Joint APEC Expert Group on Energy Efficiency and Conservation Meeting 16 and Steering Group on Energy Standards Meeting 7, Wellington, New Zealand 2nd – 4th March 2000

The joint Sixteenth Expert Group on Energy Efficiency and Conservation (EGEE&C 16) and Seventh Steering Group on Energy Standards (SGES 7), meeting was held in Wellington, New Zealand, hosted by the Energy Efficiency Conservation Authority (EECA), from 2nd March to 4th March 2000. Twenty-six representatives from twelve economies, an observer from the Asia Pacific Energy Research Centre (APERC), and a representative of the EWG Secretariat attended the meeting.

Thursday 2 March

Mr Frank Pool, chair of EGEE&C welcomed representatives to the meeting and invited Mr Giff Davidson, Chairman of EECA's Board to open and address the meeting.

Mr Davidson welcomed representatives to New Zealand on behalf of the Joint APEC Expert Group on Energy Efficiency and Conservation Meeting 16 and Steering Group on Energy Standard Meeting 7. Mr Davidson highlighted New Zealand's recent change of Government, and the exciting atmosphere, produced by this within EECA, as energy efficiency now had significantly stronger political support. New Zealand has a new Energy Minister, who had made strong commitments to effect change and support the Energy Efficiency Bill which was now being considered by Parliament. Mr Davidson stressed the importance of international co-operation to a small trading nation such as New Zealand. Mr Davidson acknowledged the strong contribution made by Nick Marty of Canada to the past activities of the Steering Group on Energy Standards, and stressed EECA's strong interest in this area.

Mr Davidson then declared the meeting open, and handed over to the co-chairs of the meeting, Nick Marty, chair of SGES, and Frank Pool, chair of EGEE&C

Overview of Last Meeting and Agenda

Nick Marty then reviewed the past activities of the Steering Group, asked all attendees to introduce themselves, and overviewed the agenda. The meeting then approved the agenda.

Mr Marty reminded the meeting that SGES was established in late 1996, with its first meeting being held in 1997. Since its inception, SGES has focused on responding to its mandate, as set by Energy Ministers in the Sydney Ministerial in 1996. SGES's focus has been on the energy efficiency standards used to test energy consuming products traded within APEC member economies. Recent activities include the Colloquium on Technical Issues of MEPS held in October 1999 in Korea, and the Study on Energy Performance Test Standards, whose results were discussed in depth at the Canberra SGES 6 meeting. The study recommended a three-pronged, product by product approach, as follows:-

- Adopt common test procedures from among those existing in the region,
- Influence the development of new international test procedures that could be adopted by most or all APEC member economies,
- Develop algorithms to convert the results of one test procedure to meet the requirements of another test procedure.

The meeting then discussed further results from the Canberra meeting, and discussed the needs and priorities of the upcoming EWG 19 meeting in Brunei (April 4-7), and Energy Ministerial in San Diego from May $10^{\text{th}} - 12^{\text{th.}}$

Update on Current and Recent SGES Projects

New Zealand summarised the outcomes of current and recent SGES projects, as follows:

- 1. Report on Standards and Regulations
- 2. Workshop on Setting Up and Running an Energy Testing Laboratory,
- 3. Colloquium on MEPS.

All these projects were agreed to have been very useful and it was agreed that they had made a high quality contribution to SGES's work programme. The EWG Secretariat confirmed that these projects had received positive consideration by the EWG Chair.

New Zealand reminded the group of the Symposium on Domestic Refrigeration Appliances being held the following week and that there was a discussion paper available to delegates. Mention was also made of a project proposal on algorithms, which would be discussed later in the meeting.

New Zealand outlined the proposed position of Standards Co-ordinator. The meeting discussed the objectives of the position, and it's timing and funding. The meeting agreed to return to this issue later in the meeting.

