APEC Cooperative Energy Efficiency Design for Sustainability (CEEDS)
FINAL REPORT FOR CEEDS PHASE 1:
Appliance Energy Efficiency Standards and Labeling

Workshop #1:
19-21 October 2009
Taipei City, Chinese Taipei

Workshop #2:
1-2 March 2010
Tokyo, Japan

APEC Energy Working Group

June 2010

APEC Project EWG 14/2009A

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APEC#210-RE-01.13.

Acknowledgements

We would like to thank all those whose efforts made the CEEDS Phase 1 Project successful.

We wish to express our appreciation to the CEEDS workshop participants including delegates from APEC member economies and invited experts, for their positive contribution and invaluable insights. Chinese Taipei and Japan generously hosted the workshops.

We would also like to thank members of the APEC Energy Working Group (EWG), APEC Expert Group on Energy Data and Analysis (EGEDA), APEC Expert Group on Energy Efficiency and Conservation (EGEE&C), and APERC Annual Conference participants for their helpful comments and guidance.

Asia-Pacific
Economic Cooperation

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Executive Summary

Phase 1 of the APEC Cooperative Energy Efficiency Design for Sustainability (CEEDS) project, a project organized by the Asia Pacific Economic Research Centre (APERC), focused on energy-efficient appliance standards and labeling (S&L) as one of the high-performance policies available to help APEC economies achieve the energy savings goals approved by APEC leaders in 2007. APERC invited APEC economies to participate in two workshops on appliance standard and labeling (S&L) in late 2009 and early 2010. Six economies agreed to participate in CEEDS Phase 1: Chile, People's Republic of China, Malaysia, Philippines, Thailand, and Vietnam. Two other economies (Chinese Taipei and Japan) offered to host the workshops, and contributed information on S&L and related appliance efficiency policies in their economies. This report presents the objectives and results of these two workshops; summarizes the status, accomplishments to date, and planned activities of these six APEC economies; and outlines additional steps that might be considered by these and other APEC economies to increase future energy savings from energy-efficient appliances.

CEEDS Background

In Sydney, Australia in September 2007, APEC Leaders agreed to work towards achieving an APEC-wide regional aspirational goal of reducing energy intensity at least 25 percent by 2030. APEC Leaders at that meeting encouraged all APEC economies to set individual goals and action plans for improving energy efficiency, taking into account this aspirational goal and reflecting the individual circumstances of different economies.

Earlier that year, at their meeting in Darwin, Australia in May 2007 the APEC Energy Ministers had directed the Energy Working Group (EWG) to strengthen efforts to share information on energy efficiency policies and measures, identify effective energy efficiency approaches, and review progress towards efficiency goals.

In response to these directives, the EWG members approved the Peer Review on Energy Efficiency (PREE) initiative proposed by Japan. So far, PREE has been successfully completed in New Zealand, Chile, Viet Nam and Thailand. CEEDS is a multi-year project, which was also proposed by Japan, aiming at promoting high-performance energy efficiency policy measures for APEC economies.

It is designed to achieve the APEC wide energy efficiency goal as well as complement the PREE initiative. For each phase of CEEDS, a set of two workshops is organized with a support of a host economy for the purpose of assisting developing economies who wish to design and implement measures for achieving energy efficiency improvements in the selected sectors.

The initial topic chosen for CEEDS Phase 1 was appliance energy standards and labeling (S&L). The first CEEDS workshop on energy efficiency appliance S&L was held in Taipei City, Chinese Taipei, from 19-21 October 2009. Among the 35 participants were delegates from the six participating economies who presented the status and plans for S&L in their economies.[1] Also present were invited experts on S&L, representatives of the two host economies (Chinese Taipei and Japan), and members of the APERC professional and administrative staff.

The second CEEDS workshop was held in Tokyo, Japan, from 1-2 March 2010. The purpose of this second workshop was to jointly review the progress made by each participating economy in refining the plans presented by the delegates at the first workshop, and to assist each economy in moving forward with S&L programs by discussing issues and opportunities they had in common. In general, the same representatives from each economy were able to attend both CEEDS workshops.[2] By the end of the second workshop, each delegate from a participating economy had

[1] The delegate from the People's Republic of China was not able to attend but provided materials for discussion, which were presented at the workshop by an expert from Lawrence Berkeley National Laboratory in the US.

[2] The delegate from Chile was planning to participate in the second workshop by teleconference but was unable to do so because of the earthquake that had just struck Chile. The presentation and discussion of his materials was led by an expert from Lawrence Berkeley National Laboratory who had worked closely with Chile on an S&L project funded by CLASP, the Collaborative Labeling and Appliance Standards Program.

shared with the group his or her recommendations for next steps to further develop energy efficiency standards and labeling for appliances.

The agendas for both workshops are shown in Appendix 1a and 1b. Summaries of the status reports and next steps for each participating economy to advance S&L action programs are included as Appendices 2 -7. The following sections summarize the general themes and issues discussed at the two CEEDS workshops on appliance S&L.

Estimating Energy Savings from Appliance S&L Programs

Presentations at both CEEDS workshops underscored the importance of energy efficiency S&L as a cornerstone strategy for achieving significant energy savings to meet the APEC region's energy efficiency goals. Experts from the Collaborative Labeling and Appliance Standards Program (CLASP) and Lawrence Berkeley National Laboratory (LBNL) presented results from the BUENAS model (Bottom-up Energy Analysis System) that was used to estimate energy savings in selected economies (e.g., Chile and the People's Republic of China) as well as globally. Global estimates using the BUENAS model suggest the potential for cost-effective S&L programs to save 1113 TWh of electricity and 327 TWh of fuels annually by 2020, and 3385 TWh of electricity plus 928 TWh of fuels by 2030.[3] Translated into avoided greenhouse gas emissions, these potential energy savings from S&L worldwide would reduce emissions by 1 Gt of CO_2 per year by 2030 (or 14 Gt cumulatively, from 2010-2030). To put these emissions reductions in context, achieving the full technical and economic potential of S&L would reduce residential CO_2 emissions to 2005 levels by 2030 and maintain commercial emissions at current levels from now to 2030, offsetting global growth in population and economic activity.

Achieving these potential energy savings and greenhouse gas reductions, however, depends on aggressive implementation of cost-effective S&L programs in every economy. And the opportunities vary among economies and regions. To take a closer look at the potential within the six APEC economies participating in CEEDS, a separate analysis using the BUENAS model was undertaken by APERC, in collaboration with CLASP and LBNL. The results (which should still be considered preliminary due to limited data available for some products and some economies) are summarized in Figure 1 and Table 1.

