

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

38th Meeting

Wellington, New Zealand

18-20 June 2012

Introduction

The 38th meeting of the Expert Group on New and Renewable Energy Technologies (EGNRET) was held on June 18 to 20, 2012 in Wellington, New Zealand. In addition to EGNRET 38, the APEC Electric Vehicle Connectivity Workshop 2012 was held alongside the meeting on June 20, 2012 at Te Papa Tongarewa Museum of New Zealand, Wellington.

The EGNRET 38 meeting was co-chaired by the EGNRET Chair, Dr. Hom-Ti (Tom) Lee of the Industrial Technology Research Institute (ITRI), Chinese Taipei and Mr. Mike Underhill, Chief Executive Officer (CEO) of Energy Efficiency and Conservation Authority (EECA), New Zealand. Representatives from Canada, Hong Kong, China, Indonesia, Japan, Korea, New Zealand, Chinese Taipei, Thailand, USA, APEC Expert Group on Energy Efficiency and Conservation (EGEE&C), Asia-Pacific Energy Research Centre (APEREC), and International Copper Association Ltd. (ICA) participated in the meeting.

Dr. Lee welcomed the delegates and opened the meeting, and Mr. Underhill then gave an official welcome to the delegates on behalf of New Zealand. Following the welcome, a final agenda distributed by the Chair was reviewed and accepted.

Overview of New and Renewable Energy in New Zealand

Ms. Elizabeth Yeaman, Transport Partnerships Manager of the Energy Efficiency and Conservation Authority (EECA), New Zealand gave a detailed overview of current New Zealand's renewable energy utilization. Ms. Yeaman's presentation introduced New Zealand's long history of renewable energy use and development, status quo & prospective of renewable for electricity, heat and transport, and also presented applying electric vehicles (EVs) in New Zealand.

Currently, renewable energy plays an important role in New Zealand's energy supply system, with around 75% of electricity generated from renewable sources (57.6% hydro, 13.4% geothermal, and 4.5% wind), and historically, the main renewable sources have been hydro and geothermal. Ms. Yeaman showed that Reefton, New Zealand was the first place in the southern hemisphere to have public supply of electricity in 1888 by employing hydropower, and now Manapouri power station is the largest hydro station in New Zealand with a capacity of 850 MW. On the other hand, geothermal energy is New Zealand's cheapest generation option. Wairakei geothermal power station built in 1958 is the the oldest operating geothermal power station in the world. Currently the installed capacity of geothermal energy is over 750 MW, or around 13% of generation. Now two more geothermal plants are underway, and New Zealand will become the 4th

largest geothermal energy producer in the world. Wind energy was developed since late 1990s, and now New Zealand has installed 16 operating wind farms, with a total installed capacity of 620 MW or nearly 5% of electricity supply. For marine energy, it is estimated that the potential is around 8,000 MW of wave and tidal energy in New Zealand waters, and it could assist off-shore islands in replacing the diesel generation.

New Zealand also made policies to encourage renewables utilization. In National Energy Strategy (non-binding), the target is set for 90% of renewable electricity generation by 2025. Another target for an additional 9.5 PJ of energy from woody biomass or direct geothermal use by 2025 is shown in National Energy Efficiency and Conservation Strategy (non-binding). However, there is no feed-in tariffs (FIT) or other subsidies for renewable electricity generation, but Biodiesel Grants Scheme has kick-started biodiesel industry. Also, Ethanol excise duty exemption is for blending with petrol, and electric vehicles exempt from road user charges can last to 2020. It can be concluded that the future generation will be dominated by renewables, the most affordable for New Zealand, and without subsidy but including carbon emissions trading scheme.

Moreover, Ms. Yeaman expressed that the circumstances of New Zealand are suitable for driving EVs. It can be seen that 86% of New Zealanders live in urban areas, 52% of households have 2 or more vehicles, and over 85% of homes have garages. Currently, the 230 Volt domestic supply can give full overnight charge for EVs, and 90% of cars are driven less than 85 km per day, well within the range of today's electric vehicles.

Ms. Yeaman's detailed presentation is available on the EGNRET website at:

<http://www.egnret.ewg.apec.org/meetings/engret38/index.html>

Mr. Takao Ikeda (Japan) represented that regarding the future renewable energy outlook in New Zealand, Japanese government has interest in geothermal energy especially, and would like to know whether New Zealand have possibility to execute joint study. Ms. Yeaman expressed welcome.

Recent APEC Activities

The Chair briefed the recent APEC activities and developments that occurred after the last meeting of the EGNRET on August 22 to 26, 2011 in Taipei, Chinese Taipei, including EWG 42 (2011.10.17-21 in Chinese Taipei), EWG 43 (2012.3.5-11 in Malaysia), Transportation & Energy Ministerial Conference (TEMC) (2011.9.13 in USA), and 19th Leaders' Meeting 2011 (2011.11.12-13 in USA).