Proposed Y2000 Projects

The chair then invited representatives to table further projects seeking APEC Y2000 approval and/or funding. The chair then reviewed the process for project consideration and endorsement by the meeting. The EWG secretariat then clarified APEC proposal consideration and approval procedures. Five operational account, two TILF and two self funded potential Year 2001 projects were then tabled. There was then a brief discussion to clarify aspects of some projects as follows:

- Supporting High Quality Energy Indicator Development

The meeting discussed the format, location and duration of the proposed training programme and discussed the importance of improving energy end use data capabilities in APEC member economies. - Forum on the Reduction of Baseload Losses

The meeting discussed the desirability of inviting speakers from outside the APEC region, and the procedures that would need to be followed to do this.

Workshop on Distributed Electric Power Generation

The meeting discussed the definition of distributed power generation and whether the focus of the workshop was to be technological aspects or the wider implications of distributed power

Upcoming APEC Energy Ministers meeting

The meeting was advised of this upcoming fourth Energy Ministerial Meeting (EMM4) being held in San Diego, USA on May 10th- 12^{th.}. The meeting will held over three days as follows:

<u>Day 1</u>, Energy senior officials, EWG members, private sector, general discussions, clean energy statement to be tabled.

<u>Day 2</u>, Public, private sector dialogue, sessions on clean and sustainable energy development, natural gas and electricity, then discussion between Ministers and energy business network.

Day 3. Energy Ministers meeting, and endorsement of communiqué in morning

Draft Report of SGES to EWG19 and EMM4

The chair described each of the sections of the SGES report. The chair stressed the importance of section 2.4 which describes the general policy framework and the role and responsibilities of the proposed standards co-ordinator.

It was agreed that the term "standards" would be changed to "test procedures" throughout the report to avoid confusion.

With respect to the recommendations for APEC Energy Ministers, it was agreed that details would be provided on the 3-pronged approach under recommendation 1 and on the critical role of the standards co-ordinator under recommendation 2.

There was a discussion about the best sequencing of the section of the report and whether the recommendation to the Ministers needed to be presented earlier in the document. It was agreed to keep the sequence unchanged but to prepare and insert a two page executive summary.

The question was raised as to whether or not the duties of the co-ordinator were too broad. The chair responded that the duties of the co-ordinator were indeed quite broad, but that this could be handled by EGEE&C providing the co-ordinator with appropriate strategic direction. The chair also pointed out that the alignment of test procedures would not be achieved by the efforts of the co-ordinator alone but would also require significant involvement by members of the individual economies. The chair agreed to highlight this fact in the report. As well, it was agreed that a paragraph would be added to the recommendations stating that the general policy framework "should" be implemented on a progressive, multilateral or bilateral basis.

The question was also raised as to the relationship between the standards co-ordinator, EGEE&C and other groups within APEC. The chair responded that the co-ordinator would report to the expert group, would attend expert group meetings, and would provide briefings on activities. The expert group would then in turn brief the EWG, who would in turn inform Ministers of relevant developments

There was a discussion about whether the proposal for the standards co-ordinator would also cover the work required to complete and maintain the standards website. New Zealand responded that the proposal would cover this although it was proposed that the web-site would be less automated than originally envisioned.

Concerns were expressed about the use of the term "recommended strategy" in Appendix 2, it was suggested that it would be better to refer to "initial" or "possible" strategy. Alternately, it was suggested that the report could make it clearer that the strategy was being recommended by the Study on Energy Performance Test Standards, rather than by the SGES.

Chinese Taipei recommended the inclusion of a statement in recommendation 1 supporting existing regional and international laboratory accreditation arrangements.

Australia suggested several editorial changes to the report. They also pointed out that the section on the Korea Colloquium described only the key findings for air conditioners and missed those for ballasts, Australia agreed to put forward wording changes for consideration the following day.

In view of the upcoming termination of the SGES, there was a suggestion by USA to schedule "technical meetings" by standards experts to discuss issues raised by the Co-ordinator. It was agreed that there should be such meetings and that they should be held in conjunction with Expert Group meetings. The meetings would be held on an ad hoc basis, but probably once a year, with the information gleaned then being fed into the Expert Group.