[3] McNeil, M. et al. 2008. "Global Potential of Energy Efficiency Standards and Labeling Programs." Lawrence Berkeley National Laboratory Report LBNL-72512.

Figure 1. Energy saving potential of minimum energy performance standards for selected household appliances (terawatt-hours)

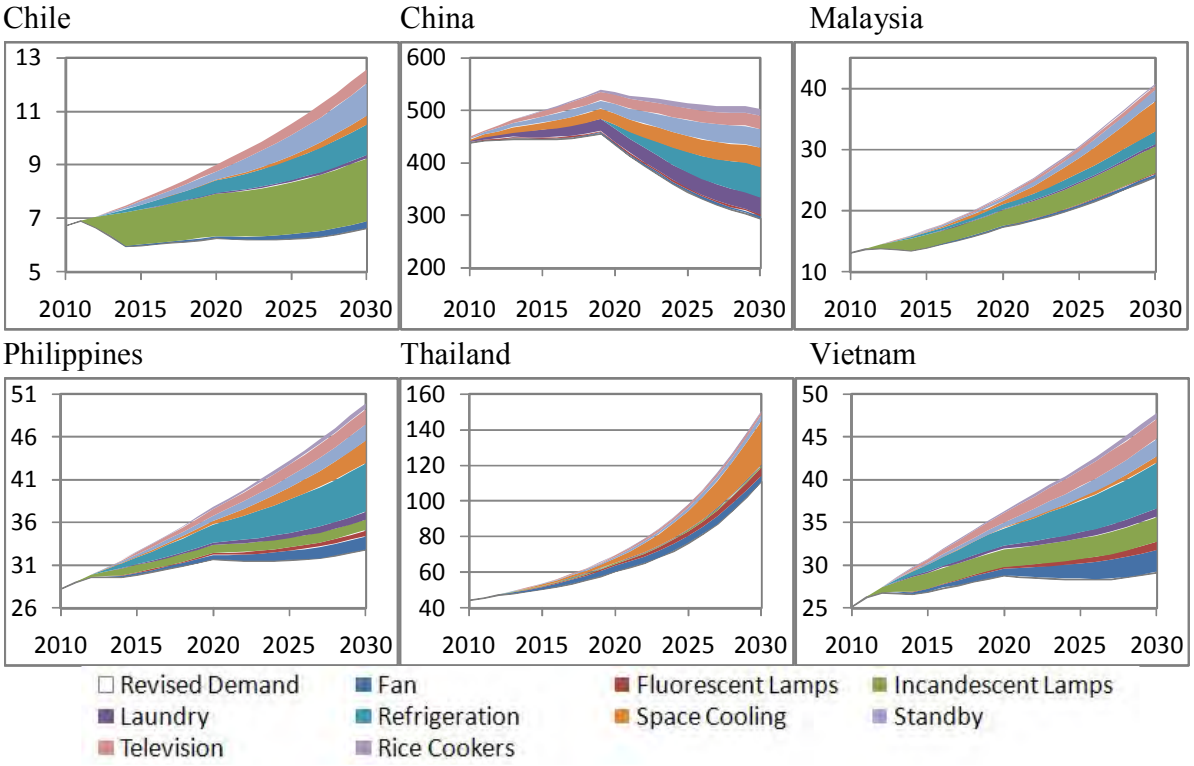
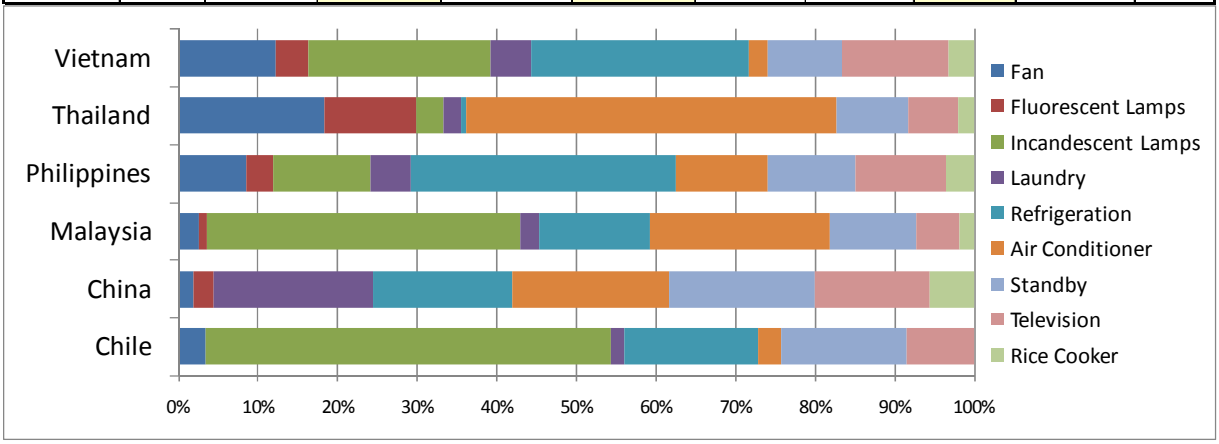


Table 1. Estimated Cumulative Energy Savings Potential, 2010-2030 (TWh)

	Fan	Fluorescent Lamps	Incandescent Lamps	Laundry	Refrigeration	Air Conditioner	Standby	Television	*Rice Cooker*	Grand Total
Chile	2.0	0.0	31.0	0.9	10.2	1.8	9.5	5.2		60.7
China	43.5	55.5	0.0	454.5	394.9	447.1	411.9	328.0	127.3	2262.7
Malaysia	3.3	1.3	52.3	3.2	18.4	30.1	14.4	7.1	2.5	132.7
Philippines	12.7	5.1	18.4	7.6	50.1	17.3	16.5	17.2	5.5	150.3
Thailand	51.9	32.8	9.8	5.9	2.0	132.1	25.8	17.6	5.8	283.9
Vietnam	21.5	7.2	40.1	9.2	47.9	4.3	16.6	23.6	5.7	176.1



According to the BUENAS model results for these six APEC economies, the potential savings from strong S&L programs for these 8 appliances and stand-by power could reduce residential sector base-case electricity demand in 2030 by 26% to 47%, depending on the economy. These estimated savings potentials are significant, even allowing for some uncertainty in the analysis due to limited availability of detailed end-use data, and the inherent difficulties of predicting future economic and energy demand growth in the base case. Additional savings would be possible, of course, for S&L programs extended to other residential appliances and to non-residential equipment such as lighting, large air conditioners, motors, pumps, and electronic office equipment.

