

**APEC EXPERT GROUP ON
ENERGY EFFICIENCY AND CONSERVATION MEETING 19
Kuala Lumpur, Malaysia, 3rd to 5th September 2001**

The nineteenth meeting of the Expert Group on Energy Efficiency and Conservation (EGEE&C 19) was held in Kuala Lumpur, Malaysia, from 3rd to 5th of September 2001. Twenty representatives from Australia, Japan, Korea, Malaysia, Mexico, Singapore, Chinese Taipei, and USA, and an observer from the Asia Pacific Energy Research Centre (APEREC) attended the meeting. New Zealand also participated in the meeting via telephone link-up.

Monday, September 3

Introduction and Review of the EGEEC 19 Meeting Agenda

The vice chair of the expert group, Dr. Fanghei Tsau of Chinese Taipei, chaired the meeting. The chair welcomed the delegates to the meeting and thanked Malaysia for hosting the meeting. The delegates introduced themselves, and the chair noted that New Zealand would be making its progress report on current projects via telephone. Then the expert group approved the meeting agenda.

Report on Completed Projects

1. EWG 06/2000—Green Building – Investing in our Future – A Showcase Workshop (Australia)

Mr. Albert Ofei-Mensah reported on the workshop held in 16-18 October 2000. He distributed the CD-ROM that documents in details the results of the workshop, and raised the question of follow-up steps to disseminate the outcome. He advised that the CD-ROM materials be reviewed to identify any suggestions from the workshop.

USA recalled the discussion on follow-up issues in the previous expert group meeting and suggested that green building is one of the areas where EGEE&C and EGNRET can cooperate. Singapore noted the importance of benchmarking in its program targeting government and private-sector buildings. Malaysia suggested incorporating sustainable architecture and urban design to broaden the scope of the green building; however, it may be too diverse in nature and too huge in scope. Malaysia mentioned an ongoing project by the government on green building.

The chair asked the Secretariat to print out the executive summary of the workshop for discussion at next day's meeting. The chair also suggested that Malaysia make a presentation of its ongoing project at the next meeting. The chair will follow up to contact the other economies for their interest in making similar presentations.

Report on Current Projects

1. EWG 06/2001—Workshop on Distributed Generation, Distribution, and Efficiency (USA)

Mr. Andre van Rest introduced the agenda of the workshop, which will be held back-to-back with the EGNRET meeting 6-8 November 2001. The topics will include:

- (1) distributed generation technologies and their cost-effectiveness,
- (2) potential barriers to the adoption of distributed technologies,
- (3) applications of distributed generation in APEC economies, and
- (4) potential market penetration of distributed technologies in APEC economies.

So far, at least 10 speakers from 6 member economies will participate. The workshop will provide funding for speakers but not the other participants, in accordance with APEC budgetary guidelines.

Malaysia pointed out the need to consider the differences between developed and developing economies in addressing distributed generation.

2. EWG 03/2000T — Study on Algorithm Development for Energy Performance Testing (New Zealand)

Mr. David Cogan explained that the project has been divided into four studies, with corresponding contractors already onboard (in parenthesis):

- (1) Selection of product groups (Energy Efficient Strategies, Australia)
- (2) Study of algorithms for domestic refrigeration appliances (Dr. Pradeep Bansal, NZ)
- (3) Study of algorithms for air-conditioners (CDH Energy Coporation, USA)
- (4) Survey of industry and regulators (Sood Ratanadilok Na Phuket, Thailand)

Malaysia enquired the feasibility of the algorithm from a regulatory point of view, and Mr. Cogan stated that it should be determined by Study 4, which will survey regulatory bodies.

3. EWG 06/2001T — Development of Algorithm Criteria (New Zealand)

Mr. David Cogan explained that this is a follow-up from the ongoing project as described above, and no progress has been made at this point.

4. EWG 01/2001T — Energy Standards Information Development and Co-ordination (New Zealand)

Mr. David Cogan reported that because of funding delay, there is expected budget surplus before the project is completed at the end of 2002. It was suggested that the surplus be used to carry out additional study, such as the options for longer term coordination of energy standards, since the energy standards coordinator is a temporary position as stipulated by the project. He also raised the possibility of working with other organization such as IEA in carrying out future work. The co-ordinator has not been identified, as the project is still open for competitive bidding.