The USA hosted first-ever joint Transportation and Energy Ministerial Conference (TEMC) in San Francisco on September 13, 2011. An Action Agenda to Move APEC toward an Energy Efficient, Sustainable, Low-carbon Transport Future was issued to guide follow-up work by the Energy Working Group, the Transportation Working Group, and interested APEC economies, including 4 catalogues: Transportation's Role in a Clean-energy Future, Energy and Transport Systems

for Livable Low-carbon Communities, Powering Low-carbon Transport, and Greening the Supply Chain for Energy-Efficient Freight Transportation. On Alternative Transport Fuels, the Action Agenda recommends APEC Economies to Identify and study appropriate strategies, approaches and best practices for promoting efficient and alternative-fueled vehicles (biofuel vehicles, natural gas vehicles and EVs) based on LCA, develop the harmonized approaches to addressing the safety of EVs in order to maintain consumer confidence in them, consider and assess in 2nd-generation biofuels and employment potential that could practically be developed, and enhance APEC cooperation with international aviation organizations to strengthen the development of aviation biofuels and the modernization of aviation traffic management.

The 19th APEC Economic Leaders' Meeting was held in Honolulu, Hawaii, USA on Nov 12-13, 2011, and the Leaders released the Honolulu Declaration - Toward a Seamless Regional Economy. The declaration addresses Promoting Green Growth including the following Instructions:

- Aspire to reduce APEC's aggregate energy intensity by 45% by 2035.
- Promote energy efficiency by taking specific steps related to transport, buildings, power grids, jobs, knowledge sharing, and education in support of energy-smart low-carbon communities.
- Incorporate low-emissions development strategies into our economic growth plans and leverage APEC to push forward this agenda, including through the Low-Carbon Model Town and other projects.

The EWG has met twice since EGNRET 37. The EWG 42 was held on October 17-21, 2011 in Kaohsiung, Chinese Taipei. At EWG 42, the APEC Secretariat introduced the procedure for the new multi-year projects. Multi-year projects can be for up to 5 years and can request a budget of up to US\$ 500,000. At least half of all APEC economies must co-sponsor the project, and there must be 50% co-fund from developed economies and 25% co-fund from developing member economies. The detailed information on APEC multi-year projects can be found at

<http://www.apec.org/Projects/Multi-Year-Projects.aspx>

The EWG also agreed to recommend to Leaders a new APEC wide energy intensity reduction target of 45 percent by 2035, with an expected range of 40-50 percent. In addition, 10 projects endorsed by EWG for consideration in the third round of the 2011 APEC budget process, including 3 EGNRET projects "Piloting Smart/micro Grid Projects for Insular and Remote Localities in APEC Economies" (Russia), "Prospects for Marine Current Energy Generation in APEC Region" (Russia), and "Best Practices in Energy Efficiency and Renewable Energy Technologies in the Industrial Sector in APEC Region" (Cooperated with EGEE&C) (Thailand). The 3 projects have received the final approval, and are in progress.

EWG 43 was held in Kuala Lumpur, Malaysia on 5-10 March 2012, and an observer from Colombia participated at the meeting as a guest. At EWG 43, a project supervision institution was introduced by EWG. For the details, please see the below session on Note on APEC Project Submission Process. The APEC Secretariat reported that 8 concept notes approved in Session 1, 2012 including 2 EGNRET projects, "Christchurch Smart Energy Grids - Earthquake Recovery

Project” (New Zealand), and “The Comprehensive Analysis and Research of Key Technologies and Commercial Model of Low Carbon Model Town Applied in Yujiapu CBD” (China). Later, New Zealand’s project has received the final approval, and is in progress. The Chinese project is expected to be submitted the full proposal to APEC Secretariat by 20 June, 2012 for Session 2, 2012. In addition, two EGNRET project concept notes led by Chinese were endorsed by EWG for consideration in Session 2, 2012, including “Research on the Radiation System Integrated with Hybrid Energy and Phase Change Energy Storage (RSIHEPCES) in Low Carbon Town”, and “Applied Research on Energy Regeneration of Municipal Sludge in Low-carbon Cities Construction.” Later, the second project received the BMC in-principle approval, and the full proposal should be submitted by 20 June, 2012.

Also, at EWG 43 Concluding Business, Mexico is scheduled to host EWG 44 in the second half year but has not yet confirmed its ability to do so. Economies were asked to volunteer to serve as EWG Lead Shepherd from 2013, given that the United States had volunteered to serve through 2012.

The future significant events include 10th Energy Ministerial Meeting (EMM 10) in St. Petersburg, Russia on June 24-25, and 20th Leaders' Meeting 2012 in Vladivostok, Russia on September 7-8, 2012. A draft St. Petersburg Declaration at EMM 10 is preparing by EWG, and the main theme will be Energy Security: Challenges and Strategic Choices. The draft Declaration addresses new and renewable energy is

- Working to increase the share of natural gas in the energy mix, develop renewable energy sources, ensure the safe and secure use of nuclear energy in interested economies, and boost energy end-use efficiency.
- Promote a lower-carbon economy that strengthens energy security and generates new sources of economic growth, and helps achieve the aspirational goal to reduce aggregate energy intensity of APEC economies by 45% from 2005 levels by 2035.

Also, the Ministers’ Instruction (draft) related to EGNRET will to request that the EWG, supported by APERC, EGEDA, EGEEC and EGNRET conduct research to develop an Energy Intensity Action Agenda to help meet the aspirational goal to reduce aggregate energy intensity of APEC economies by 45% from 2005 levels by 2035.