The appliances that deliver the most savings vary to some extent among economies, and also vary over time (which is not evident from Table 1). For example, energy savings for fans may be high in early years but shift toward energy savings for air conditioners, as the saturation of air conditioners in an economy increase with time. Similarly, the savings potential for refrigerators, TVs, home computers, or laundry appliances will increase as rising household incomes increase the rate of purchases of these appliances.

All this underscores a point made repeatedly in the workshop discussions: the need for more and better quality end-use data on the stocks, sales, and retirement of appliances and equipment, as well as the frequency-distribution (within both stock and new sales) of energy efficiency, annual energy use, and peak electricity demand. These improved end-use data, combined with software tools such as the BUENAS model (and another model called PAMS (Policy Analysis Modeling System that provides cost-effectiveness analysis for one appliance at a time), can provide the analytical base for policy makers to:

- Effectively target S&L programs to those appliances likely to provide the most energy savings and greatest cost-effectiveness; and
- Track progress over time in achieving and maintaining the intended savings.

Characteristics of an Effective S&L Program

At both the first and second CEEDS workshops, delegates from the participating economies discussed the characteristics generally associated with a successful appliance S&L program – drawing on their own experience, the Policy Template prepared for this workshop by APERC

and the Alliance to Save Energy, and the CLASP guide to S&L programs.[4] These program characteristics include:

- *Clear legal authority* – The institution responsible for setting criteria for S&L must have the clear legal authority to do so. The way this authority is established (e.g., by legislation or by administrative regulation) may vary among economies, but this authority in some form is needed to guarantee the participation of stakeholders and to enforce compliance, when necessary, with energy efficiency standards such as Minimum Energy Performance Standards (MEPS).
- *Explicit criteria for standards* – Government officials need explicit decision criteria to use in setting efficiency levels for energy efficiency standards, as well as for defining the multiple levels of energy efficiency used in a "categorical" label design. For example, efficiency criteria may be based on cost-effectiveness criteria using engineering and cost data, on a market analysis looking at the distribution of efficiencies of current models available for sale, or on a review of standards and labeling categories in place in other economies – or on combinations of these.
- *Data and analysis to set program priorities* – Ideally, all products with significant, cost-effective energy savings would be considered for inclusion in an S&L program, although some participants suggested that it is more important to emphasize "quality" over "quantity" when deciding how many appliances an S&L program should cover, and at what level of efficiency. The decision on which products to include in an S&L program often begins with an economy-wide market assessment, drawing on available data about the existing appliance stock and annual sales growth. Improving the quality of appliance energy data is a high priority for many APEC economies. The BUENAS and PAMS analysis software (mentioned above) was considered useful by several economies to help them identify the most significant energy-saving products to consider for S&L programs. The "Big 4" products most commonly included in S&L programs in the APEC region are: refrigerators, air conditioners, lighting products, and TVs. Products such as fans and rice cookers may also be important in some economies. Labels and standards for low-standby power in office equipment and consumer electronics are another category recognized as important for energy savings globally. After initially focusing on consumer products, many economies then decide to extend their S&L activities to commercial and industrial equipment such as motors, non-residential lighting, and heating and cooling equipment, as well as other products with economy-specific

[4] The CLASP guide, "A Standards & Labeling Guidebook for Appliances, Equipment, and Lighting," is online at http://www.clasponline.org/clasp.online.resource.php?sbo=289.

importance (e.g., agricultural irrigation pumps or pressure-boosting pumps for urban homes and businesses).

- *Testing and product certification* – Product testing and certification activities are an essential foundation for all S&L programs, as discussed in detail by the workshop participants. Some economies are developing or expanding their own economy-specific networks of independent, government-operated, or in some cases manufacturer-owned test labs. Others are interested in the development of regional networks of test labs. The Asia-Pacific Laboratory Accreditation Cooperation (APLAC) program, discussed at the second CEEDS workshop, offers an existing Asia-Pacific regional structure for coordinating test lab accreditation which could be a base for mutual recognition of test results among APLAC member economies (see http://www.aplac.org/). Energy performance testing does not appear to have been an area emphasized by APLAC agreements up to now, but APLAC may provide a useful starting point since all but one of the APEC economies are current APLAC members. Whatever path is followed, economy-specific or a regional network of test labs, training of laboratory personnel and proper accreditation of labs to international (ISO/IEC) standards are important elements of effective S&L programs.
- *Compliance monitoring and enforcement* – Monitoring and enforcement of energy efficiency standards and labeling requirements are fundamental, but also pose challenges to economies with limited program budgets or technical resources. Partnering with retailers, contractors/installers, and individual manufacturers or industry associations can be ways of improving compliance with S&L requirements. Workshop participants discussed plans by CLASP and members of the International Energy Agency's "Implementing Agreement for a Co-operating Programme on Efficient Electrical End-Use Equipment" (IEA-4e) to jointly sponsor a study and workshop on improving S&L compliance in the coming year.[5]
- *Regular review & updates* – Over the years, both the efficiency levels initially chosen for energy efficiency standards and the levels used to define multiple categories for appliance comparison labels need to be regularly reviewed and updated, as needed, to reflect technology advances and changing market conditions. The procedures, criteria, and agency responsible for this regular review and update should be clearly specified from the beginning of an S&L program.
- *Stakeholder involvement* – This is another important element of a successful program; key stakeholders may include a wide range of organizations and individuals, including but not limited to manufacturers, retailers, consumer groups, and academic researchers and experts.

[5] The IEA "4e" Annexe includes both APEC and non-APEC members.

- *Economy-specific label designs*– The design of an appliance energy label – unlike the energy test methods used – often needs to be customized to match the cultural and market traditions of each economy, in order to communicate clearly and effectively to consumers. A proposed label design should always be carefully pre-tested with consumers before being introduced on a large scale.
- *Consumer information and education* – Appliance energy labeling programs will generally be more effective if they are accompanied by an initial information campaign to raise customers' awareness of the label, explain how to read and interpret the information it provides, and emphasize why this information is of value to consumers. Information campaigns should also be repeated periodically, to remind consumers about the energy label and to educate each new generation of buyers. For some products it may be useful to supplement the information on the individual labels with on-line web-based information, including lists of energy-efficient products by brand and model. Finally, although it sometimes raises analytical challenges, many economies have concluded that it is very important for the label to show not just energy units (such as kWh) or an efficiency index, but also the energy costs of operating a product, in a format that makes it easy for the buyer to consider these long-term energy operating costs along with the initial purchase price.