Malaysia enquired whether this project seeks to establish standards for APEC economies. New Zealand responded that although standards harmonization will not be a direct outcome of this project, by posting standards on the website and coordinating standards activities within APEC economies, this project would prevent further divergence of energy standards within APEC economies. Furthermore, the coordinator will try to coordinate APEC participation in international standardization process so that APEC needs could be better reflected in international standards.

5. EWG 03/2001 — Supporting High Quality Energy Efficiency Indicator Development (New Zealand)

Dr. Harbans Aulakh reported that the training course will be held in Manila, Philippines, in November of this year and, if not possible, in early next year. A local

organizer has been identified, and suitable resource persons are being considered. The various components of this training course will include:

- Defining energy efficiency for monitoring and measuring purposes
- Methodologies for measuring economy-wide and sectoral levels energy efficiency improvement targets
- Case studies on measuring energy efficiency targets
- Energy end-use data and other related issues
- Assessment of energy efficiency potentials
- Communication of results to a wide range of audiences.

Dr. Oleg Sinyugin enquired about possible APERC contribution to the training course, and New Zealand responded positively. The chair informed New Zealand of an APEC workshop on distributed generation to be held in Manila, Philippines, in November 2001.

Report on Energy for Sustainable Communities Program (USA)

Mr. Andre van Rest presented an overview of the APEC Sustainable Village Project in China that started in 1999 and will produce a master plan of a Model Sustainable Village for the city of Guanghan in China in November 2001. The goals are to promote economic growth, protect the environment, foster a strong community, and improve the quality of life. Six basic principles were outlined and incorporated into various design features, including the site plan, community center, village systems, sanitary waste and bio-energy system, building design and construction, the use of earth blocks, passive solar design, and sustainable agriculture. It is hoped that the sustainable village can be replicated throughout the province and even the whole country.

Future Coordinated Activities with APEC EWG EGNRET (I)

Mr. Andre van Rest described in depth the eight collaborative areas identified by the EGNRET as a framework for project development and proposed a similar approach for EGEE&C. For each collaborative area, a work plan would be developed that includes (1) the description of the collaborative, (2) its purpose and objectives, (3) a suggested implementation plan, (4) methodology for obtaining private-sector participation, (5) deliverables, and (6) estimated costs. In light of the overlap between the two groups and in order to facilitate joint project considerations, three alternatives were proposed: the merger of the EGEE&C and EGNRET, holding back-to-back meetings, or merging the groups but having separate meetings considering individual and common issues.

Japan noted the synergy between the two groups and supports holding back-to-back meetings of the two groups. Korea in principle supported the merger of the expert groups. Malaysia noted the need to maintain the different emphasis of the two groups, while acknowledged the synergy between two groups, and has no objection to the US proposal for back-to-back meetings. Mexico supported the US new proposal for merger of the two groups but having separate meetings on individual and common issues. Chinese Taipei emphasized the fundamental differences between the two groups, noting that energy efficiency and conservation addresses demand-side issues and new and renewable energy addresses supply-side issues. Singapore has no

objection. Australia suggested a merger may risk the loss of focus of both groups and that detailed consideration is needed for sound implementation of both.

The chair advised that the group defer further discussion until next day's meeting.

2003 Project Proposals

The chair noted the purpose is to allow members to bring up any initial project concepts for discussion among experts in the meeting, so that more solid project proposals can be developed at the next meeting before submission to the EWG for project endorsement. He referred to the project selection document endorsed by the EWG and emphasized the timing of submitting project proposals. He also referred to the EWG Future Directions Strategic Plan as a good source of ideas for future project proposals.