The Chair finally reported the future prospects of EGNRET:

- The EGNRET will focus more on smart grid, AMI (advanced metering infrastructure), and Electric Vehicles (EVs), which are directly related to the APEC ASGI.
- The EGNRET will strengthen collaboration with APEC other fora, e.g., LCMT Task Force, EGEEC, Industrial Science and Technology Working Group (ISTWG), and some projects, e.g., PRLCE and PREE supported by APERC. Also EGNRET will enhance collaboration with other international organizations, e.g., ICA, IRENA, etc.
- Collaborated with EGEEC, a roadmap is expected to be established for the

successful implementation of new and renewable energy and energy efficiency system in the industrial sector of the APEC region.

- Future studies on biofuel resource potential, costs, and trade issues may be conducted as needed under the auspices of EGNRET, according to the BTF Final Report to EWG 43.
- EGNRET will follow up EMM10's Instructions, and encourage members to conduct researches related to reduction of energy intensity in APEC region.

Progress on APEC Peer Review on Low-Carbon Energy Supply (PRLCE)

Dr. Bing-Chwen Yang, Team Leader at Asia-Pacific Energy Research Centre (APEREC) presented a detailed review of progress on APEC Peer Review on Low-Carbon Energy Supply (PRLCE) on behalf of the APEREC President Mr. Kenji Kobayashi.

Dr. Yang first introduced the purpose, possible scope, and principles/criteria of PRLCE. He mentioned that the objective of PRLCE is to assist volunteer APEC economy to promote low-emission power sources by providing recommendations from APEC peer review experts.

Thailand hosted the first Peer Review on May 21-25, 2012, and the scope of peer review includes (1) policy, strategy and target for renewable energy, (2) energy policy institutional arrangement (SPP/VSP, grid, and FIT), (3) energy regulation, (4) role and activities for renewable energy promotion, (5) successful case for the promotion of renewable energy, (6) contribution by private sector, and (7) CDM. Dr. Yang also mentioned that EGNRET members, Dr. Cary Bloyd (USA), Mr. Takao Ikeda (Japan), and Dr. Keng-Tung Wu (Chinese Taipei / EGNRET Secretariat) joined the review team, and expressed his gratitude to them. As a result, total 49 recommendations were proposed after conducting the PRLCE in Thailand, and the conclusions suggested that more cooperation among different stakeholders is required, more resource integration can be enhanced, more green energy industry is also expected, and more encouragement of renewable energy research.

Now, the final report for this PRLCE in Thailand will be compiled and send to Thailand for their final comments. After that the final report will be sent to EWG 44 meeting and endorsed by all the member economy. Also the final report will be published on the APEREC website (<http://www.iecee.or.jp/aperc>).

Dr. Yang also expressed that after the successful first PRLCE in Thailand, the Philippines has expressed interesting in hosting the second PRLCE, and the tentative date is set in November, 2012. The program and field covered in this review is under consideration by the Philippines.

Finally, Dr. Yang invited Member Economies to host future PRLCE to enable APEC economies to share experiences and knowledge, and learn high-performance strategies from their peers by setting goals, formulating action plans, and improving the effectiveness of current policies in promoting energy efficiency, and low-carbon energy supply. The participation by experts from Member Economies and the Expert Group is the important key to success. Dr. Yang also

addressed that APERC will always bring the system integration concept to act as the coordinator to push forward the sustainability development in the APEC Region with the cooperation of each economy in this region and instruction from APEC Leaders.

This presentation is available on the website at:

<http://www.egnret.ewg.apec.org/meetings/engret38/index.html>

Dr. Chung-Hsien Chen (Chinese Taipei) raised a question that is there any follow-up review activity for PRLCE? Dr. Yang responded that currently PREE (Peer Review on Energy Efficiency) has built up the follow-up review mechanism, and PRLCE should establish the follow-up review in the near future. Dr. Cary Bloyd (USA) also shared his attendance experiences at the PRLCE in Thailand, and Mr. Takao Ikeda (Japan) also expressed his gratitude to Thailand for hosting the first PRLCE. The Chair encouraged Member Economies to host PRLCE, and EGNRET members to join the review team. He also suggested that APERC can summarize all challenges and barriers for promoting low carbon energy in Member Economies that observed during PRLCE activities into a comprehensive report to assist the APEC region in establishing a low carbon energy homeland.

Progress on APEC Low-Carbon Model Town (LCMT) Projects

Following APERC's presentation, Dr. Bing-Chwen Yang (APERC) also gave the progress on the APEC Low-Carbon Model Town (LCMT) Task Force projects on behalf of Mr. Shinji Kakuno, Director for Natural Resources and Energy Research, Agency for Natural Resources and Energy, METI.