- *Linking S&L with complementary energy efficiency programs* – The workshop participants discussed at some length the importance of clearly linking S&L programs with other energy efficiency policies and programs that can both build on S&L and in turn add value to them; examples include tax incentives and rebates, building energy codes, and public procurement. Other examples of complementary programs including targeted incentive for early retirement and replacement of old, inefficient appliances, including efficient appliances in building retrofit programs, and encouraging contractors to include efficient appliances as part of a "sustainable furnishings" package. In addition, several workshop participants mentioned a growing interest in S&L programs in general in their economy, related to the increased support globally for phasing out incandescent lighting in favor of fluorescent, solid-state, or other lighting technologies.

Key Challenges in Implementing S&L

The workshop participants identified a number of challenges in developing and implementing new S&L programs, or expanding and strengthening existing programs. While the specific nature of these challenges, and the path to solve them, tended to vary from one APEC economy to the next (see Appendices 2-7), there were several important common elements:

- *Need for policy-maker support for energy efficiency standards and mandatory labels* – Several economies referred to the difficulty of gaining attention and support from top governmental officials, and sustaining that attention over time with changes in government leadership and competing demands to focus on economic recovery.
- *Inadequate program staff and budgets* – In some economies, the agency responsible for leading S&L programs (including testing and market oversight) lacked experienced staff with adequate training.
- *Need for more staff training and technical assistance* – The recognized need for training and technical assistance is one obvious way to overcome some of these staffing constraints, but training and technical assistance also needs to be repeated periodically to account for staff turnover. The workshop participants discussed both conventional approaches (in-person workshops and training courses) and possible ways to use on-line webinars and other forms of "distance learning" to accomplish some of the training and technical assistance from international resources such as CLASP, LBNL, and IEA. Another idea was peer-to-peer assistance, and combinations of in-person and on-line training to work through real-life examples of planning for end-use data collection or applying available data to an in-depth analysis of S&L potential using software tools like BUENAS and PAMS.
- *Limited data availability* – The importance of access to high quality, economy-specific data and trends on appliance sales, efficiencies, market channels, etc. has already been noted.
- *Need to strengthen test-lab capabilities and certification procedures* – For some economies, especially the smaller APEC economies, the limited size of the domestic appliance market makes it difficult to develop and sustain a network of technically qualified, ISO/IEC-accredited energy test labs. Cooperative testing with other economies and mutual-recognition agreements were discussed as one possible path to address these constraints.

In response to both these challenges and the energy savings opportunities for S&L, the delegates from each participating economy first developed a draft proposal on Next Steps for that Economy and presented these ideas at the conclusion of Workshop #1. At the start of Workshop #2, these same delegates then reported to the full group on their progress, and based on group discussion and input from the invited experts, each economy's delegate(s) developed a revised plan of action to move forward after the two CEEDS workshops. These plans for each participating economy are summarized in Appendices 2-7.

Future Opportunities for Regional Cooperation and Action

In many cases, the proposed S&L action plans pointed to the need for increased regional cooperation. As one workshop participant from CLASP noted: "Single-economy action increases costs; regional action reduces costs!" The CEEDS workshop participants identified the following priority areas of opportunity for regional cooperation:

- *Networking for advice & information-sharing* – The CLASP website (www.clasponline.org) offers an available, in-depth resource for S&L information and opportunities for networking. Another region-specific resource is the APEC-ESIS (Energy Standards Information System) website currently managed by CLASP (http://www.apec-esis.org/). In addition to these reference sources, workshop participants discussed the idea of staff-exchanges and working visits among economies, including both S&L program staff and test-lab personnel.

- *Test standard harmonization* – Workshop participants discussed a range of testing harmonization and collaboration activities in the APEC region, as well as models from other regions. The APEC Subcommittee on Standards and Conformance (SCSC) works on alignment of standards under the APEC Committee on Trade and Investment (CTI) (http://www.apec.org/apec/apec_groups/committee_on_trade/sub-committee_on_standards.html). It was also reported that the SCSC has established a working relationship with the Expert Group on Energy Efficiency and Conservation (EGEEC) of the EWG and that the two groups are planning a workshop in Sendai, Japan in September 2010 to consider developing harmonized test methods for refrigerators and air conditioners. A new UNDP/GEF funded project, "Barrier Removal to the Cost-Effective Development and Implementation of Energy Efficiency Standards and Labeling" (BRESL), involves at least six APEC economies (China, Indonesia, Thailand, and Viet Nam as member economies, along with Japan and Korea joining as observers).[6] The People's Republic of China is participating with other economies in efforts to standardize testing of compact fluorescent lamps (CFLs). At the first CEEDS workshop, an expert from Chinese Taipei host economy noted that for their economy, with extensive testing experience and a strong laboratory infrastructure already in place, regional harmonization of energy test standards is a special priority. According to a representative from CLASP, a cooperative air conditioner testing program involving three North African economies further demonstrated the benefits of regional cooperation.

[6] BRESL activities include test method harmonization and other S&L program development activities for 7 targeted products similar to those identified as priorities by the CEEDS participants: refrigerators, air conditioners, CFLs, fluorescent ballasts, motors, fans, and rice cookers.

- *Regional cooperation on energy testing facilities* – In general, potential areas for cooperation within the APEC region on energy testing facilities could include:
  - Funding new test labs;
  - Test lab staff training; and
  - Lab accreditation and round-robin testing, possibly through cooperation with APLAC, as noted above.

  Workshop participants agreed that a path forward might involve interested economies agreeing on a priority list of products suitable for round-robin energy testing (as part of laboratory accreditation) and a possible mutual recognition agreement, and then bringing this as a proposal to APLAC, possibly through the APEC Subcommittee on Standards and Conformance (SCSC).

  Workshop participants generally agreed on the need for both *round-robin testing* (aimed at improving or verifying the capabilities and performance of the test lab itself) and *check-testing* of randomly-selected products (to verify that products were actually meeting the required energy efficiency standards or labeled efficiency level). Because both types of testing are useful but costly it is important to set priorities based on factors such as: sales volumes, energy savings, inherent accuracy of the test method, and expected variance among products.

