

## **The 53<sup>rd</sup> Meeting of APEC Expert Group on Energy Efficiency & Conservation (EGEEC 53)**

### **Meeting Summary**

18 – 22 March 2019

Hong Kong, China

#### **1. Introduction**

The 53<sup>rd</sup> Meeting of the APEC Expert Group on Energy Efficiency & Conservation (EGEEC 53) and the 52<sup>nd</sup> Meeting of the APEC Expert Group on New and Renewable Energy Technologies (EGNRET 52) and Associated Workshops were held in Hong Kong, China (HKC) during the week from 18 to 22 March 2019. Joint meetings of EGEEC and EGNRET were held in the morning of 20 March 2019 and in the afternoon of 21 March 2019. Technical visits to Zero Carbon Building, The Chinese University of Hong Kong and International Commerce Centre were carried out on 22 March 2019. In addition, three APEC project-related workshops were held on 18 and 19 March 2019 alongside the meeting. The three workshops were (1) (EGEEC) Energy Efficiency Policy Workshop: Developing Fuel Economy Regulations; (2) (EGEEC) APEC Workshop on Aligning Conformity Assessment Efforts for Energy Efficiency Regulations of Motors in the APEC and ASEAN Regions: 1st Stakeholders' Consultation Workshop; and (3) (EGNRET) APEC Workshop on Supporting Renewable Energy Integration and Energy Efficiency through Effective Regulation.

The EGEEC meeting was co-chaired by Mr. VY Ek Chin, Electrical and Mechanical Services Department (EMSD) and Dr. Li Pengcheng, China National Institute of Standardization (CNIS). Delegates from 12 APEC member economies, namely Chile; People's Republic of China; Hong Kong, China; Indonesia; Japan; Malaysia; the Philippines; Singapore; Thailand, Chinese Taipei; the United States and Viet Nam attended the meeting. Representatives from the Asia Pacific Energy Research Centre (APEREC) and APEC Sustainable Energy Center (APSEC) also attended the meeting. Representatives from the International Copper Association (ICA) and National Association of Regulatory Utility Commissioners (NARUC) participated in the meeting as observers.

The list of EGEEC 53 participants is attached in Appendix A of this meeting summary.

## **2. Joint Meeting of EGEEEC 53 and EGNERT 52 (20 March 2019)**

The joint meeting was chaired by Dr. Li Pengcheng, Chair of EGEEEC, Dr. Tom Lee, Chair of EGNRET and co-chaired by Mr Harry Lai Hon-chung, Deputy Director of EMSD.

### **2.1 Official Welcome**

Mr. Alfred Sit Wing-hang, Director of EMSD, delivered the welcome address on behalf of the host. He extended his warm welcome to all delegates and expressed sincere appreciation to representatives of APEC member economies for sharing their valuable experience in implementing energy efficiency and conservation policies. He explained HKC's efforts and achievements in promoting energy efficiency and renewable energy. He also encouraged more collaboration between APEC member economies with a view to achieving the APEC goal in reducing energy intensity by 45 percent from 2005 levels by 2035.

### **2.2 Opening Address and Adoption of Agenda**

Dr. Li Pengcheng, Chair of EGEEEC and Dr. Tom Lee, Chair of EGNRET gave the opening addresses. They welcomed delegates from APEC member economies and thanked HKC for its hospitality in hosting the meetings and associated workshops. The meeting agenda was adopted by attending member economies.

### **2.3 Energy Development in Hong Kong, China**

Mr. VY Ek Chin, Assistant Director/ Electricity and Energy Efficiency of EMSD gave a presentation on latest energy development in HKC.

### **2.4 Updates of APEC/ Energy Working Groups (EWG)/ Expert Groups/ APEC Centers**

Seven (7) presentations were conducted as follows:

**i) “APEC Secretariat Report” by Dr. Tarcy Sih-Ting Jhou, EGNRET Secretariat on behalf of Mr. Tetsuya Shimokawa, Program Director, APEC Secretariat**

The APEC Secretariat firstly introduced the theme of APEC Chile 2019 – “Connecting People, Building the Future” and also the policy priority of Chile. The APEC project cycle for session 1 & 2 of 2019 with key dates were then presented followed by the key project information updates including the release of Guidebook on APEC Projects (Ed.13) in November 2018 and advice for project implementation.