Furthermore, the chair provided a list of EWG projects endorsed by the BMC for APEC funding in 2002, including:

Operational Account

- EWG 01/2002 “Harmonising Economic and Environmental Objectives of Energy Policy Phase 1”
- EWG 02/2002 “Operation of APEC Energy Data Base and Analysis”
- EWG 03/2002 “Symposium on the Development and Coordination of Energy Efficiency Programs and Standards during Energy Market Restructuring”
- EWG 04/2002 “APEC 21st Century Renewable Energy Initiative: Training and Accreditation Needs and Capabilities Study”

TILF Special Account

- EWG 01/2002T “Adoption of Renewable Energy Standards”
- EWG 03/2002T “Measuring the Impacts of New Economy Technologies on the Energy Sector in APEC Economies”

APERC Report on “Energy Efficiency Indicators for APEC Economies”

Dr. Oleg Sinyugin introduced the history of APERC and noted the recent change of its President. The first phase study on energy efficiency indicators covered 3 sectors (iron & steel, paper & pulp, cement). The objectives were to establish a common methodology for constructing a basic set of energy efficiency indicators for APEC economies and to construct energy efficiency indicators (EEI) for the whole APEC. 21 APEC economies were studied with the time span from 1980 to 1998.

The study found that, according to estimates at macroeconomic level, China has experienced the highest improvement in energy efficiency, while some economies have shown deterioration. In energy intensity trend, China showed the greatest decrease whereas some economies had increased. The report found fast growth in the transport sector in both developed and developing economies. In the services sector, energy intensity is currently at low levels in developing economies compared to developed economies, but is rising quickly. Strong correlation between income and electricity per capita in all APEC economies implies strong growth in electricity demand in the future.

The next phase study will update the APEC EEI database and disseminate the results. More in-depth analysis of energy efficiency trends will be conducted, and methodology and estimates for energy saving potentials economy-wise will be developed. The next phase will also identify successful energy efficiency policy cases. APERC is interested in participating in the expert group meetings to further disseminate results of its studies on energy efficiency.

Australia noted that the energy efficiency indicator as shown is really energy intensity and that caution is needed in making comparison of energy efficiencies among economies, including APEC economies.

Update on Energy Efficiency Database Construction (Japan)

Mr. Takeshi Sekiyama described the history of the project. At the completion of the final project report in October 2000, 8 out of 21 economies had responded to the survey. At the request of the EGEE&C, Japan agreed to update the database for one more year on a voluntary basis and report to the EGEE&C. Japan conducted a second survey in February 2001, and a third survey in August 2001. The update period ended after the third survey, and Japan will upload the results on the ECCJ homepage to be linked to the APEC Secretariat website. Although the constructed database is still not satisfactory, it would be a very useful tool for developing energy conservation technologies, introduction of policies, and planning in every APEC economy.

The Expert Group agreed that Japan would not need to provide further updates on this project in the future.

Tuesday, September 4

Open Forum

Australia

Mr Albert Ofei-Mensah reported that the Council of Australian Governments (CoAG) has established a national energy policy framework to guide energy policy decision-making and to provide certainty to both energy users and suppliers. The key objectives of the policy are: efficient provision of reliable, competitively-priced energy services to Australians; responsible development of Australia's energy resources, technology and expertise; and mitigating local and global environmental impacts. Actions to give effect to the objectives include: energy market development, support for liquid fuels, renewable energy measures, innovation, energy-efficiency measures, and international engagement.

The energy market reform in Australia continues to generate benefits such as increased efficiency and productivity and decline in electricity and gas prices. However, more can be done under the market reform process - including further interconnection of electricity grids and gas pipelines - to maximise the benefits.

The following new measures have been designed to increase energy efficiency and/or limit greenhouse gas emissions. The Greenhouse Gas Abatement Program (GGAP) is to facilitate private sector investment in projects that will lead to large-scale, cost-effective and sustained reductions in Australia's greenhouse gas emissions. The

Mandatory Renewable Energy Target (MRET) legislation requires companies making wholesale purchase of electricity to progressively source an additional 2% (9,500 GWh) of energy from renewable sources annually by 2010. The recently mandated new fuel quality standards for petrol and diesel under the Fuel Quality Act 2000, which will be phased over the next five years, is to ensure that the quality of transport fuel used in Australia is in line with international best practice. The recently enacted Environment Protection and Biodiversity Conservation (EPBC) Act 1999 applies to projects, including many energy projects, likely to impact on a matter of national environmental significance.