Possible Future Directions

In the closing session of the second CEEDS workshop, participants reviewed some possible future actions, in addition to the specific action steps planned for each participating economy. The main topics were:

1. *Reporting on the CEEDS process during Phase 1* – APERC, as the lead organizer of CEEDS, agreed to report on the results of Phase 1 at upcoming meetings of the EWG (March 2010) and the Energy Ministers meeting (June 2010) as part of APERC's Progress Report on Peer Review Mechanisms. APERC also featured a summary of CEEDS at their own annual conference which immediately followed the 2nd CEEDS Workshop.
2. *Regional capacity-building* – APERC asked each of the participating economies to informally rank their priorities for future capacity-building related to S&L. A consensus view among the six economies suggested that the most important areas were:
   1) Training in data gathering methods and data analysis tools for setting S&L priorities
   2) Capacity-building for energy test lab personnel

3) Methods and criteria for setting and updating energy efficiency standard levels
4) Training in methods of impact evaluation for S&L programs

Participants considered technical assistance on other S&L topics, such as label design or complementary programs, as useful but less urgent. A number of capacity-building approaches were considered worth trying, including: Hands-on one-to one training (or "coaching"); distance-learning (or a combination of in-person and on-line training); and peer-to-peer collaboration.

- *Regional cooperation on test lab accreditation, round-robin testing, and Mutual Recognition Agreements* – APERC offered to explore opportunities with the SCSC and APLAC to identify one or more priority products as a pilot example for regional cooperation in appliance energy testing.

- *Regional Alignment on a Multi-tier Framework for Appliance Efficiency* – Even these six participating economies – let alone the many other APEC economies – differed significantly in their extent of their S&L programs and the relative stringency of their energy efficiency standards or labeling criteria. Thus, it initially seems difficult to consider achieving regional harmonization on appliance efficiency levels – even assuming that agreement can be reached on harmonized test methods and regional cooperation in accrediting and recognizing test labs.

  However, one strategy for moving toward regional alignment may be to develop a multi-tiered set of energy performance levels – beginning with the multi-tiered categories used for appliance labeling in many economies. Partial alignment of these performance tiers[7] could provide a framework for regional cooperation to advance both appliance energy efficiency and trade policy. These same multiple tiers of energy efficiency could also be used *within* a given economy to create a series of "dynamic" efficiency standards leading to long-term market transformation. For example, above the minimum energy efficiency level there might be two or three higher levels of efficiency. The next step up might be announced as a new proposed energy efficiency standard in 5 years, and meanwhile those products in the top two tiers might be eligible for two different levels of incentive. Five years from now, with the new MEPS standard, each of the higher performance tiers would step up one notch (i.e., today's 5-star level would become tomorrow's 4-star level, and a new criterion would be set for the most efficient 5-star products.

[7] For example, the 3-star level in one economy could equate to the 3-star level for another economy, and so forth.

Japan's "Top-Runner" policy is a variant of this approach, and Thailand has adopted some elements of this strategy by designating high-efficiency products (HEPS) as well as a minimum energy performance standard (MEPS), with the HEPS products receiving special recognition and incentives. These and other policy innovations are among the hoped-for outgrowths of the useful steps taken, in their own way, by each of the APEC economies participating in these CEEDS Phase 1 workshops.

Appendix 1a

Appliance Energy Efficiency Standards and Labeling
Agenda for 1st CEEDS workshop
19, 20 & 21 October 2009, Taipei, Chinese Taipei

First Day - Monday, 19 October 2009		
Venue: VIP Room 14F, Howard International House Taipei, Taipei		
9:00-9:20	***Registration (Reception, VIP Room 14F)***	
	I. Opening Session	
9:30- 9:35	***Welcome Words*** ***(President of APERC, Designated Executant of CEEDS Project)***	
9:35-9:45	I-1: Opening Remarks	Mr. Huey-Ching Yeh, Chinese Taipei (Host economy)
9:45-9:55	I-2: Opening Remarks	Mr. Mitsuo Matsumoto, Japan (Co-host economy)
9:55-10:10 (15)	Photo Session (VIP Room 14F)	
10:10 - 10:20 (10)	***Coffee Break (VIP Room 14F)***	
	II. Kick-off Session to share expected outcome of CEEDS workshops	
10:20-10:50 (30)	II-1: Project Kick-off Presentation "Cooperative Energy Efficiency Design for Sustainability" "Energy Efficiency Potential of Energy Efficiency Standards & Labeling for Residential Appliances"	Mr. Kenji Kobayashi (APERC) Mr. James Russell (APERC)
10:50-11:05 (15)	II-2: Overview of steps for deciding whether and how to implement Energy Efficiency (EE) Standards	Ms. Yamina Saheb (CLASP)
11:05-12:35 (90)	II-3: Presentations on Current Economy Report (status of S&L, next steps in mind, expected outcome of CEEDS workshop etc.)	Mr. Ivan Jacques (Chile) Ms. Ivy Yap Lee Lian (Malaysia) Dr. Nan Zhou (on behalf of People's Republic of China) Ms. Mirna R. Campanano (Philippines)

		Mr. Chalermchai Phadunghus (Thailand) Mr. Phuong Hoang Kim (Vietnam)
12:35 – 13:45 (70)	***Lunch (Garden Cafeteria 1F)***	
13:45-14:00 (15) ***14:00-14:15 (15)***	II-4: "Role of Energy Efficiency Standard & Labeling Schemes – How to reach households" II-5:"How S&L can link to other energy efficiency programs"	Ms. Yukari Yamashita (IEEJ) Mr. Jeffrey Harris (ASE)
	III. Panel Discussion	
14:15-15:15 (60)	***III-1: "Legislation and institutional capacity to develop minimum energy-efficiency standards (Legal Authority and Testing Infrastructure)"*** ***Moderator: Mr. Jeffery Harris***	
(a) Presentation on legislation by an invited expert speaker (Mr. Jeffrey Harris), presentation on testing laboratory capacity by an expert speaker by Dr. Robert Hu. (b) Panel discussion by expert speakers, delegates and APERC researchers.		
15:15 – 15:45 (30)	***Coffee Break (VIP Room 14F)***	
15:45-16:45 (60)	***III-2: "How to select the appropriate label programme and/or standard Programme (e.g. labels or standards? Mandatory programme or voluntary programme?) Moderator: Ms. Yamina Saheb***	
(a) Presentation by an invited expert speaker (Ms. Yamina Saheb) (b) Panel discussion by expert speakers, delegates and APERC researchers		
16:45-17:45 (60)	***III-3: "How to select and expand products to be covered by minimum EE standards (Which Products to Consider)" Moderator: Mr. Ivan Jacques***	
(a) Presentation by an invited expert speaker (Mr. Jeffrey Harris)on sample priority list appliances to be covered by MEPS (b) Panel discussion by expert speakers, delegates and APERC researchers		
17:45 – 18:15 (30)	***Special Session (VIP Room 14F)***	
Report on ERIA Working Group for Analysis of Energy Saving Potential in East Asia region (a) Presentation by Ms. Cecilya Malik (b) Q &A		
18:15-18:25 (10)	***Summary Remarks of the discussion on the First Day by APERC***	
18:30 – 20:30	***Dinner (VIP Room 14F)***	
	End of the First Day	