**ii) “Updated Development of APEC Energy Working Group” by Dr. Liu Ren, EGEEC Secretariat on behalf of EWG Secretariat**

The EWG Secretariat introduced recent EWG decisions on APEC project management. Expert groups and task forces were requested to assist POs in familiarizing the APEC project procedures and to provide POs with technical advices for the sake of project quality. Member economies and Expert Group Chairs were also requested to present in the EWG meeting a 2 page summary for each EWG project completed since the last EWG meeting. The EWG Secretariat further reminded POs to follow the rules of submission on co-sponsorship and to submit the project completion report on time.

The EWG Secretariat reported that the EWG Strategic Plan 2019-2023 and 2019 EWG Workplan had been endorsed by SOM. For the APEC Energy Vision Post 2020, the EWG Secretariat reminded APEC member economies that idea exchange and discussion through emails would be continued by EWG57. Lastly, expert groups were requested to discuss the Energy Modernization paper provided by Chile and report the discussion results and conclusion in EWG57. EGEEC were also requested to report the progress on APEC Zero Energy Building Initiative in appropriate EWG meeting and study the reasons of different performance on energy intensity within the APEC region and to disseminate the findings.

**iii) “Update of APEC EGEEC” by Dr. Li Pengcheng, Chair of EGEEC**

Dr. Li Pengcheng presented the mandates of APEC EGEEC and the meeting summary of the 52<sup>nd</sup> meeting of APEC EGEEC held on 10-14 September 2018 in Chiang Mai, Thailand. Dr. Li then presented the status of ongoing EGEEC projects and new EGEEC concept notes on APEC Zero Energy Building Initiative Workshop submitted by PRC. Regarding the succession plan of Chair of EGEEC, Dr. Li mentioned that nomination was received from HKC and the CV of the candidate was circulated to APEC member economies in early February 2019.

**iv) “EGNRET Updates” by Dr. Tom Lee, Chair of EGNRET**

Dr. Tom Lee presented the meeting summary of the 51<sup>st</sup> meeting of APEC EGNRET held on 10-14 September 2018 in Chiang Mai, Thailand and also the election results for the positions of Chair and Vice Chair of EGNRET for term 2019-2020. Dr. Lee reported that the revised ToR of EGNRET was submitted to EWG 56 and had been endorsed. Dr. Lee then presented the status of EGNRET projects and also the EWG 56 summary related to EGNRET.

**v) “Progress toward APEC Goals” by Mr. James Kendell, Chair of EGEDA**

Mr. James Kendell reported the progress on energy intensity reduction goal and renewable energy doubling goal of APEC. Mr. Kendell mentioned that in accordance with APEC Energy Demand and Supply Outlook 7<sup>th</sup> Edition, the APEC energy intensity reduction goal could be met in 2029 under the Business as Usual Scenario. For renewable energy doubling goal, Mr. Kendell suggested EGNRET to look into the barriers and then formulate policy responses as part of the comprehensive renewable energy doubling road map.

**vi) “Overview of APERC Activities” by Alexey Kablinskiy, Researcher, APERC**

Mr. Alexey Kablinskiy presented the background of APERC including its functions, tasks, research activities and cooperative projects in APEC. Mr. Kablinskiy mentioned that the 7<sup>th</sup> edition of APEC Energy Demand and Supply Outlook would be presented to EWG in May 2019. The overview of APEC Peer Review on Energy Efficiency (PREE), APEC Low-carbon Model Town (LCMT), Peer Review on Low Carbon Energy Policies (PRLCE) were also presented.