Dr. Yang mentioned that Yujiapu Financial District, about 40 km east of Tianjin, China, was chosen as the first Low-Carbon Model Town test case (LCMT Phase 1 Project). The outcomes of the Phase 1 have been published in three reports including the Concept of LCMT, Policy Review for Yujiapu CBD, Tianjin, and Tianjin Yujiapu Feasibility Study. For Phase 2 project, three LCMT project candidates were nominated in August, 2011, including San Borja Town, Lima (Peru), Samui Island (Thailand), and Da Nang (Viet Nam). After an evaluation procedure on a scale of 1-5 for each selection criteria endorsed by APEC LCMT Task Force and EWG members, Samui Island is chosen to be the case study for LCMT phase 2 project, announced officially at EWG 42 in October, 2011. However, other two towns should hold candidacy status for subsequent phase of the APEC LCMT Project. The outcomes of Phase 2 project will be delivered in end of this year. In addition, the concept of the Low-Carbon Town in APEC (refinement) will be tailored for island-type development. The refined concept will be distributed at EWG 44.

The final reports of LCMT Phase 1 project can be downloaded at the APERC website:

<http://www.ieej.or.jp/aperc/>

or at the APEC Publication Database:

<http://publications.apec.org/>

This presentation is also available on the EGNRET website at:

<http://www.egnret.ewg.apec.org/meetings/engret38/index.html>

Finally, on behalf of Japanese Government, Mr. Takao Ikeda (Japan) expressed that Japanese Government highly appreciate APEC economies' continuing support for Low Carbon Model Town Project.

Member Economy Presentations: Update of Financial Incentives for Promoting New and Renewable Energy in APEC Member Economies

The economy presentation topic for EGNRET 38 was “Update of Financial Incentives for Promoting New and Renewable Energy in APEC Member Economies.” This topic was suggested by the Chair because after the nuclear accident in Japan, accelerating the promotion of renewable energy is one of the most important tasks in APEC Economies. Current financial incentives, e.g., Feed-In Tariffs (FITs), Renewable Portfolio Standards (RPS), Tax Credits, Loan Guarantees, etc., may have changed to support the new promotion target of new and renewable energy. Through member presentations and discussion on this meeting theme, EGNRET members can exchange information and learn the new financial incentives from each other.

The meeting presentations are available on the website at:

<http://www.egnret.ewg.apec.org/meetings/engret38/index.html>

Review of Biofuels Task Force (BTF) Activities

Biofuels Task Force (BTF) was endorsed to be established by EMM 7 in 2005, and completed its activity at the end of 2011. On behalf of Mr. Jeff Skeer (BTF Chair), Dr. Cary Bloyd (USA) reviewed the activities of BTF. In the past, 17 APEC economies participated, and APERC and EGNRET were also represented.

Biofuels development and use depends on several key factors including biofuel economics (cost of ethanol vs. petrol and biodiesel vs. diesel), biofuel trade opportunities (created by production cost differentials), biofuel infrastructure (cost and time to build biofuel filling station network), fuel-flexible vehicles (FFV) (practical path of uptake into the automobile market), and biofuel resources (current and potential availability of biofuel feedstocks). BTF conducted APEC biofuels projects, and produced 8 technical reports on biofuel resources, economics, transportation infrastructure, employment potential, and sustainability measures including

- Survey of Biofuel Resource Assessments and Assessment Capabilities
- Potential of Biofuels on Marginal Lands in APEC Economies
- Assessment of Biomass Resource Elasticity in APEC Economies

- Study of Employment Opportunities from Biofuel Production in APEC Economies
- Biofuel Feedstock Costs, Technology and Economics in APEC Economies
- Strategies for Developing Biofuel Transportation Infrastructure
- Sustainable Biofuels Development Practices in APEC Economies
- Resource Potential of Algae for Biodiesel Production in APEC Economies

The recent report suggested that algae could potentially displace 7 percent or more of automotive biodiesel needs in the APEC region.

At EWG 43, the BTF Final Report suggested that future studies on biofuel resource potential, costs, and trade issues may be conducted as needed under the auspices of EGNRET. The Chair has responded at EWG 43 that EGNRET is considering a follow-up study on 2nd generation biofuels. He also suggested that bio-butanol fuels may be a study topic in the future.

Most BTF reports can be downloaded at the EGNRET website:

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

and the 15-page BTF final report can also be found at the EGNRET website:

[http://www.egnret.ewg.apec.org/meetings/egnret38/\[G4\]%20Biofuels%20Task%20Force.pdf](http://www.egnret.ewg.apec.org/meetings/egnret38/[G4]%20Biofuels%20Task%20Force.pdf)

Recent Activities of EGEE&C

Since the ties between the EGNRET and Expert Group on Energy Efficiency and Conservation (EGEE&C) are developing rapidly, both two expert groups usually work together for proposing APEC projects, and also held a joint meeting together every two years. Because New Zealand currently holds the Chairship of EGEE&C, and EGNRET 38 was just held in New Zealand as well, the EGEE&C Chair, Dr. Terry Collins was invited to give a presentation on recent activities of the EGEE&C.