Japan

Mr. Takeo Ijuin noted that CO₂ emission in Japan is expected to increase by 6.9% by 2010, compared with 1990 level. In the industrial sector, current measures would achieve 20.1 M kiloliters of energy saving. New additional energy conservation measures include: achieving targets set in Keidaren's voluntary action plan, general inspection to verify the enhanced management system for factories, and promoting results of new technological innovations, with a total of 400 K kiloliters of potential saving. In the civil sector, current measures would achieve 5.4 M kiloliters of energy saving. New additional measures include: expanding Top Runner machinery and equipment, high-efficiency hot water systems, reducing standby power, improving energy saving property of homes and other structures, power demand management, totalling 18.6 M kiloliters of potential saving. In the transportation sector, current measures would achieve 15.9M kiloliters of saving. Additional new measures include: accelerated introduction of top runner, hybrid car, energy saving measures related to traffic systems, with savings totalling 1 M kiloliters. In cross-sector areas, new measures include: re-evaluation of technological innovation items, promoting co-generation system, promoting energy conservation education, etc. Overall, future energy conservation measures would achieve 57 M kiloliters of energy saving, which is more than the total annual household consumption in Japan.

In presenting topics from the Energy Conservation Center, Japan, Mr. Takeshi Sekiyama explained that energy consumption in industrial sector has remained the same while the residential/commercial and transportation sectors have doubled since 1973, making up over 51% of total energy consumption. "Smart life" is an energy-saving lifestyle to be achieved by promoting energy conservation in residential and commercial sectors. "Energy Conservation Navi" is an energy cost indication system, installed at about 800 houses nation-wide and reduced household's electricity consumption by about 20%. "Energy Conservation Republic" is a program implemented in concert with local communities to promote energy conservation.

Korea

Mr. Dae Gyun Oh described the Energy Conservation Exhibition 2001 (ENCONEX 2001) held in Seoul from 31st August to 3rd September 2001. A total of 118 companies from 13 countries participated in the exhibition, which covered the following fields: (1) Household Energy Conservation Equipment, (2) Industrial Energy Conservation Equipment, (3) Transportation Energy Conservation Equipment, (4) High Efficient Energy Using Materials and Equipment, (4) Energy Saving Office

Equipment and ESCO Business, (5) Electric Power Saving Equipment, and (6) Environmental Protection and Pollution Abatement Equipment.

Malaysia

Dr. Salim Sairan explained that Malaysia has newly established the Energy Commission, taking over the roles of the existing Electricity and Gas Supply Department effectively from January 2002. In May 2001, the Government of Malaysia (GOM) has officially launched Renewable Energy as the Fifth Fuel Policy. This is in line with the ongoing Energy Efficiency Program. Presently, the 4-year Malaysian Industrial Energy Efficiency Improvement Program (MIEEIP) is being implemented, with more than 48 facilities being audited and now developing benchmarking on energy use. The GOM is also undertaking a project named "Low Energy Office" (LEO), focussing on the newly designed building of the Ministry of Energy, Communications and Multimedia. A DSM utility-led program is underway after a detailed study on the impact to the utility has been completed. The study concluded that it is a "win-win" strategy.

Mexico

Mr. Carlos Chavez Baeza described two aspects of energy efficiency activities in Mexico. In energy efficiency standards, there are 20 mandatory standards for systems and equipment, resulting in efficiencies up to 40 % higher than models 6 years or older. The standards apply to more than 6 million products and systems sold in Mexico, and important savings have been obtained in the past 5 years. The energy efficiency programs for Federal Buildings, operated through the internet, involves more than 350 buildings and has achieved 14% reduction in energy consumption from 1998 to 2000. In 2001, the program is mandatory for buildings with more than 1,000 m² of office space, and the ESCO approach is being arranged to be applied to the public sector.