**vii) “APSEC Activity Updates” by Mr. Steivan Defilla, President Assistant, APSEC**

Mr. Steivan Defilla presented the background of APSEC including its mission, pillar programs and major events. Mr. Defilla reported that the APEC Sustainable Urban Development Report was presented at the 4<sup>th</sup> Asia-Pacific Energy Sustainable Development Forum held in September 2018. Findings of the report were briefly presented. Mr. Defilla also reported that the 4<sup>th</sup> APEC Workshop on Sustainable Cities would be held on 22 May 2019 during the EWG 57 and the 5<sup>th</sup> Asia-Pacific Sustainable Energy Development Forum would be held on 18-20 September 2019. Two self-funded project namely “Exchange and Training on Clean Coal Technology and Clean Energy Policy” and “Cloud-based Sharing Platform on Multi-energy Microgrid” were also introduced.

### 3. EGEEC 53 (20 and 21 March 2019)

#### 3.1 Project Update

The status of ten (10) nos. of project were presented and a summary of the project status is provided below.

APEC Project Title		Proposing Economy	Project No.	Status
1	Enhancing Regional Conformity Assessment to Ensure Successful ISO50001 Outcomes	US	EWG 04 2015A	Completed in August 2018
2	Aligning Conformity Assessment Efforts for Energy Efficiency Regulations of Motors in the APEC and ASEAN Regions	US	EWG 05 2018A	On-going
3	Coordinating Standards for Cool Roof Testing and Performance	US	EWG 14 2018A	On-going
4	Empowering a Distributed Energy Resource Future Through Regulatory and Market Reforms	Thailand	EWG 11 2017A	On-going
5	Refrigerator / Freezer Energy Efficiency Improvement in APEC Region: Review of Experience and Best Practices	Chinese Taipei	EWG 07 2017A	Completion Report Submitted in Dec 2018

APEC Project Title		Proposing Economy	Project No.	Status
6	APEC Peer Review on Energy Efficiency (PREE) Phase 7	Japan	EWG 08 2017A	On-going
7	APEC Peer Review on Energy Efficiency (PREE) Phase 8	Japan	EWG 02 2018A	On-going
8	APEC Peer Review on Energy Efficiency (PREE) Phase 9	Japan	EWG 08 2018A	On-going
9	APEC Nearly/Net Zero Energy Building Roadmap	PRC	EWG 15 2016A	Completion Report Submitted in Dec 2018
10	Best Practices Sharing and Technical Capacity Building for Measurement and Verification Standards of Energy Savings	PRC	CTI 17 2016 A	Completed

### **3.1.1 Enhancing Regional Conformity Assessment to Ensure Successful ISO50001 Outcomes (EWG 04 2015A/USA)**

In collaboration with a Clean Energy Ministerial project team, this project would focus on building regional capacity to improve conformity assessment and ensure successful implementation of the ISO 50001 standard. The ISO 50001 international energy management system standard is a key strategy for increasing the competitiveness of APEC economies, meeting APEC energy intensity reduction goals, and promoting green growth. This project would promote greater energy efficiency in manufacturing and other sectors.

**Status: Completed in August 2018**

### **3.1.2 Aligning Conformity Assessment Efforts for Energy Efficiency Regulations of Motors in the APEC and ASEAN Regions (EWG 05 2018A/USA)**

The project expands a 2008 project conducted by China on motor efficiency and aims to inform the regulatory and policy environments within APEC and ASEAN of the benefits of harmonization of standards and conformity assessment approaches to facilitate trade of energy efficient electric motors and accelerate progress toward energy intensity reduction in the region. The project would be divided into 3 phases: Update the 2008 list of standards and conformity assessment policies for motors

in APEC and ASEAN (Phase 1); Develop a roadmap for harmonization within APEC and ASEAN based on outcomes and lessons learned via the ASEAN SHINE (Phase 2); and Promote recommendations of harmonization of standards and conformity assessment policies for motors among the economies (Phase 3). The project focuses on APEC and ASEAN economies, (non-APEC, ASEAN members will be funded by ICA (International Copper Association) and UL (UL LLC - formerly known as Underwriters Laboratories). The project will facilitate a public-private dialogue by including industry perspectives.

