

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

EGNRET Update

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**Expert Group on
New and Renewable Energy Technologies
April 9, 2014**



**Asia-Pacific
Economic Cooperation**

**EGNRET
EGEE&C**

**Joint
Meeting**

EGNRET/EGEE&C

Honolulu, USA 09 April, 2014

Introduction to EGNRET



Mission of EGNRET

To facilitate an increase in the use of new and renewable energy technology in APEC region

Activities of EGNRET

Be directed towards meeting the energy challenges identified by APEC Leaders and Energy Ministers

Project Implement of EGNRET

Develop and implement projects that contribute to the EWG's objectives and strategic initiatives

Source: EGNRET Terms of Reference

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- Meeting twice annually
- Conducting research projects
- Organizing workshops
- Cooperation with Other Groups under Ministerial Instructions
 - APERC (e.g. Peer Review Related Programs)
 - Biofuels Task Force
 - Low-Carbon Model Town Task Force
 - EGEE&C
- Supporting major Initiatives
 - ✓ APEC 21st Century Renewable Energy Development Initiative
 - ✓ Energy Smart Communities Initiative (ESCI)
 - ✓ APEC Smart Grid Initiative (ASGI)

EGNRET Meeting Themes since 2011

Support Information Dissemination



Meeting themes are chosen to align with current projects and EWG priorities

2011 EGNRE 36 Meeting: New and Renewable Energies in Transportation (i.e., EVs and alternative fuels)

2011 EGNRET 37 Meeting: Current New and Renewable Energies Priority in APEC Member Economies

2012 EGNRET 38 Meeting: Update of Financial Incentives for Promoting New and Renewable Energy

2012 EGNRET 39 Meeting: Applying Distributed Energy in APEC Member Economies

2013 EGNRET 40 Meeting: Integrating New and Renewable Energy into the Grid in the APEC member Economies

2013 EGNRET 41 Meeting: Current New and Renewable Energies Priority in APEC Member Economies

2014 EGNRET 42 Meeting: The Promotion of Biofuels in Transportation Sector

■ EGNRET 41: Oct. 16-17, 2013 in Beijing, China

- Meeting Theme: Current New and Renewable Energy Priorities in APEC Member Economies
- The APEC Low-Carbon Model Town Development Model Tool Kit Workshop was held alongside the meeting on October 14-15, 2013
- APEC Forum on Energy Storage System Application and Sustainable New Energy Supply was held on October 18-19, 2013
- Invited presentations: ICA, LCMT TF, and APERC
- Meeting presentations are available on the EGNRET website:
<http://www.egnret.ewg.apec.org/meetings/egnret41/index.html>

Review of EGNRET 41



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北京. 国电新能源技术研究院
Beijing, China GUODIAN New Energy Technology Research Institute

EGNRET Project Update



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Status	Projects	Note
Completed	7	
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

- **EGNRET Project being approved:**
83.3% for S3, 2012 ; 50% for S1, 2013 ; 100% for S2, 2013
100% for S3, 2013

Completed Projects: 7



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

[SUMMARY] Completed Projects: 1/7



C1. 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.

C2. 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

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

[SUMMARY] Completed Projects: 3/7



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C3. APEC Workshop on Best Practices on Financing Renewable Energy (EWG 21 2012A) (Viet Nam)

- The Workshop is scheduled to take place in Viet Nam in March 2013.
- The key objectives of the project are:
 - Analyze the current situation and best practices
 - Present best practices and exchange views
- The Workshop concluded with a discussion of possible future activities and continuing work to improve the effectiveness of renewable-energy financing in APEC

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



C4. 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.
- APEC member economies have the privilege of facing the Pacific waters which offer vast quantities of predictable, reliable and consistent tidal stream energy. Given the recent technology development and various acceleration programs, this form of electricity generation can play an important part in the future global energy mix
- The final report could be download http://publications.apec.org/publication-detail.php?pub_id=1408



C5. 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

[SUMMARY] Completed Projects: 6/7



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C6. Promoting Stable and Consistent Renewable Energy Supply by Utilizing Suitable Energy Storage Systems (EWG 22 2012A) (China)

- The proposed 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: 6/7 (Cont'd)



C6. 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**



C7. 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.

Thank you for your attention!



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

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



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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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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** **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)

•[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



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|--------|--|----------|--------------|
| •[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)



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[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)



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[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

2014 APEC Workshop on Biodiesel Application Experiences



EGNRET self-funded project proposed by Chinese Taipei

Date: September 10, 2014 (TBC)

Venue: GIS NTU Convention Center, Taipei (TBC)

- **Objective:** To enhance the quality control of the supply chain management and popularize the applications of biodiesel in the APEC region by sharing the international practical experience, especially the high moisture and temperature environment in the APEC region.
- **Workshop Topics**
 - The status and challenges of the clean fuels application, such as ULSD and Biodiesel Blended vehicles fuels, in the APEC Region.
 - Biodiesel Blended quality control and microbial contamination prevention in the supply chain, including the fuel tanks of terminal distributor and gas station dispenser.
 - Key issues on the Biodiesel Blended Standard Management.

EGNRET Future Prospects in 2014



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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.