The Chair agreed to circulate to the meeting, the following day, the revised sections of the report dealing with the Korea Colloquium and the recommendations for Energy Ministers. The other suggested changes to the report will be made by the chair of SGES when he returns to Canada. The revised report will be emailed to meeting participants, and then sent to EWG for consideration at their April 4-7th meeting.

Day 2 – Friday 3rd March

Overview of EGEE&C Business & Priorities

Frank Pool, the chair of EGEEC, opened with a review on the progress of the expert group and briefly discussed the history of the two former expert sub-groups.

Future Co-ordinated Activities with APEC Expert Group on New and Renewable Energy Technologies.(*EGNRET*)

Andre van Rest (USA), the chair of EGNRET, summarised the conclusions of the EGNRET meeting held earlier in the week and discussed the Energy Industry for Sustainable Energy Services proposal. With regard to the scope of the project, Mr van Rest reminded the meeting that there were some APEC economies where demand side management is still very important, whilst there were also economies which have already restructured and now focus on energy services rather than DSM, and that there were economies who are still in between these two extremes. At the November 1999 planning meeting in Hawaii for this group, the utility and other participants left the meeting not sure what direction the group would take in the future. The next meeting of the group is scheduled for June in Thailand. This meeting will determine the future of the group; including whether it should break up into a number of smaller and more tightly focussed groups.

Where proposals are proposed to come under joint EGNRET and EGEE&C oversight, it was agreed that there would need to be very clear division of responsibilities between the expert groups before the project commences.

Discussion of Proposed Year 2001 APEC Projects

The EWG Secretariat reviewed the process of considering and ranking projects and noted that would be only around US\$300,000 available for all EWG operational fund projects in any one APEC year.

The meeting then discussed whether forwarding too many projects to EWG might be counterproductive. It was agreed that only projects of high quality and relevance should be endorsed and forwarded to EWG. It was agreed that projects would be divided into TILF, operating account and self funded categories and ranked by the economies present, with the low ranked projects to be carefully considered later in the meeting before they received EGEE&C endorsement.

Update on APERC Industrial Indicators Project (Visual Presentation - Ivan Jaques of APERC) In his presentation Mr Jaques highlighted the need for energy indicators, and explained the project's objectives, relevance and scope. Ivan noted that the project had to reduce its scope due to time limits. Ivan discussed how the data used was collected from various sources, from existing databases, and from various institutions, and the possible level of data disaggregation.

Ivan then presented the project's findings on the cement industry, covering cement production, technological changes, energy consumption and CO2 intensity. The presentation then moved on to how indicators could be used to assess energy savings potentials, measures and barriers. The presentation then touched on policy issues, in particular how indicators can only assist policy discussions when analyses when suitable data and consistent methodologies had been used.

Ivan then highlighted further APERC research activities, in particular the network of energy efficiency analysts established; the need for more work on environmental aspects, policy measures and barriers; the joint study with ADEME (France); the development of energy indicators for all WEC (World Energy Council) members; and the potential for collaboration with EGEE&C for a short term capacity building project in 2001.

Update on APEC EWG 02/99 Energy Efficiency Database Construction (Japan – K Tanabe) Mr Tanabe stressed that the project's purpose was to build a database which records the individual energy efficiency uptake of particular technologies in APEC economies. The database would address the issue of the uptake rate of technologies employed within 10 different industry sectors (of all APEC member economies) The project would also record technologies commonly employed across all industries, such as combustion, heat recovery, power recovery, heat storage, heat exchangers, etc.

Mr Tanabe then explained that Japan has produced a simple questionnaire to be delivered to individual economies covering Company name, details, energy efficiency technology employed, etc.

Mr Tanabe then noted that the project plan called for a draft report to be prepared by October 2000. Japan concluded by asking meeting representatives to fully participate in this project, in particular by collecting the necessary data within their own individual economies.