**Status: On-going**

### **3.1.3 Coordinating Standards for Cool Roof Testing and Performance (EWG 14 2018A/USA)**

A number of APEC economies have adopted or are considering standards for the testing and performance requirements for reflective, “cool” surface technologies (roofs and walls). These surfaces reduce cooling energy use, ease summertime peak electricity demand, and facilitate cooler, more comfortable cities. Differing testing standards across the region increases the cost of trade in these product lines and inhibits market growth across the APEC region. This project would develop a review and comparison of cool surface testing and performance standards in place or under consideration in APEC economies and provide a roadmap for establishing cool surface product testing and rating infrastructure in economies that do not have access to it. The study would be undertaken from the US.

**Status: The project RFT is under development.**

### **3.1.4 Empowering a Distributed Energy Resource Future Through Regulatory and Market Reforms (EWG 11 2017A/Thailand)**

Sharply declining technology costs and increasing consumer interest in distributed energy resources (DER) have prompted concerns about electric utilities’ revenue sufficiency. Electric power utilities’ common reaction to DER is to slow down, if not prevent, the scale-up of these technologies. Working collaboratively with decision-makers in the APEC region, this project would initiate a platform for analyzing the current utility regulatory systems in selected APEC economies and sharing successful experiences of other APEC economies that have reformed their regulatory models. The cross-pollination platform will provide actionable

recommendations on innovative utility business models and regulatory frameworks that incentivize utilities to ramp up DER while reducing carbon emissions.

**Status: On-going**

### **3.1.5 Refrigerator / Freezer Energy Efficiency Improvement in APEC Region: Review of Experience and Best Practices (EWG 07 2017A/Chinese Taipei)**

This project aims at building the capacity to implement high efficient refrigerator /freezer technologies and policies in developing APEC economies, meeting APEC energy intensity reduction goals, and the directives in 2014 Ministerial Meeting to “enhance cooperation among member economies, get a deeper understanding of their R&D needs, build information platforms, develop Asia-Pacific intellectual networks, share R&D results and strengthen practical project cooperation”. This work would establish a technical experts group to review and investigate the energy efficiency promotion for refrigerator/freezer and to manifest the causal effect of policy guidance on energy saving performance. This project would also initiate the experience sharing platform of domestic refrigerator/freezer design for energy issue to improve the information exchange mechanism and technical training among APEC region. Through holding the workshops to disseminate study results and collect available opinions, this project would be expected to create a roadmap to enhance efficiency management in the future.

**Status: Completion Report Submitted in Dec 2018**

### **3.1.6 APEC Peer Review on Energy Efficiency (PREE) Phase 7 (EWG 08 2017A/Japan)**

APEC Peer Review on Energy Efficiency (PREE) Phase 7 has two parts. The first part is the Follow-up PREE, which is designed to assist a former PREE host economy in implementing the recommendations of a PREE review team. The key objective is to assist the host economy to obtain in-depth knowledge on how to implement the best practice recommended by the review team in previous PREE for the host economy. The second part is Energy Efficiency Policy (EEP) Workshop, which succeeds Cooperative Energy Efficiency Design for Sustainability (CEEDS) project as a forum to further discuss key issues in the previous PREEs.

**Status: On-going**



### **3.1.7 APEC Peer Review on Energy Efficiency (PREE) Phase 8 (EWG 02 2018A/Japan)**

APEC Peer Review on Energy Efficiency (PREE) Phase 8 has two parts. The first part is a peer review, which provides recommendations for the host economy on how implementation of their energy efficiency action plans could be improved with a view to achieving their energy efficiency goals. The second part is an Energy Efficiency Policy (EEP) Workshop, which succeeds the Cooperative Energy Efficiency Design for Sustainability (CEEDS) project as a forum to further discuss key issues in the previous PREEs.

**Status: On-going**

### **3.1.8 APEC Peer Review on Energy Efficiency (PREE) Phase 9 (EWG 08 2018A/Japan)**

APEC Peer Review on Energy Efficiency (PREE) responds to the declaration at the 9th APEC Energy Ministers Meeting (EMM9) in Fukui, Japan to promote the energy efficiency of the APEC member economies and meet the APEC's aggregate energy intensity reduction goal of 45% by 2035. A peer review to be conducted in PREE provides recommendations for the host economy on how implementation of their energy efficiency action plans could be improved with a view to achieving their energy efficiency goals. In PREE Phase 9, a Follow-up PREE, which is designed to assist a former PREE host economy in implementing the recommendations of the PREE review team was held in Peru in March 2019.