Second Day - Tuesday, 20 October 2009	
Venue: VIP Room 14F, Howard International House Taipei, Taipei	
9:00-10:00	***III-4: How to increase compliance to mandatory standards (e.g. by expanding verification testing program) Moderator: Dr. Nan Zhou***
(a) Presentation by an invited expert speaker (Dr. Nan Zhou) (b) Panel discussion by expert speakers, delegates and APERC researchers.	
10:00-11:00	***III-5: Various types of Standard to promote EE other than MEPS Moderator: Ms. Yukari Yamashita***
(a) Presentation on "Japan's Top Runner Program" by an invited expert speaker (Ms. Yukari Yamashita) (b) Presentation on Top Runner Program/High Energy Performance Standard (HEPS) or similar program by delegate from Thailand (TBC). (c) Panel discussion by expert speakers, delegates and APERC researchers	
11:00-11:20 (20)	***Coffee Break (VIP Room 14F)***
11:20-12:30(50)	***III-6: "How to design a process for stakeholder input into the design of setting standards/programs (Stakeholder Involvement)" Moderator: Mr. Jeffrey Harris***
(a) Presentation by Prof. Horng-Ching Hsiao and Mr. Henry Lo from the government, manufactures and consumers/users in host economy (Chinese Taipei) (b) Panel discussion by expert speakers from host economy and delegates from participating economies.	
12:30-13:30 (60)	***Lunch (Garden Cafeteria,1F)***
13:30-17:00	***IV. Brainstorming Session: "What is the next step/road map to develop EE Standard programme for each participating economy?"***
13:30-14:00 (30) 14:00-14:30 (30) 14:30-15:00 (30)	Chile : Moderator: Mr. Jeffrey Harris China: Moderator: Dr. Nan Zhou Malaysia: Moderator: Mr. Jeffrey Harris
15:00 – 15:30 (30)	***Coffee Break (VIP Room 14F)***
15:30-16:00 (30) 16:00-16:30 (30) 16:30-17:00 (30) 17:00-17:15 (15)	Philippines: Moderator: Ms. Yamina Saheb Thailand: Moderator: Ms. Yukari Yamashita Vietnam: Moderator: Ms. Yamina Saheb Summary Remarks of the discussion on the Second Day by APERC

(Note) A rapporteur, who is an APERC researcher for each participating economy, will write a summary report with experts' suggestions on the next steps/road maps to develop EE standard for each economy in order to assist each delegate to make a presentation on the next steps/road maps at wrap-up sessions.	
17:15 – 19:00	***Follow-up Group Discussion***
	End of the Second Day

Third Day - Wednesday, 21 October 2009	
Venue: VIP Room 14F, Howard International House Taipei, Taipei	
9:00-12:50	***V. Wrap-Up Session***
(a) Presentation by a delegate about draft proposal on the next step/road map for each participant's economy to develop EE Standard programme (b) Discussion for identifying key points in the future proposal, which will be presented at the 2nd CEEDS workshop.	
9:30-11:00	Chile: (a), (b)
	China: (a), (b)
	Malaysia: (a), (b)
11:00 – 11:20 (20)	***Coffee Break (VIP Room 14F)***
11:20-12:50	Philippines: (a), (b)
	Thailand: (a), (b)
	Vietnam: (a), (b)
12:50 – 13:50 (60)	***Lunch (Garden Cafeteria,1F)***
14:00 – 15:00 (60)	***VI. Closing Session***
	Closing Remarks (President of APERC)
End of Workshop	

Appendix 1b

Appliance Energy Efficiency Standards and Labeling
Agenda for 2nd CEEDS workshop
1-2 March 2010, Tokyo, Japan

First Day - Monday, 1 March 2010		
Venue: Starlight 43F, Keio Plaza Hotel, Tokyo		
8:30-8:45	***Registration (Reception, Subaru 43F)***	
	I. Opening Session	
	Welcome Remarks	
8:45-8:55 (10)	I-1: Opening Remarks	Mr. Mitsuo Matsumoto, Japan (Co-host economy)
8:55-9:10 (05)	I-2: Opening Remarks	Dr. Jyuung-Shiauu Chern, Chinese Taipei (Co-host economy)
9:05-9:15 (10)	I-3: Opening Remarks	Mr. Kenji Kobayashi President, APERC
	II. Kick-off Session to share expected outcome of CEEDS workshops	
9:15 - 9:45 (30) ***9:15 – 9:30*** ***9:30 – 9:45*** ***9:45-10:15 (30)*** ***9:45 – 10:00 (15)*** ***10:00 – 10:30 (30)***	II-1: Presentation (a) Presentation by APERC (b) Discussion II-2: Presentation on APLAC activity (a) Presentation (b) Discussion - Opportunity for test standards harmonization - Regional cooperation on energy testing facilities	Format of Discussion + Energy Saving Potential Presentation by Dr. Helen LIDDY[8]
10:30 – 10:45 (15)	***Coffee Break (Takao 42F)***	
	III. Next Steps for each participating economy	

[8] Dr. Helen Liddy, APLAC Secretary, could not participate in the workshop because of her flight problem. Other participating experts explained about her presentation slide.

