REPORT OF THE CHAIR OF THE APEC EXPERTS GROUP ON NEW & RENEWABLE ENERGY TECHNOLOGIES (EGNRET) TO THE 30th APEC ENERGY WORKING GROUP (EWG) MEETING
ULSAN, KOREA,
AUGUST 22-26, 2005

1. EGNRET ACTIVITIES SINCE EWG 29

The 24th meeting of the Expert Group on New and Renewable Energy Technologies (EGNRET) was held on May 17-19, 2005 in Honolulu, Hawaii, USA. The meeting was chaired by Cary Bloyd of the U.S. Department of Energy’s Argonne National Laboratory. Delegates from Australia, China, Hong Kong China, Japan, Korea, Mexico, Malaysia, New Zealand, Chinese Taipei, Thailand, the United States of America, and APERC participated in the meeting.

The meeting followed the workshop “Hydrogen Workshop for APEC Economies Focus on the Eastern Hemisphere” which was held May 16, 2005, at the same venue. The workshop was held as part of the EGNRET project “APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Development of a Sourcebook of Hydrogen Codes and Standards for APEC Member Economies (EWG 08/2004T)”. Presentations were made at the workshop by nine APEC economies concentrating on those in the eastern hemisphere. This is the second of two workshops being held in support of this EGNRET project. The presentations from the workshop are available at: http://www.hpath.org/workshop-5-05.asp

The theme of the economy presentations at EGNRET 24 was “APEC Economies' Experience in Alternative Transport Fuels: Successes and R&D Challenges”. This theme was chosen to provide initial information the new APEC 21st Century Renewable Development Initiative collaborative on Alternative Transport Fuels. This collaborative is being led by New Zealand. One of the discussion items at EGNRET 24 was the development of a summary of alternative fuel options for presentation to the EMM7.

A discussion was also held concerning future potential workshops. The EGNRET decided that they would like to have a workshop based on zero net energy housing. If the workshop was held in a major capital city, it was felt that there would be much interest in this topic from both the construction industry and the new and renewable energy industry. It was also suggested that this topic be linked to the clean energy finance initiatives currently being developed by the EWG.

The 25th meeting of the EGNRET will be held in Chinese Taipei, in November, 2005, most likely in conjunction with a workshop on alternative fuels, concentrating on energy from biomass.

New project proposals to BMC
The EGNRET had five project proposals for potential funding in 2006 forwarded by the EWG to the BMC.

The proposed projects are:

- APEC 21st Century Renewable Energy Development Initiative (Collaborative V III) Local Banks Training Program for Financing Energy Efficiency and Renewable Energy Projects. (TILF Mexico lead, $100,000 total/$50,000 APEC)

- APEC 21st Century Renewable Energy Development Initiative (Collaborative V I) Evaluation of the Role of Village Power Applications in Response to the Tsunami Recovery Effort. (OA USA lead, $75,000 total/$50,000 APEC)

- APEC 21st Century Renewable Energy Development Initiative (Collaborative V III) Information Sharing on Financing Public Sector Energy Efficiency and Renewable Energy Projects. (OA USA lead, $75,000 total/$50,000 APEC)


- APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Handbook for Developing City/State Hydrogen and Fuel Cell Programs in APEC Member Economies. (OA USA lead, $100,000 total/$75,000 APEC)

**EGNRET Project Update**

**USA: Monitoring and Assessing the Design, Operation and Performance of an Ocean Thermal Energy Conversion (OTEC) Project (Self-funded)**

The purpose of this project is to monitor and assess the design, operation and performance of an ocean thermal energy conversion (OTEC) project proposed for implementation in an APEC-member economy. The land-based OTEC design will be capable of producing both electricity and desalinated water on a large scale, using only solar energy from the tropical ocean. Valuable by-products, such as fish, vegetables and industrial gases offer additional potential opportunities. Discussions are underway with an APEC economy to begin implementation of an OTEC system by late-2005. The project developer has obtained funds to implement one or more 10MW OTEC systems in an APEC member economy. All that is needed from the host economy is to sign a contract to purchase the resulting water and electricity at current competitive market rates. The project developer has again asked for interested APEC member economies to contact him if there are interested in an OTEC project.

**USA: APEC 21st Century Renewable Energy Development Initiative (Collaborative**
VIII): Demonstration of the feasibility of operating a renewables-related energy-service company (RESCO) in the hydro-electric field. (Self-funded).