**Status: On-going**

### **3.1.9 APEC Nearly/Net Zero Energy Building Roadmap (EWG 15 2016A/ PRC)**

The objective of this program is to strengthen the energy reduction goals between UN and APEC 2035 energy intensity target for the building sector, harmonize the Nearly/Net Zero Energy Building (NZEB) Roadmap within the APEC region, find a flexible approach to reducing building energy consumption through readily accessible methods to achieve NZEB in all climatic zones, prioritize a list of policy and technology recommendations for APEC economies to promote NZEB in the future. As an important supplement to trading regimes, this project will contribute to enhanced economic cooperation on building materials and building energy systems, equipment and appliances, thus promoting regional economic integration,

leading to the fourth statement on Peru’s Priorities. Within the program, APEC NZEB roadmap workshops was held in Hawaii in 2017.

**Status: Completion Report Submitted in Dec 2018**

### **3.1.10 Best Practices Sharing and Technical Capacity Building for Measurement and Verification Standards of Energy Savings (CTI 17 2016 A/PRC)**

This project would initiate best practices sharing and capacity building to promote M&V standards based activities of policies and regulations, standards, methodologies, engineering application, market development, etc, in the APEC developing economies based on correct understanding and effective implementation of M&V standards. The main activities include: 1) Review of M&V activities in APEC region, Oct. 2016 – Jan. 2017; 2) A workshop to enhance best practices sharing and capacity building in APEC economies on M&V standards based activities, Mar./Apr. 2017.

**Status: Completed**

Below is the list of projects where status was not presented in the meeting:

APEC Project Title	Proposing Economy	Project No.	Status
1   APEC Best Practice Guidelines for Establishing and Enhancing Energy Efficiency Incentive (EEI) Schemes	Australia	EWG 09 2018A	On-going

### **3.2 Economy Update**

Eight (8) APEC member economies presented the updates on key development in energy efficiency polices and programmes. Below is a summary of economy update:

- i) **People’s Republic of China** reported its recent actions for improving cooling efficiency;
- ii) **Hong Kong, China** reported its effort in developing energy efficiency standard and label for LED lighting and cooling products. The Buildings Energy Efficiency Ordinance framework was also introduced;
- iii) **Japan** reported the latest developments of energy conservation policies in Japan

- and its challenges for future goal;
- iv) **Singapore** reported its energy efficiency approach and the energy efficiency efforts in Industrial and building sectors.
  - v) **Thailand** reported its energy efficiency situation, energy efficiency plan (EEP2015) and energy efficiency policies and measures.
  - vi) **Chinese Taipei** reported its energy efficiency situation, equipment energy management and energy efficiency achievements.
  - vii) **The United States** reported its energy efficiency policies and programs update.
  - viii) **Viet Nam** reported its energy outlook update and also the energy efficiency & conservation development.

### 3.3 Invited Presentation

One (1) invited presentation was given in the EGEEEC meeting. Below is a summary of the invited presentation:

- i) **International Copper Association (ICA)**

Mr. Jean-Marc Alexandre, Manager – Partnerships Asia of ICA introduced the background of ICA and its initiatives to promote energy efficiency and renewable energy. He also presented the international cooperation of ICA and status of the APEC funded workshop on Aligning Conformity Assessment Efforts for EE Regulations of Motors in the APEC and ASEAN Regions (EWG 05 2018A).

### 3.4 Concept Notes Presentation

Three (3) nos. of concept notes were presented and endorsed.