The USA informed the meeting, that it would have problems collecting such data unless it was already in existence. The chair suggested that in such cases the project could approach a relevant industry association, and ask for data (which may not be exact) but would be an indication of the percentage of technologies employed.

Canada and Australia stated that they would have no restrictions on collecting data, however it could be hard to collect information from industry. NZ stated that it already has established relationships with a large percentage of NZ industry and should be able to collect this data. The chair then asked economies to do their best to collect relevant data and forward it promptly to Japan for this project's successful conclusion. Japan undertook to prepare a final draft of their project and present it to EGEE&C 17 in October.

Update on EWG 03/2000 Workshop on Financing and Implementing Energy-Efficiency (USA - Larry Hill)

Mr Hill informed the meeting that the USA was ready to start actively putting together the workshop, and that they were looking for an APEC economy that was is in the process of restructuring its electricity industry, and was still currently running DSM programmes. Thailand seemed to be a suitable candidate economy to host the workshop, and had indicated its willingness to host a workshop; preliminary timing being the weeks of June 5th or 12th in Thailand.

Update on EWG 06/2000 Green Buildings – Investing in our Future – a Showcase Workshop (Australia - John Butterfield)

At the EGEE&C 14 meeting in Mexico last year, Australia agreed to co-sponsor the workshop on green buildings. Mr Butterfield informed the meeting that the workshop was running to schedule as per the project brief, and now needed to send out requests for papers and topics to EWG representatives and individuals known to be working in the field. Chinese Taipei informed the meeting that it had agreed to host the workshop in October. The focus will be on green building technologies, and policy and project delivery methods, (also policy development by governments to implement these methods).

The Expert Group discussed the best timing for the working and concluded the best date would be the third week in October.

Review of Completed EGEE&C Projects - Frank Pool and Jane Wollenberg (EWG Secretariat) Delegates were reminded that all projects must provide for their own self-evaluation, and a self evaluation by the project manager was expected by the EWG Secretariat within 2 weeks of project completion. It was noted that there were still two outstanding evaluation reports due with the EWG Secretariat. Clarification was then sought by the USA on the process and content for self-evaluation reports and how they should then be forwarded to EWG (in particular for the Benchmarking project 02/98)

Election of Vice Chairs for EGEE&C

The chair of EGEE&C highlighted the role and responsibilities of vice chairs. Two new vice chairs were then agreed to, Chinese Taipei (Dr Fanghei Tsau) and Canada (Nick Marty)

Clean Energy Statement: The chair invited delegates to comment and make suggested changes to the draft tabled paper titled: "APEC Energy Ministers Joint Statement on Clean Development and Use of Energy". The suggestions on changes made were then passed on to the USA, as host to the upcoming Fourth Energy Ministers Meeting.

Open Forum – Individual Economy Initiatives to Control Standby Electricity Losses – (All)

Australia

Shane Holt informed the meeting that AGO was the first stand-alone Greenhouse Office established in the world (in 1996). AGO utilised the US initiated voluntary "Energy Star" programme established for home appliances. AGO was also supporting a Standby Power Forum, being held in Sydney on the 9th March 2000. AGO felt that it was important to establish programmes in this area now, as one of the the largest energy growth areas is in this home appliance sector. It was also felt to be important that such programmes have industry and government support from their beginning.

Canada

Canada had no specific initiatives at present to control standby power losses. Canada is looking at the possibility of adopting existing and emerging programmes in this area. Standby power loss is not as large a share of residential CO2 emissions in Canada as for other economies, since Canada uses a lot of energy for space heating, and a lot of its electricity comes from hydro.