Singapore

Ms. Latha Ganesh presented an overview of the electricity industry restructuring in Singapore. The first restructuring in 1995 saw the creation of a vertically integrated power industry. Currently, Singapore is proceeding with the second restructuring. In the new structure, the contestable parts of the industry will be separated from the non-contestable parts at the ownership level. The new wholesale electricity market will comprise a spot market for electricity and a spot market for spinning reserves. This will enable generation companies to bid to sell spinning reserves. The new retail electricity market would be liberalized in three phases, giving customers the choice of buying electricity from a range of retail companies or directly from the wholesale market. After 2003, all customers would be contestable.

Chinese Taipei

Mr. Robert Shih presented recent efforts in energy efficiency and conservation in Chinese Taipei. Energy audits of top 100 energy users began in November 1999 and cover the iron & steel, chemical, cement, paper & pulp, synthetic fiber and electronics

industries. By the end of 2001, 30 audits are expected to be completed, with a total potential saving of 185 MLOE. Audits of all 100 top users are expected to be completed by 2003, with a total potential saving of 780 MLOE.

During 2001, Chinese Taipei has held various courses for interested businesses on energy conservation, including 36 symposiums, 13 technical training courses, and 12 forums. In particular, Chinese Taipei held the 2001 International Symposium on Energy Conservation Technology in July 2001 and four APEC Economies (Japan, New Zealand, Singapore and USA) participated in the event. Since May 2001, a demonstration program has been initiated for energy conservation of the top 8 franchised 24-hour convenience store chains. Each chain would be encouraged to set up a demonstration store to implement energy conservation measures with a potential 12.5% of energy saving. Furthermore, ERL/ITRI and LBNL (USA) recently signed a technical MOU to promote energy efficiency and conservation, with initial emphasis on cleanrooms.

USA

Mr. Andre van Rest presented an update on energy efficiency programs in the USA, which manifested a shift toward technology deployment. In transportation, which accounts for 27% of energy consumption and 65% of oil consumption, programs included improving petroleum based fuels and vehicles, developing alternative fuels and vehicles, and conducting vehicle component and materials research. An example of a public-private sector partnership is the Clean Cities International Program that promotes the use of alternative fuel vehicles, with over 4,400 partners.

In buildings, programs are implemented to reduce energy consumption and cost, help school reinvest their savings from energy improvements, improve learning environment of schools, and increase student, teacher and community awareness of energy and related issues. Examples of public-private sector programs include "Rebuild America", which renovates buildings to include renewable and efficient design, and "Building America" that helps build homes with high energy efficiency.

In industry, the "Industries of the Future" program creates partnership between industry, government and research institutions to accelerate technology research, development and deployment. In distributed resources, efforts are focussed on distributed generation and commercial and industrial co-generation.

The presentation also included a discussion of energy efficiency-related recommendations in the U.S. National Energy Policy of May 2001.

Future Coordinated Activities with APEC EWG EGNRET (II)

USA noted that the expert group feels a lot of overlap between the two groups, but is more in favor of back-to-back meetings at this stage, while a merger may be considered at a later stage. There's a need to get more economies to participate in expert group meetings, especially the developing economies, and to identify their needs and priorities. USA suggested that maybe a new format, with private sector participation, would make it more interesting.

Singapore favored joint projects for the time being, with merger considered later. Chinese Taipei noted that collaboration between the two expert groups may be

identified to facilitate project development, such as holding back-to-back meetings or having joint project proposals to address emerging and inter-related issues, whenever appropriate. However, their technical and policy uniqueness still demands the two expert groups to function independent of each other.

Malaysia supported merger of the two groups, but also suggests holding simultaneous two-day meetings of the groups, joint meeting on a third day. Korea noted that, though the merger of the two groups would make a synergistic effect, at this stage the two groups have their own interests and supported back-to-back meetings, joint workshops or other activities. Japan noted the differences in the meetings of the two groups, did not support merger, and favored back-to-back and joint meetings.

Australia maintained that the objectives of the groups are different. Synergies can be derived, while back-to-back arrangement may help, but need sound coordination between the two chairs. Private-sector participation can be included in one session, but not likely the whole meeting period.