Concept Notes for 2019 S1		Proposing Economy
1	APEC Zero Energy Building Initiative Workshop	PRC
2	University collaboration to support data gathering and analysis in energy efficiency and renewable energy	US
3	Evaluation of energy technologies, sustainable development goals and national climate actions	US

### **3.5 Dates and Venues for Upcoming EGEEC Meeting**

Dr. Li Pengcheng suggested that the next EGEEC meeting, i.e. EGEEC 54 should be held in September 2019 tentatively. Dr. Li invited APEC member economies to consider hosting the EGEEC 54. Viet Nam pointed out that they would consider to host EGEEC 54. Chinese Taipei pointed out that they would consider to host the next joint meeting in 2020. The EGEEC Secretariat would liaise with interested economies and notified delegates the venue of EGEEC 54 in due course.

[Post-meeting Notes: Vietnam pointed out that they would consider to host EGEEC meeting in 2020]

### **3.6 Election of EGEEC Chair**

Dr. Li Pengcheng pointed out that in accordance with the EGEEC Terms of Reference (ToR), a new EGEEC Chair should be elected in EGEEC 53 as he had been serving as EGEEC Chair for two (2) consecutive two-year terms (i.e. eight (8) meetings).

Dr. Li further mentioned that HKC had proposed Mr. VY Ek Chin as candidate of EGEEC Chair and Mr. VY's CV had been circulated to APEC member economies in early February 2019. No objection from APEC member economies was received.

Dr. Li announced that Mr. Vy Ek Chin from HKC was elected as the new Chair of EGEEC with a term of two (2) years (i.e. four (4) meetings). PRC would act as Co-Chair of EGEEC for smooth transition of the EGEEC leadership. The EGEEC members reached consensus that the new Chair and Co-chair of EGEEC would be on duty after the EGEEC 53 until next election.

The new Chair of EGEEC, Mr. VY Ek Chin, nominated Ms. Jovian Cheung, senior engineer, EMSD and Mr. Willy Yu, engineer, EMSD, to serve in the EGEEC Secretariat from EGEEC 53 onwards.

### **3.7 EGEEC 53 Conclusion**

Dr. Li Pengcheng appreciated the efforts from APEC member economies in achieving the energy intensity reduction goal. According to APERC analysis (7<sup>th</sup> edition of APEC Energy Demand and Supply Outlook), APEC would reach its energy intensity reduction goal by 2029. Dr. Li pointed out that although the statistics showed a positive trend, APEC

member economies should continue to review their energy efficiency regulations, targets, economic incentive and energy management resources in order to make sure that the reduction trend is a long-term trend. Dr. Li invited APERC to keep monitoring and reporting the energy intensity reduction trend for further reporting in EWG meetings.

### **3.8 Discussion on Chile's Energy Modernization Paper**

Chile's paper on Energy Modernization was discussed during the meeting. Mr. VY Ek Chin, new Chair of EGEEC suggested that member economies could further studied the paper and the EGEEC Secretariat would call for return on member economies' comment or supplement on Chile's paper. The consolidated comments would be circulated to member economies before reporting to the coming EWG 57 in Manila.

## **4. Joint Meeting of EGEEC 53 and EGNERT 52 (21 March 2019)**

### **4.1 Discussion on Key Areas for Collaborative Actions between EGEEC and EGNRET**

EGEEC Chair, Mr. Vy Ek Chin and EGNRET Chair, Dr. Tom Lee invited APEC member economies to propose potential topics for collaboration between EGEEC and EGNRET. The United States suggested that electric mobility could be a joint area for collaboration as sustainable transport was one of the three challenges mentioned in Chile's Energy Modernization Paper. The United States further mentioned that electric mobility or transport is a cross-ministrial issues in many economies which touched on both energy efficiency and renewable energy. HKC supported the United States' suggestion and pointed out that an electric vehicle workshop was held in New Zealand during the EWG 54 and had good responses. During the EWG 56, Peru had invited their transport minister to share their experience on energy efficiency and renewable energy in Transport.

APSEC proposed that sustainability city could be a topic for cooperation and the energy efficiency and renewable energy performance of volunteer cities could be monitored. Thailand mentioned that under the EWG there was a Low Carbon Model Town (LCMT) task force and APSEC should clarify the difference between sustainability city and LCMT. Dr. Lee suggested that APSEC could circulate a summary on the idea of sustainable city to EGNRET as this topic had only been presented in EGEEC meeting and EGNRET members might not know the concept of sustainability city.