10:45-11:45 (60) *10:45 – 10:55 (10)* *10:55 – 11:15 (20)* *11:15 – 11:45 (30)*	***III-1: Malaysia*** ***(a) Highlighting Key Steps by Moderator, Mr. Jeffrey Harris*** ***(b) Presentation on refined proposal on next steps by delegate Ms. Ivy Yap Lee Lian (Presentation: TBC)*** ***(c) Discussion & Summary***
11:45-12:45 (60) *11:45 – 11:55 (10)* *11:55 – 12:15 (20)* *12:15 – 12:45 (30)*	***III-2: China*** ***(a) Highlighting Key Steps by Moderator, Dr. Nan Zhou*** ***(b) Presentation on refined proposal on next steps "Energy Efficiency Standard and Labeling Programme of China" by Ms. Han Wei*** ***(c) Discussion & Summary***
12:45 – 13:45 (60)	*Working Lunch (Akebono 47F: TBC)*
13:45-14:45 (60) *13:45 – 13:55 (10)* *13:55 – 14:15 (20)* *14:15 – 14:45 (30)*	***III-3: The Philippines*** ***(a) Highlighting Key Steps by Moderator, Ms. Yamina Saheb*** ***(b) Presentation on refined proposal on next steps by delegate, Ms. Mirna R. Campanano (Presentation: TBC)*** ***(c) Discussion & Summary***
14:45-15:45 (60) *14:45 – 14:55 (10)* *14:55 – 15:15 (20)* *15:15 – 15:45 (30)*	***III-4: Thailand*** ***(a) Highlighting Key Steps by Moderator, IEEJ Expert (TBD)*** ***(b) Presentation on refined proposal on next steps: "Proposal to develop Appliance Energy Efficiency Standards and Labeling" by Mr. Chalermchai Phadunghus*** ***(c) Discussion & Summary***
15:45 – 16:15 (30)	*Coffee Break (Takao 42F)*
16:15-17:15 (60) *16:15 – 16:25 (10)* *16:25 – 16:45 (20)* *16:45 – 17:15 (30)*	***III-5: Vietnam*** ***(a) Highlighting Key Steps by Moderator, Yamina Saheb*** ***(b) Presentation on refined proposal on next steps by delegate, Mr. Phuong Hoang Kim (Presentation: TBC)*** ***(c) Discussion & Summary***
17:15 – 17:45 (30) *17:45 – 18:45 (60)*	*Group Discussion to work out fine-tuned proposal on the next steps for participating economy* *Group Discussion on areas of Potential Collaboration* - *Possible mechanisms for continued networking and information sharing*
	End of the First Day

Second Day - Tuesday, 2 March 2010	
Venue: Starlight 43F, Keio Plaza Hotel, Tokyo	
	Morning Session
8:00-9:00 (60) TBC ***8:00 –8:10 (10)*** ***8:10 – 8:30 (20)*** ***8:30 – 9:00 (30)***	***III-6: Chile (Telephone conference)*** ***(a) Highlighting Key Steps by Moderator, Mr. Jeffrey Harris*** ***(b) Presentation on refined proposal on next steps by delegate, Mr. Ivan Jacques (Presentation: TBC)*** ***(c) Discussion & Summary***
9:00 – 14:15	***IV. Wrap-up Session***
9:00-9:45 (45) ***9:00 – 9:05 (5)*** ***9:05 – 9:25 (20)*** ***9:25 – 9:45 (20)***	***IV-1: Malaysia*** ***(a) Highlighting Key Steps by Moderator, Mr. Jeffrey Harris*** ***(b) Presentation on fine-tuned proposal on next steps by delegate Ms. Ivy Yap Lee Lian (Presentation: TBC)*** ***(c) Discussion & Summary***
9:45-10:30 (45) ***9:45 – 9:50 (5)*** ***9:50 – 10:10 (20)*** ***10:10 – 10:30 (20)***	***IV-2: China*** ***(a) Highlighting Key Steps by Moderator, Dr. Nan Zhou*** ***(b) Presentation on fine-tuned proposal on next steps by delegate Ms. Han Wei (Presentation: TBC)*** ***(c) Discussion & Summary***
10:30 – 11:00 (30)	***Coffee Break (Moonlight 43F)***
11:00-11:45 (45) ***11:00 – 11:05 (5)*** ***11:05 – 11:25 (20)*** ***11:25 – 11:45 (20)***	***IV-3: Philippines*** ***(a) Highlighting Key Steps by Moderator, Ms. Yamina Saheb*** ***(b) Presentation on fine-tuned proposal on next steps by delegate Ms. Mirna R. Campanano (Presentation: TBC)*** ***(c) Discussion & Summary***
11:45-12:30 (45) ***11:45 – 11:50 (5)*** ***11:50 – 12:10 (20)*** ***12:10 – 12:30 (20)***	***IV-4: Vietnam*** ***(a) Highlighting Key Steps by Moderator, Yamina Saheb*** ***(b) Presentation on fine-tuned proposal on next steps by delegate Mr. Phuong Hoang Kim (Presentation: TBC)*** ***(c) Discussion & Summary***
12:30 – 14:00 (90)	***Working Lunch (Fuji 42F)***

14:00-14:45 (45) ***14:00 – 14:05 (5)*** ***14:05 – 14:25 (20)*** ***14:25 – 14:45 (20)***	***IV-5: Thailand*** ***(a) Highlighting Key Steps by Moderator, IEEJ Expert (TBD)*** ***(b) Presentation on fine-tuned proposal on next steps by delegate Mr. Chalermchai Phadunghus (Presentation: TBC)*** ***(c) Discussion & Summary***	
14:45 – 15:15 (30)	***Coffee Break (Moonlight 43F)***	
15:15 – 16:15 (60)	***V. Closing Session***	
V-1: ***(a) 15:15 – 15:30 (15)*** Summary Report by APERC and Mr. Jeffrey Harris (ASE) ***(b) 15:30 – 15:45 (15)*** Summary Report by Dr. Yie-Zu Robert HU (ITRI)(TBC) ***(c) 15:45 – 16:15 (30)*** Discussion —the ways that the results of CEEDS Workshop could be shared more broadly with other interested APEC economies		
	V-2: Closing Remarks	Mr. Mitsuo Matsumoto, Japan (Host economy)
	V-3: Closing Remarks	Dr. Jyuung-Shiauu Chern, Chinese Taipei (Co-host economy)
	V-4: Closing Remarks	Mr. Kenji Kobayashi President, APERC
18:30 – 20:30	***Reception (Fuji 42F)*** ***Farewell Reception for participants in CEEDS Workshop and Welcome Reception for participants in Annual Conference and Advisory Board Members***	
	End of Workshop	

Appendix 2

Next Steps to Develop
Appliance Energy Efficiency Standards & Labeling:

CHILE

1. Next Steps Identified in Workshop #1

1.a Labels

- Implement labels for the current and future pipeline of appliances (ongoing)
  - Definition of protocols for efficiency and labels
  - Negotiations with stakeholders
  - Analysis and definition of future products
- Finalize the development of baselines and impact assessments of labeling programs (methodologies, data collection, etc.) (2009 – 2011, data ongoing)
- Develop and implement procedures for re-calibration of label categories (refrigerators, etc.) (2010-2011)
- Extend labeling program to other sectors (especially commercial) (2010 – 2015)
- Develop the institutional framework for a comprehensive system that incorporates labeling of houses and light vehicles (2010 – 2015)