This project is intended to demonstrate the feasibility of operating a renewables-related energy-services company (RESCO) in the hydro-electric field. Specifically, this project is to identify and prioritize hydro-power generation facilities possessing optimization project opportunities in APEC-member economies. Power generation optimization projects are defined as the modification of, or addition to, power generating equipment in existing facilities. Through the implementation of these power generation facility optimization projects, “latent capacity” is released from the existing power infrastructure without the need for new or greenfield power generation development. This release of “latent capacity” provides for additional power in a given locale with a lower cost and environmental impact per megawatt of capacity. An initial identification of existing hydro-facilities in APEC member economies has been completed an orientation meeting was held in Mexico in late October 2002. As a follow-up activity, a return trip to Mexico to visit potential project sites is planned for late 2005.

USA: APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Development of a Sourcebook of Hydrogen Codes and Standards for APEC Member Economies (EWG 08/2004T)

The goal of this project is to develop an information source, *The Sourcebook for Hydrogen Applications*, which captures the hydrogen and fuel cell experience of APEC members including safety, codes and standards. This document will serve as a baseline from which the future discussions of harmonization of standards can take place. The project is on schedule, with the first project workshop was held November 22, 2004 in Mexico. The second project workshop was held in May 16, 2005 in Honolulu, Hawaii.

USA: APEC 21st century renewable energy development initiative (Collaborative IV): Adoption of renewable energy standards phase II – Final groundwork (EWG 04-2004T)

The ultimate purpose of this project is to reduce trade barriers within the APEC region for renewable energy technologies and services, by working towards a harmonized set of standards. Specifically, this project will assist APEC economies, through representative technical expert committees from the region, in working together to document and prioritize the comprehensive standards for renewable energy hardware and workforce development in the APEC economies. These committees and the APEC EWG will identify the activities necessary to ultimately harmonize and implement these priority standards in the region. The RFP for this project was developed and put out to bid. A contractor has been chosen, and the implementation of the project has begun.

**Update of the APEC 21st Century Renewable Energy Development Initiative**
The APEC 21st Century Renewable Energy Development Initiative was launched by the United States at the fourth APEC energy ministers meeting in San Diego, California in May 2000, at which time it was endorsed by all of the energy ministers. The purpose of the initiative is to advance the use of renewable energy for sustainable economic development and growth of the APEC region. The initiative addresses the principal objectives of the APEC EWG by fostering a common understanding of regional renewable energy issues, facilitating trade and investment in renewable energy technologies and services, and reducing the environmental impact of the energy sector through applications of renewable energy technologies. It also addresses the APEC energy ministers’ recommendations regarding the use of renewable energy for sustainable development and diversification of energy supplies. Furthermore, it addresses, from the perspective of renewable energy technology applications, the six priority economic and technical cooperation areas identified by APEC leaders at their meeting in the Philippines in 1996, relating to developing human capital, fostering safe and efficient capital markets, strengthening economic infrastructure, harnessing technologies of the future, promoting environmentally sustainable growth, and encouraging the growth of small and medium-sized enterprises.

The EGNRET has used this initiative as a base to link its projects together by way of a series of collaborative efforts that specifically address the renewable energy-based needs and issues of individual APEC member economies. Projects developed under the initiative take into consideration renewable energy infrastructure, development needs, training requirements, needs for analysis tools and methods, policy formulation, financing, joint-venture development, and the removal of trade barriers. There are currently nine collaboratives which will be briefly discussed below.

Collaborative I: Stakeholders Dialogues, Outreach Forums, and Symposia
Lead Economy—USA

Collaborative I links together the various outreach activities of the EGNRET that are associated with bringing renewable energy information to the economic leaders, energy ministers, and energy program implementers. Collaborative I includes the facilitation of stakeholder dialogues, outreach forums, and renewable energy-related symposia. As part of this collaborative, the first APEC Private Sector Renewable Energy Forum was held in Portland, Oregon, on March 28-29, 2001. A second APEC Private Sector Renewable Energy Forum—APEC Clean Energy and Village Power Business Development Forum—was initially planned for early 2004, but has been postponed due to budget considerations.

Collaborative I also includes the APEC operational funded project, APEC 21st Century Renewable Energy Development Initiative (Collaborative I): Technical Workshop to Support Village Power Applications (which was held November 8-10, 2004), and the Korea-sponsored New and Renewable Energy Exhibition (which was held in November 2002 in conjunction with EGNRET 20). At their meeting in China, the EGNRET agreed to jointly produce an annual paper entitled Background Document and Vision on the Use and Benefits of Renewable Energy in the APEC Region. This paper is meant to provide a concise briefing for the EWG on recent trends and successes in the area of new and renewable energy
Collaborative II: Micro-Business Development
Lead Economy—USA