Chinese Taipei

Dr Tsau made a brief presentation on Chinese Taipei's Pledge and Review, as follows:-

- \$300 Million to be spent on greenhouse gas emissions control between 2001 and 2005
- Energy conservation improvement programmes divided in 4 sectors, industry, transportation, commerce & residential and power sectors.
- Research and development covering building, industry, and products sectors
- Energy centres being developed in five universities to improve research in energy applications.
- Definition of "Standby Power" is complex and has cost and policy considerations needing further study.
- 1999 MOU for "Energy Star" programme signed by Chinese Taipei

Japan – Handout, Booklet and CD ROM distributed

Mr Ijuin introduced the Japanese programme, and stated that manufacturers had responded quickly to the issue and improved energy efficiency of products, and then used this as a marketing tool and also to improve their companies' image. Japan had undertaken a survey in 1999, which measured actual standby power consumption of household appliances. A questionnaire had been sent to 1000 families and results compared with IEA data. Mr Ijuin then referred to a wide range of other relevant initiatives.

Malaysia

No specific policy yet developed regarding standby power losses. A number of projects for improvement of industrial energy efficiency were highlighted.

Korea

It was noted that 2% of all power consumption in Korea is standby power. In 1999 an energy saving office equipment and home electronics program was started– a voluntary programme between Korean Govt and manufacturers. The programme covers computers, monitors, VCRs, printers, fax machines, copiers, and TV's. Products to be included cover scanners, audio equipment, DVD players, battery chargers, and multifunction devices. It was noted that energy saving products sold on the Korean market now comprise 43% of total sales. The "Energy Boy" logo is widely used, and government agencies are obligated to buy such energy saving products.

New Zealand

It was noted that the new Government was very supportive of energy efficiency, and the Energy Efficiency Bill currently before Parliament would provide the legislative basis for future activities in this area.

Philippines

No specific initiatives yet, strong justification has to be shown in savings made to country. Can use others successes in their bid to convince government.

Singapore

Has no stand-by power initiatives at the moment, but will be closely monitoring the developments in stand-by power made by consumer appliance/office equipment manufacturers.

Mexico No initiatives yet.

USA

Energy Star programme originated in the USA, and voluntary agreements with manufacturers are in place.

Following some general discussion on the "standby power loss" issue, the meeting concluded for the day at 5.50pm.

Saturday 4th March 2000

The meeting started with a discussion about project ranking of the tabled projects, and how best to manage the project ranking and endorsement processes. A project ranking sheet for the five operational fund, two TILF and two self funded Year 2001 project proposals was then circulated and each economy present was then asked to rank the projects in each category from 1 (highest ranking) to 5 or 2 (lowest ranking) respectively. The scores were then aggregated and distributed, and then each project was discussed in turn by delegates.

TILF projects

The Energy Standards Information Development and Co-ordination (Energy Standards Co-ordinator) project was endorsed by the group with a priority one ranking from all the economies present.

New Zealand offered to withdraw the Development of Algorithm Criteria project given its lack of project co-sponsors. Following discussion, the USA and Canada offered to co-sponsor the project. New Zealand (the project sponsor) undertook to work out of session to make the project more specific. The meeting then endorsed the project.

Operational Fund

The three highest-ranking projects were briefly discussed, and it was then suggested that these be endorsed for forwarding to EWG for consideration for APEC Year 2001 funding. This was agreed to for the following projects:-

"Supporting High Quality Energy Indicator Development"

"Forum on the Reduction of Baseload Losses"

"Symposium on Industrial Voluntary Commitment Programmes"

For the project "Supporting High Quality Energy Indicator Development", Chinese Taipei voiced a concern with a methodology aspect of this project. It was suggested to APERC that, rather than recollect data in a different form from economies, that the original data was used. If the derived results did not then give the required level of information, then the economies could recollect more specific data to gain the required information. Japan queried whether an outcome of the workshop would be to develop new indicators. APERC replied that this was not what was envisaged for the project. It was agreed that the project be tabled by New Zealand at the 11th meeting of the Expert Group on Energy Data and Analysis in Tokyo the following week for EGEDA consideration and endorsement. (Note, the EGEDA meeting on 6-7 March supported the proposal from New Zealand to co-endorse the project).