The EGNRET Secretariat mentioned that EGEEC and EGNRET might consider to have joint meetings with other expert groups. Thailand pointed out that EGEEC and EGNRET should have focus or specific target before having joint meeting with other expert groups.

Mr. Vy Ek Chin and Dr. Tom Lee thanked member economies for their suggestions and welcome member economies to continue in exploring areas for collaboration between EGEEC and EGNRET. Both of them pointed out that enhanced cooperation between expert groups and member economies would be important for achieving the energy intensity reduction target and renewable energy doubling goals.

#### **4.2 Closing**

Mr Harry Lai Hon-chung, Deputy Director of EMSD gave the closing remarks and expressed his gratitude to EGEEC and EGNRET delegates and affiliate organizations for their active participation during the meeting. He was looking forward to receiving all member economies again in future EWG and EG activities to be hosted by HKC.



Asia-Pacific  
Economic Cooperation

APEC Expert Group on Energy Efficiency and Conservation (EGEE&C)  
Under the APEC Energy Working Group

Appendix A – EGEEEC 53 List of Participants

No	Full Name	Economy	Organization
1	YANG Xinyan	People's Republic of China	China Academy of Building Research
2	LAI Hon Chung Harry	Hong Kong, China	Electrical and Mechanical Services Department
3	VY Ek Chin	Hong Kong, China	Electrical and Mechanical Services Department
4	CHEUNG Man Chit Jovian	Hong Kong, China	Electrical and Mechanical Services Department
5	LO Kam Cheung	Hong Kong, China	Electrical and Mechanical Services Department
6	NG Chi Shing, Senna	Hong Kong, China	Electrical and Mechanical Services Department
7	SHUM Chung Yee	Hong Kong, China	Electrical and Mechanical Services Department
8	YU Wai Lee, Willy	Hong Kong, China	Electrical and Mechanical Services Department
9	Joanie FOK	Hong Kong, China	Trade and Industry Department
10	John LAM	Hong Kong, China	Trade and Industry Department
11	Yoyo JIU	Hong Kong, China	Trade and Industry Department
12	DOI Naoko	Japan	The Institute of Energy Economics, Japan
13	Roslee BIN ESMAN	Malaysia	Energy Commission Malaysia
14	CHANG Yee Lik Eric	Singapore	Energy Market Authority of Singapore
15	Cheryl LEEM	Singapore	Energy Planning & Development Division Energy Market Authority of Singapore
16	BOR Shiau-Jiun	Chinese Taipei	Bureau of Energy
17	LO Henry Shin-Han	Chinese Taipei	Industrial Technology Research Institute
18	Warote Chainatarawong	Thailand	Ministry of Energy
19	Watcharin Boonyarit	Thailand	Ministry of Energy



Asia-Pacific  
Economic Cooperation

APEC Expert Group on Energy Efficiency and Conservation (EGEE&C)  
Under the APEC Energy Working Group

No	Full Name	Economy	Organization
20	Cary BLOYD	United States	Pacific Northwest National Laboratory
21	CHAU Dinh Van	Viet Nam	Ministry of Industry and Trade, Vietnam
22	NGUYEN Tuan	Viet Nam	Ministry of Industry and Trade
23	LI Pengcheng	EGEEC	CNIS
24	LIU Ren	EGEEC	CNIS
25	James M. Kendell	EGEDA	Asia Pacific Energy Research Centre (APERC)
26	Hugh MARSHALL-TATE	APERC	Asia Pacific Energy Research Centre (APERC)
27	Steivan DEFILLA	APSEC	APEC Sustainable Energy Center
28	SUN Yong	APSEC	APEC Sustainable Energy Center
29	JEAN-MARC ALEXANDRE	ICA	ICA
30	PIERRE CAZELLES	ICA	ICA
31	Rachel ESTRADA	NARUC	National Association of Regulatory Utility Commissioners (NARUC)