Collaborative II fosters the development of micro-enterprise activity in rural and remote regions of APEC economies, using renewable energy as the electricity source. The collaborative uses technical and business expertise within specific APEC economies to identify viable micro-enterprise activities that create income-generating opportunities and raise the standard of living of rural populations. Some of the Collaborative II projects undertaken in specific communities will be self-replicating in other communities. The purpose of this collaborative is not to demonstrate renewable energy technologies; rather, it is to demonstrate rural development opportunities with renewables as a primary energy source. Under this initiative, the EGNRET implemented the “Greenstar Micro-Enterprise Project Combining Solar Power and Internet Connectivity for Sustainable Development”. Future activities under Collaborative II include the production of the *APEC Business Development Guide for Micro-Enterprise*. In support of Collaborative II, a paper entitled *Renewable Energy for Microenterprise*, developed by the National Renewable Energy Laboratory, will be distributed to EGNRET representatives. In addition, a session on productive uses of renewable energy was included in the APEC Village Power Workshop held November 8-10, 2004. This collaborative has linkages to two 2005 project: *APEC 21st Century Renewable Energy Development Initiative (Collaborative V III) Local Banks Training Program for Financing Energy Efficiency and Renewable Energy Projects* and *APEC 21st Century Renewable Energy Development Initiative (Collaborative V I), and Evaluation of the Role of Village Power Applications in Response to the Tsunami Recovery Effort*. Parts of both project are associated with the development of micro-enterprises for new and renewable energy systems.

Collaborative III: Renewable Energy Training and Certification Network
Lead Economy—Australia

Collaborative III involves the identification of currently available renewable energy training and certification systems within member economies; an assessment of the needs of member economies for qualified staff to plan, design, install, operate, and maintain renewable energy systems; an assessment of the gap between currently available training and current needs; and an assessment of how training resources may be allocated to better meet the needs of member countries.

The second project implemented under this collaborative was “Development and Implementation of a System for Accrediting Renewable Energy Training”. This project was self-funded by Australia, with the final report was submitted in June 2004. It was developed in response to a need identified during the previous APEC-funded project, “Training and Accreditation Needs and Capabilities Study” (EWG04/2002), and seeks to develop and recommend a system for accrediting renewable energy training within the APEC region. The key output was a report that identifies and describes high-priority renewable energy technologies. The development of the paper will be discussed at EGNRET 25.
training courses and resources which are currently available, develops key competencies across high-priority renewable energy training courses and resources, recommended an approach for gaining relevant training provider institution agreement to implement accreditation, and recommended an approach for implementing a renewable energy training system within the APEC region. Both reports are available on the EWG website.

**Collaborative IV: Renewable Energy Standards**  
**Lead Economy—China**

The objectives of this collaborative are to (1) review and document available standards for renewable energy systems for (a) off-grid applications, including mini-grids and stand-alone systems, and (b) grid-interactive applications; (2) categorize according to types of standards (e.g., components, systems, interconnections, safety); and (3) prepare harmonized/synthesized proposed standards for APEC economies. Collaborative IV includes a TILF-funded project entitled Adoption of Renewable Energy Standards. A follow-up project was proposed to the EWG. The project was accepted for funding and will begin in January, 2005. The project is entitled “APEC 21st Century Renewable Energy Development Initiative (Collaborative IV): Adoption of Renewable Energy Standards Phase II—Final Groundwork”. The ultimate purpose of this collaborative is to reduce trade barriers within the APEC region for renewable energy technologies and services by working towards a harmonized set of standards. The implementation of this project began in the second quarter of 2005.

**Collaborative V: Distributed Energy Resources**  
**Lead Economy—New Zealand**

Collaborative V provides the means to move local distributed energy resources know-how within an APEC economy to collective information accessible by all participating APEC economies and promote standardization of distributed energy resources practices across commercial, political, environmental, and social operations and regions. New Zealand has already held a series of seminars around the country, promoting stakeholder interest and participation in this collaborative.

A workshop on distributed generation, distribution, and efficiency was held in Mexico City in 2002 to further develop an action plan for this collaborative. The recommendations from the workshop were designated as the five working areas of this collaborative. It is expected that the two projects under Collaboratives VI and VIII including “APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Workshop on Advances in Electricity Storage in Support of Distributed Renewable Energy Based Systems” and “APEC 21st Century Renewable Energy Development Initiative (Collaborative VIII): Building and Developing an APEC Renewable Energy Collaboratives Projects Integrator (APEC-CPI)”, will also promote distributed generation technologies in the APEC region. Both of these projects were completed in 2004. Additional activities under this collaborative will be discussed at EGNRET25.
Collaborative VI: Renewable Energy Technology Applications  
Lead Economy—USA

The objective of Collaborative VI is to identify and demonstrate potential applications of renewable energy technologies in the APEC region. Suggested project areas included hybrid renewable systems for schools in rural areas, renewable energy technology parks, and best practices for biomass applications. Collaborative VI also aims to set up a database on renewable energy technology applications and best practices, and to hold workshops for information exchanges. A self-funded project, entitled Monitoring and Assessing the Design, Operation and Performance of an Ocean Thermal Energy Conversion (OTEC) Project, is being undertaken as part of this collaborative and is expected to be implemented in last 2004 or early 2005. There was also an APEC operational account project which was implemented in May of 2004 as part of this collaborative entitled APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Workshop on Advances in Electricity Storage in Support of Distributed Renewable Energy-Based Systems. This project has crosscutting links to several of the APEC 21st Century Collaboratives.