Consideration then moved to the two lowest ranked Operational Fund projects, namely "Workshop on Distributed Electric-Power Generation" and "Workshop on Sustainable Energy Development: Processes and Tools".

Workshop on Distributed Electric-Power Generation

After discussion on rewording the project title to more clearly reflect the proposed focus of the workshop, it was decided to rename it "Workshop on Distributed Electric Power Systems". It was suggested that the USA, as the project sponsor, should further develop this project proposal, and send an update to all economies via email. Chinese Taipei and New Zealand offered to co-sponsor this project. Canada suggested that success indicators should go further than just number of attendees and request for notes, and should have an outcome focus. The US agreed to incorporate the need for a stronger outcome focus in the final project proposal. The project was then endorsed by the meeting for forwarding to EWG for Year 2001 funding.

"Workshop on Sustainable Energy Development: Processes and Tools"

Mr Andre van Rest of the USA further explained the concept behind this project and the work on the energy for sustainable communities programme to date.

The chair thanked Mr van Rest for his explanation and suggested that some of the information from his explanation should be included in the project proposal, which would then make it more informative and attractive for EWG support.

Each economy gave their view on the project. Many economies felt that there were difficulties in progressing the concept of the sustainable communities project due to the wide range of other agencies and organisations that should also be involved. For some delegates, this area went beyond their agencies specific scope of energy efficiency and conservation and it was also felt that this project may not be relevant and of benefit to their economies. It was felt that most economies were currently dealing with energy efficiency strategies primarily at the national level. The difficulties of changing focus of energy efficiency/sustainable energy to a regional or local community level were discussed. These difficulties and barriers were felt to be mainly related to the lack of current infrastructure to deal with the cross-sector involvement that would be necessary, for a sustainable energy community project, driven from this national level, to be viable.

The USA mentioned that there was a move within the region to better integrate local and national energy strategies. It was also felt that there has been encouragement at Energy Minister level for energy expert groups such as EGEE&C to drive this integrated sustainable community approach.

It was suggested by the chair that the project be withdrawn for now as not many economies had the necessary infrastructure ready to act on this proposed project. However, it was clear that interest and support was high from all economies to develop the sustainable community concept further within EGEE&C.

The USA offered to withdraw the project and resubmit a revised project at the next meeting.

Self-funded projects

Two self-funding project proposals, namely "Energy for Sustainable Communities Program" and "APEC Energy-Industry Project on Sustainable Energy Services" were then discussed.

Energy for Sustainable Communities Program

Mr Andre van Rest of the USA outlined this programme of best practices, indicators and benchmarks, information dissemination, programme implementation and sustainable energy and development. The USA proposed to take the lead role in this programme, which proposed for 2001 to change its

web-site from a US web-site to a global web-site, with a target date of 30 June 2001 to have the revised web-site up and running. Member economies could then investigate the information that they may want to add to this web-site. The programme would encourage cities to appoint energy managers, and then institutionalise this programme within their processes. The Philippines raised the point that their city election process is only every three years, the US agreed but did not see this as an insurmountable problem. Australia foresaw some problems within their cities due to representation issues.

The chair stressed that this proposed programme would still need to adhere to APEC rules stringently even as a self-funded project. The USA stressed that they saw this project very much as an APEC project, so they committed to work closely within APEC guidelines for projects. It was then agreed that this project should be forwarded to EWG for consideration as a self-funded project.

APEC Energy-Industry Project on Sustainable Energy Services.

Mr Andre van Rest of the USA outlined the objectives and scope of this proposed project, and noted that after the proposed workshop had been held in mid-2000, it should become clearer as to the future of the group, and whether the group wanted this activity to be a 5-year project, although it has been written up as a one-year project at this stage. APERC mentioned that they had just completed a study on electricity market de-regulation, which would be of relevance to this proposed project, and would forward the relevant information to USA for distribution to participants. Following further discussion it was agreed that the project would be endorsed in principle, with further details to be added to the programme as discussed. It was also agreed that the results of the proposed second planning workshop would be reported to EGEE&C 17 in October.