Dr. Collins expressed that EGEE&C 39th Meeting was held on 27-28 February 2012 in Sydney, Australia, and EGEE&C 40 will be held on 8-9 November 2012 in Taipei, Chinese Taipei. One of important activities for EGEE&C is to implement the projects through the Collaborative Assessment of Standards and Testing (CAST) Initiative launched under EMM 9 directions to promote harmonized test procedures & aligned standards & labelling in APEC economies. The CAST Enables EGEE&C to link with similar projects under the Super Efficient Appliance Deployment (SEAD) initiative (of the Clean Energy Ministerial). In addition, except EGNRET, EGEE&C also collaborated with APERC, EGEDA (APEC Expert Group on Energy Data & Analysis), CTI-EGS Work Program (APEC Committee on Trade and Investment's Environmental Goods and Services Work Program), SCSC (APEC Sub Committee on Standards and Conformance) and ICA (International Copper Association). In 2012, ICA supported EGEE&C's projects including Heat Pump Water Heaters (Australia, Korea, and ICA) and Electric Motor Repairs (China and ICA).

ICA's Programs on Renewable Energy in Asia

Mr. Mayur Karmarkar, Director for Asia Sustainable Energy at International Copper Association (ICA) Asia was invited to give a presentation on update of ICA's renewable energy programs. ICA is a leading organization for promoting copper worldwide, including 43 global-level members, and producers representing 60% of world copper production. ICA now established 31 offices in 24 countries on 6 continents with US\$ 95 million budget including co-funding for 2012. Mr. Karmarkar expressed that the operating principle of ICA on renewable energy programs is working together with partners collectively fund activities to grow sustainable energy that accomplish much more than by working individually. The value proposition of ICA is to position copper and the copper industry as delivering significant benefit to society in areas of critical current concern including energy efficiency, alternative (renewable) energy, and energy access (electrification).

Mr. Karmarkar also delivered some examples on renewable energy & energy access programs that ICA sponsored and participate in, including Bioenergy for Rural Electrification in Bangladesh, Alliance for Mindanao Off-grid Renewable Energy (AMORE) in Philippines, Energy Efficiency & Renewable Energy Project in Agricultural Sector in Thailand, Small Wind Energy in China, Solar Thermal Project in India. Finally, Mr. Karmarkar emphasized that ICA has supported EGEE&C's programs, and expects to collaborate with EGNRET. The Chair expressed welcome, and encouraged the EGNRET members in considering future collaboration with ICA.

EGNRET Current Project Update

Currently, the EGNRET is implementing 6 projects, as listed below.

1. Addressing Challenges of AMI Deployment in APEC (EWG 07/2011A) (Chinese Taipei)
2. Stock-take of Electric Vehicle Interface with Electricity and Smart Grids Across APEC Economies and the Potential for Harmonization (EWG 11/2011) (New Zealand)
3. Piloting Smart/micro Grid Projects for Insular and Remote Localities in APEC Economies (S EWG 15 11A) (Russia)
4. Prospects for Marine Current Energy Generation in APEC Region (S EWG 23 11A) (Russia)
5. Best Practices in Energy Efficiency and Renewable Energy Technologies in the Industrial Sector in APEC Region (S EWG 19 11A) (Cooperated with EGEE&C) (Thailand)
6. Christchurch Smart Energy Grids: Earthquake Recovery Project (*Aproval in Session 1, 2012*) (Cooperated with EGEE&C) (New Zealand)

In addition, 3 new project concept notes have received BMC in-principle approval in Session 2, 2012, and these full proposals should be submitted by 20 June, 2012:

1. The Comprehensive Analysis and Research of Key Technologies and

- Commercial Model of Low Carbon Model Town Applied in Yujiapu CBD (China)
2. Applied Research on Energy Regeneration of Municipal Sludge in Low-carbon Cities Construction (China)
 3. Research on the Application of Physical Energy Storage Technology to Enhance the Deployment of Renewable Energy in an APEC low Carbon Town (China) (*Submitted on 4 June already*)

Six on-going projects are described briefly as below.

- **Addressing Challenges of AMI Deployment in APEC (EWG 07/2011A)**
(Chinese Taipei lead)

The 9th Energy Ministerial Meeting (EMM 9) in 2010 instructed EWG to start an APEC Smart Grid Initiative (ASGI) to evaluate the potential of smart grids to support the integration of intermittent renewable energies and energy management approaches in buildings and industry. Advanced Metering Infrastructure (AMI) is a foundation enabling technology for the Smart Grid. Many countries in the worldwide announce and start their AMI programs. However, it seems many issues are needed to overcome. These issues include policy, meter reliability, information security, customer education, and so on. This project will investigate the development strategies and current status of AMI in all APEC economies, and provide recommendations for AMI deployment. The methodology of this project involves survey and analysis of AMI development status, and an two-day AMI workshop.

Currently, the worldwide AMI deployment status is continuously collected, and the first completed region was Australia. It was found out that each economy has its own deployment plan. More important, the plan adopted the Minimum AMI Functionality Specification and Minimum AMI Service Levels Specification to ensure the quality of system integration. In addition, the interconnection with HAN (Home Area Network) and the functionality of IHD was also considered in Australia.

The APEC AMI Workshop has been held on 24-25 August, 2011 in Chinese Taipei. In total 16 speakers were invited from 9 economies, and 216 participants from 7 economies attended the Workshop. The presentation files of the Workshop can be found at:

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

APEC member economies which are developing their AMI can be beneficiary most from the project. They will gain valuable experiences from field trials, policy making, system requirements, etc. As a result, effective action plans can be made to accelerate the development of AMI in the APEC region.

