiences (EWG 01 2014S) (Chinese Taipei)

- The APEC Workshop on Biodiesel Application Experiences was held in Sep. 10, 2014, Chinese Taipei. It was a closed-door meeting with 30 experts from Chinese Taipei, Thailand, and Korea. The practical benefits of effective biodiesel supply chain management of biodiesel quality control are the key factors to biofuel promotion policy on consumers.
- Applications of biodiesel in different economies are reported and discussed. Experts shared the international practical experience and enhancing the quality control of the supply chain management.
- A close meeting was also arranged on Sept. 11, 2014 to discuss the follow up of the topics and practices of workshop



Summary of EGNRET On-going Projects

[SUMMARY] On-going Projects: 1/17



P1. 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.**

P2. 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.

P3. 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.

P4. 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.

[SUMMARY] On-going Projects: 5/17



P5. 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.

P6. 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.

[SUMMARY] On-going Projects: 7/17



P7. 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.

[SUMMARY] On-going Projects: 8/17



P8. APEC Photovoltaic Communication and Cooperation Platform (PVCCP) (EWG 16 2013A) (China)

- 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.

P9. 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.

P10. 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

P11. 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.**

P12. 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.

P13. 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.

P14. 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] On-going Projects: 15/17



P15. APEC Photovoltaic System Best Practices and Latest Development Comparative Study (PV-BPLD) (EWG 03 2014A) (China)

- The 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. Those practices include but not limited to solar resources evaluation, system design, module and main equipment selection, manufacturing supervision, construction management, complete check, performance ratio evaluation, maintenance, recycling, financing and insurance, etc.
 3. To prepare a written report and host a workshop in China during APEC China year 2014.

[SUMMARY] On-going Projects: 16/17



P16. APEC Public - Private Dialogue on Addressing Impediments in Financing Renewable Energy (EWG 02 2014A) (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:
 1. Exchange information on impediments in financing renewable energy in APEC economies;
 2. Develop recommendations as a reference tool for APEC economies to tackle the above-mentioned impediments;
 3. Continue the good cooperation and coordination among attendants who participated in the APEC Dialogue on Best Practices on Financing Renewable Energy in June 2013.

[SUMMARY] On-going Projects: 17/17



P17. APEC Peer Review on Low-Carbon Energy Policies (PRLCE), Phase 3 (EWG 01 2014A) (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 policy from APEC member economies will review goals and policies to promote low-carbon energy policies.
- 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 expected to be held in Viet Nam in the first half of 2015.