The most recent project approved under Collaborative VI is “APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Development of a Sourcebook of Hydrogen Codes and Standards for APEC member economies”. The goal of this project is to develop an information source, The Sourcebook for Hydrogen Applications, which captures the hydrogen and fuel cell experience of APEC members, including safety, codes, and standards, to serve as a baseline from which the future discussions of harmonization of standards can take place. Implementation of this project began in 2004 and is on schedule. The first project workshop was held in November 22, 2004 in Mexico, and the second workshop was held in Honolulu, Hawaii May 16, 2005.

Three projects under this collaborative were supported at the EWG 29 meeting and are being submitted to the BMC for funding in 2006. The projects are: APEC 21st Century Renewable Energy Development Initiative (Collaborative VI) Evaluation of the Role of Village Power Applications in Response to the Tsunami Recovery Effort, APEC 21st Century Renewable Energy Development Initiative (Collaborative VI) Renewable Energy Products Database: Paving the Way for Deployment of Renewable Energy, and APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Handbook for Developing City/State Hydrogen and Fuel Cell Programs in APEC Member Economies.

Collaborative VII: Web-Based Renewable Energy Information Dissemination  
Lead Economy—New Zealand

Collaborative VII aims to provide news and information to a wide range of targets within APEC economies on a range of renewable energy applications. This information will validate the feasible applications of renewable energy technologies and provide complete “how-when-where” information for interested parties. A major activity of the collaborative is the 2003 TILF-funded project “APEC 21st Century Renewable Energy Development Initiative (Collaborative VIII): Building and Developing an APEC Renewable Energy
Collaboratives Projects Integrator (APEC-CPI)”. This project links those of the financing collaborative with project identification and information sharing (http://www.apec-cpi.com). This project was completed in 2004 and the website was officially announced at EGNRET 22 in May of 2004. The APEC-CPI has continued to be developed in support of EGNRET project activities and is being utilized as part of the current clean energy finance initiatives currently being led by the EWG.

Collaborative VIII: Financing
Lead Economy—Mexico

The objective of Collaborative VIII is to provide a roadmap in the form of a set of guides, tools, and databases available through a website that will facilitate financing of renewable energy projects in the APEC region through existing international commercial and multilateral financing mechanisms. Mexico has developed a work plan that was accepted by the EGNRET. The concepts presented in the work plan are being integrated into a web-based system that would include four portals: (1) a financing portal that would list lenders and their requirements and application forms, etc.; (2) a portal containing potential renewables-based projects, in specified format; (3) a portal containing tools for financial analyses; and (4) a portal listing available expertise to perform financial and other analyses and implement potential projects. The principal project under this collaborative is an APEC funded activity led by Mexico, entitled “APEC 21st Century Renewable Energy Development Initiative (Collaborative VIII): Financial Roadmap for the APEC Region”. The final report was completed in early February 2004. The project provided major input to the Renewable Energy Financing Workshop held in Hawaii in May of 2004. In support of this collaborative, a new project for training local bankers for financing energy efficiency and renewable energy projects will be submitted to EWG 29 for support.

In support of this collaborative, two projects were accepted by the EWG and have been put forward to the BMC for funding in 2006. The projects are: APEC 21st Century Renewable Energy Development Initiative (Collaborative VIII) Local Banks Training Program for Financing Energy Efficiency and Renewable Energy Projects, led by Mexico, and APEC 21st Century Renewable Energy Development Initiative (Collaborative VIII) Information Sharing on Financing Public Sector Energy Efficiency and Renewable Energy Projects, led by the USA.

Collaborative IX: Alternative Transport Fuels.
Lead Economy—New Zealand

The object of Collaborative IX is to provide advice to the EWG and the APEC Energy Ministers concerning the technical and economic developments in the field of alternative fuels for road transport and measures the APEC economies could pursue to increase their use of cost effective use of alternative transport fuels. These measures include legislative actions, implementation issues as well as research and technical development. The first product of this Collaborative will be a brief summary report on the status of alternative transport fuels for EMM7.