Energy Efficiency Benchmarking in Commercial Buildings

The US tabled a potential future project to put together a programme of co-operation within commercial buildings, beginning with benchmarking and awareness, and potentially going beyond just commercial buildings to schools, hotels etc. New Zealand commented that all economies were doing something in some form similar to this idea. Malaysia expressed an interest in participating in such a project. The chair suggested that there should be further discussion on this potential area of activity at the next meeting of the expert group, to coincide with the focus on green buildings of the back-to-back workshop at that meeting. Mexico and Japan asked the US to prepare and circulate further information on this concept prior to the next expert group meeting.

Next Meeting

Chinese Taipei confirmed that in principle it would be able to host the next EGEE&C 17 meeting in Chinese Taipei in the week of 17 October back-to-back with the upcoming Green Buildings Workshop. The meeting thanked Chinese Taipei, and will await official confirmation of this invitation.

The meeting closed for formal business at 12.45pm

John Butterfield	Dept of Industry, Science & Resources (Australia) john.butterfield@isr.gov.au
Shane Holt	Australian Greenhouse Office (Australia) shane.holt@ea.gov.au
Lloyd Harrington	Energy Efficient Strategies (Australia) <u>lloydh@ozemail.com.au</u>
Joe Perone	Melbourne City Council (Australia)
Nicolas Marty	Natural Resources, Canada (Canada) <u>nmarty@nrcan.gc.ca</u>
Poon-wah Lam	Electrical and Mechanical Services Department, Government of the Hong Kong Special Administrative Region <u>lampw@emsd.gcn.gov.hk</u>
Takeo Ijuin	Ministry of International Trade & Industry Japan <u>ijuin-takeo@miti.go.jp</u>
Kazuki Tanabe	The Energy Conservation Centre, Japan tanabe@eccj.or.jp
Yoshiki Oikawa	The Energy Conservation Centre, Japan oikawa@eccj.or.jp
Oh Dae-Gyun	KEMCO (Korea) dgoh@kemco.or.kr
Ko Young-Kyun	KEEI (Korea) <u>koyk@mocie.go.kr</u>
Kim Yung-Rae	KEMCO (Korea) <u>yrkim@kemco.or.kr</u>
Azura Mahayudin	Dept of Electricity & Gas Malaysia (Malaysia) azuram@ktkm.gov.my
Jose Pedro Guzman	CONAE (National Commission for Energy Conservation) (Mexico)
	no@energia.gob.mx
Frank Pool	Energy Efficiency and Conservation Authority (New Zealand)
	frank.pool@eeca.govt.nz
David Cogan	Energy Efficiency and Conservation Authority (New Zealand)
	david.cogan@eeca.govt.nz
Nigel Isaacs	Building Research Association NZ (New Zealand) <u>branznpi@branz.org.nz</u>
-	Appliances Testing Laboratory (Philippines) deofatl@skyinet.net
Latha Ganesh	Public Utilities Board (Singapore) <u>lathag@pub.gov.sg</u>
Fanhgei Tsau	Energy Resources Laboratory., Industrial Technology Research Institute (Chinese Taipei) <u>f800521@itri.org.tw</u>
Carl Adams	US Dept of Energy (USA) carl.adams@ee.doe.gov
Andre. W van Rest	US Dept of Energy (USA) andre.vanrest@hq.doe.gov
Larry Hill	Oak Ridge National Laboratory (USA) <u>hilllj@ornl.gov</u>
David Cope	Asia Pacific Energy Research Centre (Japan) cope@aperc.ieej.or.jp
Ivan Jaques	APERC (Japan) jaques@aperc.ieej.or.jp
Jane Wollenberg	Dept of Industry, Science & Resources (APEC Section, International Energy
	Branch) (Australia) Jane. Wollenberg@isr.gov.au