The chair noted that a lack of interest in subjects may not be the only reason for low attendance, and that contact difficulty and budget constraint might be possible. He also noted the efforts in the past to hold expert group meetings back to back with APEC workshops, but it's not always possible due to scheduling problem.

In conclusion, the chair suggested that the two groups be kept separate for now, and that the two groups should hold a back-to-back meeting at least once a year, during which a joint session should be arranged whenever appropriate to address common issues. A survey would also be sent to member economies to identify collaborative areas within the EGEE&C. The expert group agreed on the need to raise interest to improve attendance in both groups.

Malaysia Utility Proposal on Electricity Restructuring Model

Dr. Ismail Mustapha of TNB described the evolution of electricity supply industry in Malaysia. There are three utility companies in Malaysia, established at different stages of privatization. IPP was introduced in 1993 and now consist of 37% of electricity supply. The proposal to conduct ESI Study on a fully competitive model is being reviewed by government, and now it is proceeding with a transition model. High growth rate requires a unique ESI solution for Malaysia, with maintaining security of supply and an attractive investment climate as top priorities. The model must also reflect Malaysian environment, with a developing market with high growth, need of uniform tariffs, and special fuel pricing policy. There's a need for unbundling of existing structure to ensure transparency and efficiency. M3 model has robust regulatory framework, strong incumbent, sustainable IPP Development, and offers security, stability, competitive prices and low transition costs. The model must retain flexibility to accommodate further evolution. In conclusion, TNB management unbundling is very important in achieving transparency, and internal improvement is needed because of a lack of market competitiveness.

Malaysian Experiences on District Cooling System and Demand Side Management

Dr. Salim Sairan, Tenaga SPL Sdn Bhd, made a presentation on its experiences on the district cooling system and demand side management. The district cooling system is coupled with the thermal storage system which enjoys a special tariff during the off-

peak hours under the current TNB scheduling and, as such, has successfully shifted 14.7 MW of demand off the peak load. In addition, a study on the residential load curve found that the load factor in Malaysia has increased from 30% to 71%, due mainly to the uptake of electrical appliances by households. The peak demand has also shifted from the usual 8 PM to 10 PM, probably because of air-conditioning usage. A further study indicated market transformation programs with governmental regulations and utility-led DSM could save up to 370 MW of generation capacity in 10 years and avoid generation investment by RM 1 billion in 20 years.

Report on Sustainable Electric Services & Update on APEC Leaders Summit Events

Mr. Andre van Rest noted three themes for sustainable electric services activities, namely (1) energy efficiency and market transformation programs, (2) distributed generation, and (3) electric restructuring. He also noted that a project on ESCOs services and training did not receive APEC funding for 2002.

USA has decided not to pursue any events for the APEC Leaders Summit.

Future for the EGEE&C (Terms of Reference and Election of New Chair)

The chair noted that the EWG will be reviewing the terms of reference (TOR) of each expert group next year, and a preliminary review of the TOR is proposed in order to better reflect recent developments in the APEC region.

The chair suggested that the EWG Future Directions Strategic Plan be incorporated in the background section of the TOR. Australia suggested the inclusion of energy efficiency in the preamble of the mission statement section. Malaysia suggested the inclusion of the improvement on indigenous energy efficiency technologies as one of the missions to be accomplished. USA suggested the deletion of one of the strategies referring to liaison group activities. USA also suggested the deletion in the reporting mechanism section of references to liaison groups. A draft TOR was produced in this meeting and will be finalized at the next meeting before submission to the EWG for endorsement.

USA nominated Chinese Taipei to serve as the new chair of the expert group, and it was seconded by other economies present. Chinese Taipei appreciated the support from member economies and accepted the position as the chair of the expert group.

Next meeting & Consideration and Acceptance of Minutes

Mexico offered to host the next meeting in March 2002 in Mexico City, and the group agreed to the proposal. The new chair of the expert group will confirm the meeting dates and venue with Mexico out of session.

The meeting minutes were reviewed and accepted by the delegates present.

Adjourn

The chair formally thanked the host economy, Malaysia, for its efficient and courteous arrangements for this meeting. The meeting closed for formal business at 5 p.m.

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