- **Stock-take of Electric Vehicle Interface with Electricity and Smart Grids Across APEC Economies and the Potential for Harmonization (EWG 11/2011)** (New Zealand lead)

The objective of the project is to enhance understanding in APEC economies of

EV connectivity to electricity grids and identify opportunities to increase the harmonization of standards and requirements to promote the deployment and integration of EVs, both vehicles and supporting technologies.

The methodology of this project involves 3 main steps, including a survey of APEC economies on existing EV connectivity infrastructure, regulations, and standards; a desktop review of the results; and a workshop to discuss the findings and collect APEC feedback.

The deployment of electric vehicles in a given economy requires careful consideration of the electrical systems, hardware configuration conditions, and existing standards and regulations. Differences in these conditions across APEC economies may create barriers to the diffusion of EVs across the region. Currently, there is an increasing amount of pressure on harmonizing these requirements by users and producers of EVs to maximize their market opportunities.

The APEC Electric Vehicle Connectivity Workshop 2012 was held on 20 June 2012 in Wellington, New Zealand, alongside the EGNRET 38. A draft project report was also released.

- **Piloting Smart/micro Grid Projects for Insular and Remote Localities in APEC Economies (S EWG 15 11A)** (Russia lead)

The objectives of the project are to compile and share member economies' experiences in introducing new technologies for local energy systems including smart & micro grid technologies to support sustainable development of remote and isolated areas, to review microgrid as a critical component of smart grid concept for local energy systems with a view to maximize the economic and environmental effect of tested and ready-to-use technologies, and to provide a menu of options to APEC economies for piloting of smart/micro grid projects in the form of assessment methodologies, business scenario models and specific recommendations.

A project newsletter was released in the end of February, 2012 to allow for wider dissemination of the information about the project. The project team has also been working towards establishing a dedicated project website:

<http://www.localenergy-apec.ru>

- **Prospects for Marine Current Energy Generation in APEC Region (S EWG 23 11A)** (Russia lead)

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

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

review and stocktake exercise.

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

<http://www.marineenergy-apec.ru>

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

This project will address the best practices, identify the hurdles and opportunities of the application of energy efficiency (EE) and new and renewable energy (NRE) technologies in the industrial sector among member economies to better support and promote the dissemination of NRE and EE in the overall region. The key objective of this project is to develop a report which clearly identifies the examples of successful adoption of new and renewable energy technologies combined with energy efficiency in the APEC industrial sector, the obstacles that prevent the adoption of technologies, and the applicability of lesson learned from previous reports including APEC supported activities.

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

- **Christchurch Smart Energy Grids: Earthquake Recovery Project** (*Approval in Session 1, 2012*) (Cooperated with EGEE&C) (New Zealand lead)

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

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

In addition, Chinese Taipei and New Zealand are conducting questionnaire surveys for two of above projects "Addressing Challenges of AMI Deployment in APEC"(Chinese Taipei), and "Stock-take of Electric Vehicle Interface with Electricity and Smart Grids Across APEC Economies and the Potential for Harmonization" (New Zealand). EGNRET members are kindly requested to assist in fill in questionnaires.

Three new projects approved by BMC in-principle in Session 2, 2012 are

described briefly as below.

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

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.

Therefore, 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.

- **Applied Research on Energy Regeneration of Municipal Sludge in Low-carbon Cities Construction (China lead)**

The project responds to the Energy Ministers' instruction from their meeting in Fukui, Japan in 2010 to implement an APEC Low-Carbon Model Town Project. Traditional city sludge treatment is pollutant and energy wasted. This project specially will focus on the feasibility of municipal sludge energy regeneration for market application. Currently, this technology has been applied in the biggest sludge treatment plant in Asia, named bailonggang sludge treatment plant.

This project is combined energy saving and environmental protection. It is very suitable for popularization in large-scale cities of Asia Pacific, belonging to new industry, owing huge potential market. Also, this project can change the waste solid produced by wastewater treatment plant into the renewable energy in the course of sludge reduction, making waste into valuable. It is the development of revolution in sludge treatment, and is considered as the ultimate purpose of sludge treatment.

- **Research on the Application of Physical Energy Storage Technology to Enhance the Deployment of Renewable Energy in an APEC low Carbon Town (China lead)**

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

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

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

Dr. Cary Bloyd (USA) also reported the update of Energy Smart Communities (ESCI) and APEC Smart Grid Initiative (ASGI) activities. He mentioned that the ESCI is meant to help realized APEC Leaders' goal to reduce the energy intensity of their economies by 45% by 2035, and contains two crosscutting elements (Knowledge Sharing Platform (KSP), and Low Carbon Model Towns (LCMT)) and four pillars (Smart Transportation, Smart Buildings, Smart Grids, and Smart Jobs and Consumers).

The APEC Smart Grid Initiative is being led by the U.S, Korea, and Chinese Taipei, and contains 4 suggested Elements, including (1) Survey of Smart Grid Status and Potential, (2) Smart Grid Roadmap, (3) Smart Grid Test Beds, and (4) Development of Smart Grid Interoperability Standards. The following is the summary of recent activities.

A recently completed report "Using Smart Grids to Enhance Use of Energy Efficiency and Renewable Energy Technologies" (EWG 01/2009S), evaluated the potential of smart grid technologies in APEC economies to enhance the use of renewable energy and energy efficient buildings, appliances and equipment. The report can be downloaded from the EGNRET website. For project implementation, three projects related to different aspects of road mapping were implemented in 2011, and 6 new smart grid project proposals for 2012 are in progress. In addition, APEC test beds would become part of a Smart Grid International Research Facility Network (SIRFN) to be coordinated by the International Smart Grid Action Network (ISGAN). The significant APEC smart grid test beds activities include Korean world largest smart grid community program in Jeju Island, and Distributed Energies Technology Laboratory (DETL) at Sandia National Laboratories in the USA. For smart grid interoperability standards, APEC Regulatory Cooperation Advancement Mechanism on Trade-Related Standards and Technical Regulations (ARCAM) held discussions in 2011, and considered follow-up steps to develop interoperability standards across the APEC region and globally through ISGAN.

This presentation can be downloaded at EGNRET website:

<http://www.egnret.ewg.apec.org/meetings/egnret38/index.html>

The ESCI Knowledge Sharing Platform (KSP) website is at <http://esci-ksp.org>

New Project Proposals for Funding in Session 3, 2012

A Canadian project concept note "District Energy Development - Guiding Framework" was proposed at the Meeting for endorsement. The project summary

The proponent expressed that there is a need for increased awareness and understanding at the local and regional level to advance the concepts of renewable energy driven district energy networks. This understanding enables the

development of community energy networks and grids utilizing renewable energy to realize social and economic benefits beyond simply the use of low carbon energy. Therefore, this project will develop a series of educational modules aimed at local government, addressing key issues relating to fuel selection and the design, development and business management of a renewable energy driven thermal network. Workshop material will be developed or adapted using expertise from APEC member economies enabling officials and staff to raise awareness of sustainability issues and techniques of socio-economic benefit within their community. Subject matter will include identification and selection of renewable and local resources for both heating & cooling, design & marketing, policy, economic & business models, related urban planning, retrofits and new developments.

After briefing discussion, the EGNRET Representatives supported this project. Before the Meeting, this project has received the support from New Zealand and Chinese Taipei, and both two economies have agreed to be the project co-sponsors. At the Meeting, USA also agreed to be the co-sponsoring economy. The revised concept note should be sent back to EGNRET Secretariat by 10 August, 2012 for submitting to EWG and APEC Secretariats for further ranking and endorsement procedure.

At the Meeting, the EGNRET delegates discussed the development of other new projects. Chinese Taipei would like to propose a self-funded project on host a geothermal workshop, and will developing the concept note soon, and received the supports from other economies.

The EGNRET delegates also discussed about development of geothermal energy in the APEC region. As mentioned in Ms. Yeaman's presentation "Overview of New and Renewable Energy in New Zealand", in addition to the US, the Philippines and Indonesia, New Zealand has 750 MW of geothermal capacity which meets 13% of New Zealand's national electricity demand and makes New Zealand the fourth largest producer of geothermal energy in the world. New Zealand also has an advanced regulatory framework and is working with a number of APEC economies around developing regulatory frameworks for geothermal development. In addition, since Indonesia will assume the host and chairship of APEC in 2013, it might be a good idea to host some geothermal energy events in Indonesia, and would also bring attention to the good work which has been done in Indonesia in developing its geothermal energy resources. EGNRET delegates agreed that APEC member economies should work together promptly through collaboration in developing geothermal energy in the APEC region.

ICA also suggested that promoting the solar water heater in developing economies will be a topic, and ICA could assist in funding and implementation.

The EGNRET Secretariat emphasized that if EGNRET members would like to propose new concept notes for Session 3, 2012, the deadline for submission to EGNRET will be 10 August, 2012.

Note on APEC Project Submission Process

The EGNRET Secretariat presented the new development of project submission

process. According to EWG 43 Summary Record, a project supervision institution was introduced by EWG:

- **Procedures for Project Proposals**

While EWG member economies retain the right to make project proposals directly to the EWG, member economies are highly encouraged to vet project proposals with an appropriate expert group or task force. This will ensure expert advice and coordination with ongoing and planned work as the project proposals are elaborated. Project proposals should normally be submitted by an EWG delegate or designated expert group or task force member. In cases where the subject matter of the proposal does not clearly relate to the remit of any existing expert group or task force, or in cases where the project would be self-funded by an economy or economies and no request is being made for support from APEC funding sources, the expert vetting process may not be necessary.

- **Procedures for Projects Underway**

Each APEC-funded project underway should be assigned a lead expert group or task force to follow and advise it, along with an assisting expert group or task force where appropriate, to ensure coordination with ongoing or planned activities. Project assignments should be suggested by expert group and task force chairs collectively, and the assignments should then be endorsed by the EWG. The APEC and EWG Secretariats should maintain a list of current projects with leads and co-leads for each in consultation with the expert group and task force chairs, and this list should be reported to the EWG.

The new Guidebook on APEC Projects (8th edition) was published in May, 2012. The new version was issued to facilitate the consultation of Project Proponents and Project Overseers and make easier the arrangements both the submission of proposals and travel undertakings. For Session 3, 2012 (starting in Aug.) the new templates of Concept Notes and Full Project Proposals will be those containing in 8th Edition. Each Concept note (including title page) should be less than 3 pages, and each project full proposal should be no more than 12 A4 pages, including the budget. For Monitoring and Completion Reports (next submission on 1st Aug.), Appendixes G & H are including the new templates to be fulfilled for that occasion.

The useful information for project submission including 8th ed. Guidebook, forms, and resources can be found at APEC Project website directly:

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

For last Session in 2012, the inter-sessional project approval schedule (standard projects) for BMC is as defined below:

- Deadlines to submit concept notes for Session 3, 2012
 - Submission of Concept notes: 10 Sep 2011
 - Committee prioritization and ranking: 13-26 Sep 2012
 - PDM prioritization (if needed): 27 Sep to 5 Oct 2012
 - BMC in-principle approval: 10 Oct (notify 11 Oct 2012)

- Deadlines to submit full project proposals for Session 3, 2012

Submit to APEC Secretariat	Recommendation to BMC	BMC decision	Notification
23 Oct 2012	2 Nov 2012	7 Nov 2012	8 Nov 2012
9 Nov 2012	22 Nov 2012	27 Nov 2012	28 Nov 2012

The EGNRET Secretariat emphasized that for Session 3, 2012, concept notes for standard projects must be endorsed by EGNRET and EWG by 10 September, 2012 before submitted to APEC Secretariat. Therefore, the deadline for new concept notes submission to EGNRET is 10 August, 2012.

Administration and Operation

Dr. Cary Bloyd (USA) has mentioned that the Terms of Reference (TOR) of the EGNRET should be modified according to the new initiatives and declarations instructed by the APEC Leaders and Energy Ministers, e.g., Fukui Declaration, APEC Smart Grid Initiative (ASGI), Energy Smart Communities Initiative (ESCI). After discussion, there was no consensus of opinions. Therefore, the new version of the EGNRET TOR will be drafted firstly by the EGNRET Secretariat, and sent to EGNRET Representatives for review. Also, the draft TOR will be discussed at next EGNRET meeting.

The next EGNRET 39 meeting will be held in Chongqing, China in the end of November or the early of December 2012. Associated with the meeting, there will be a joint workshop on distributed energy.

The elections will be also held at EGNRET 39 for the positions of Chair and Vice-Chair for 2013-2014 term. Economies interested in holding an office are asked to provide the current Chair with their nominations prior to EGNRET 39.

The Chair asked if there was any additional new business. There being none, the Chair and EGNRET delegates thanked New Zealand for hosting the meeting and closed the 38th meeting of the APEC Expert Group on New and Renewable Energy Technologies. Meeting minutes will be distributed and approved out of session.

Special gratitudes are due to Mr. Martin Brown-Santirso and his colleagues at Energy Efficiency and Conservation Authority (EECA), New Zealand for their kind assistance and arrangement on meeting affairs.

The EGNRET 38 meeting presentations are available on the website at:

<http://www.egnret.ewg.apec.org/meetings/egnret38/index.html>

and presentations of APEC Electric Vehicle Connectivity Workshop 2012 with the project final report can be found at the EGNRET website:

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

or the Workshop official website (including podcasts):

<http://www.eeca.govt.nz/content/apec-electric-vehicle-connectivity-workshop-2012>

LIST OF PARTICIPANTS

Canada

Mark Stumborg, Agriculture and Agri-Food Canada

Hong Kong, China

Wai Yip Ho, Electrical and Mechanical Services Dept. (EMSD)

Indonesia

Ken Martina, Esa Unggul University

Emy Perdanahari, Coordinating Ministry of Economic Affairs

Japan

Takao Ikeda, Institute of Energy Economics (IEE)

Takashi Ohshige, New Energy and Ind. Tech. Dev. Organization (NEDO)

Korea

Gavin, Sang Keun Yu, Korea Energy Management Co. (KEMCO)

New Zealand

Martin Brown-Santirso, Energy Efficiency and Conservation Authority (EECA)

Anna Morris, Energy Efficiency and Conservation Authority (EECA)

Caroline Ryder, Energy Efficiency and Conservation Authority (EECA)

Mike Underhill, Energy Efficiency and Conservation Authority (EECA)

Elizabeth Yeaman, Energy Efficiency and Conservation Authority (EECA)

Chinese Taipei

Chung-Hsien Chen, Bureau of Energy, MOEA

Tom Hom-Ti Lee, Industrial Technology Research Institute

Keng-Tung Wu, National Chung Hsing University

Thailand

Jariya Budnard, Dept. of Alternative Energy Development and Efficiency (DEDE)

Vinuchada Talangsri, Dept. of Alternative Energy Development and Efficiency (DEDE)

USA

Cary Bloyd, Pacific Northwest National Laboratory (PNNL)

APEC EGEE&C

Laura Christen

Terry Collins

APEREC

Bing-Chwen Yang

ICA

Mayur Karmarkar