1.b Standards

- Develop and put in practice the energy efficiency standards Action Plan
  - Legal and Institutional Framework (2009 – 2012)
  - Methodologies (support methods for best practice in implementation programs) (2010 – 2012)
  - Data collection (market studies, etc) (2010 – ongoing)
  - Capacity building (ongoing)
  - Analyses (cost-effective energy savings analysis, life cycle assessment (LCA), industry situation, testing facilities, etc.) (ongoing)
  - Implementation Strategies (negotiations with stakeholders, market transformation plan, communication and education campaigns, etc.) (2010 – 2011 with permanent revisions)
  - Enforcement and assessment strategy and procedures (2010 – 2012)

2. Problems and Barriers

2.a Labels

- Improve testing capacity (both technical and infrastructure for new products)
- Consolidate the working group for labeling implementation (improvement of both technical and operational capacities)
- Achieve commitment of different stakeholders in order to extend the program to other sectors
- Need for better and more comprehensive data

2.b Standards

- Final approval of the bill that creates Energy Ministry by congress is pending
- Change of administration could stop or delay the development of MEPS
- Technical capacity to design and implement the Energy Efficiency Standards Action Plan
- Opposition by interest groups
- Adequate resources for enforcement
- Further enhancement of harmonization of testing procedures is needed
- Need for better and more comprehensive data
- Need to strengthen financial and fiscal mechanisms for energy efficiency retrofit programs

3. How to Overcome the Barriers

- Technical support to laboratories and recognition of certifications issued by accredited foreign laboratories
- Technical support by LBNL and CLASP to S&L working group
- Institutionalize the labeling and standards working group
- Conform working group with all the relevant stakeholders and agree on an Action Plan for the extension of S&L to other sectors
- Carry out surveys, market studies, etc.

4. Developments between CEEDS Workshops #1 and #2

- National Energy Efficiency Action Plan 2010-2020 well advanced, will be presented on March 5, 2010

    - Contains policies, lines of action, programmes and activities related to EE S&L in all major sectors
- Bill that creates the Energy Ministry is now law
    - MEPS have now a legal backing (article in Energy Ministry law)
    - Regulation required by law is being drafted
    - The Ministry started operations on February 1, 2010
- Regulation for certification of products (DS 298) is under revision
    - Incorporate other certification schemes
    - Streamline the process
- Institutional reorganization:

- Energy Efficiency Division created in the Energy Ministry: in charge of policy formulation, including S&L
- National Energy Efficiency Programme (PPEE) will transform into the Chilean Energy Efficiency Agency (AChEE): in charge of programme design and implementation
- The Superintendence of Electricity and Fuels (SEC) is now part of the Energy Ministry: in charge of enforcement
- New government (and ruling coalition) elected, takes office on March 11, 2010
    - No major changes expected
- First MEPS under way: lighting
    - Joint effort between PPEE, SEC, LBNL and Fundación Chile
    - PAMS analysis
    - Institutional framework
    - International harmonization
    - Market research
    - Regulatory impact assessment
- Technical and legal documents currently being drafted

- Collaboration with CLASP approved - Assess EE S&L Programme and make proposals for improvement:
    - Review of relevant legislation, in particular the regulatory framework and existing regulations regarding conformity evaluation
    - Review of mandates and roles of organizations involved in the EE S&L Programme, in particular in the areas of standard setting, policy, implementation and enforcement of the programme
    - Review of the procedures followed regarding the various activities of the EE S&L Programme
    - Review of testing and certification
    - Review of existing and planned complementary programmes and instruments to foster market transformation
    - Review of proposed institutional and organizational framework for the elaboration and enacting of MEPS, prioritization of products, market control and other relevant aspects
    - Case study: electric motors
    - Proposals for improvement of the EE S&L Programme
    - EE labeling for dwellings in pilot phase
- EE labeling for light vehicles under development

5. <u>Next Steps</u>

- Steps outlined in First CEEDS workshop still valid
- However, assessment and proposal by CLASP may introduce changes
- Similarly, new administration may also introduce changes in emphasis and timelines

5.a Labels

- Carry out assessment and implement recommendations from CLASP (assessment in 2010)
- Improve regulation (e.g. DS 298) (ongoing)
- Improve institutional framework (2010 onwards)
- Implement labels for the current and future pipeline of appliances (ongoing)
    - Analysis and definition of products to be labeled
    - Definition of protocols for efficiency and labels
    - Negotiations with stakeholders
- Ongoing development of baselines and impact assessments of labeling programs (methodologies, data collection, etc.)

- Develop and implement procedures for re-calibration of label categories (refrigerators, etc.) (2010 onwards)
- Improve testing facilities (ongoing)
- Improve enforcement capacity (2010-2015)
- Continue and increase international cooperation (ongoing)
- Extend labeling program to other sectors (especially commercial) (2010 – 2015)
- Develop the institutional framework for a comprehensive system that incorporates labeling of houses and light vehicles (2010 – 2015)

5.b Standards

- Develop and put in practice the energy efficiency standards Action Plan
    - Legal and institutional framework (2010 – 2012)
    - Methodologies (support methods for best practice in implementation programs) (2010 – 2012)
    - Data collection (market studies, etc.) (2010 – ongoing)
    - Capacity building (ongoing)
    - Analyses (cost-effective energy savings analysis, life cycle assessment (LCA), industry situation, testing facilities, etc.) (ongoing)
    - Implementation strategies (negotiations with stakeholders, market transformation plan, communication and education campaigns, etc.) (2010 onwards with permanent revisions)
    - Enforcement and assessment strategy and procedures (2010 – 2012)

6. Problems and Barriers

6.a Labels

- Improve testing capacity (both technical and infrastructure for new products)
- Consolidate the working group for labeling implementation (improvement of both technical and operational capacities)
- Achieve commitment of different stakeholders in order to extend the program to other sectors
- Need for better and more comprehensive data

6.b Standards

- Continue MEPS programme with new administration
- Technical capacity to design and implement the Energy Efficiency Standards Action Plan
- Opposition by interest groups
- Adequate resources for enforcement
- Further enhancement of harmonization of testing procedures is needed

- Need for better and more comprehensive data
- Need to strengthen financial and fiscal mechanisms for energy efficiency retrofit programs

7. How to Overcome the Barriers

- Technical support to laboratories and recognition of certifications issued by accredited foreign laboratories
- Technical support by LBNL and CLASP to S&L working group
- Institutionalize the labeling and standards working group
- Conform working group with all the relevant stakeholders and agree on an Action Plan for the extension of S&L to other sectors
- Carry out surveys, market studies, etc.

8. Comments from Workshop Participants

- 'Adequate resources for enforcement' – evaluate and report on needs for this.
- 'Institutionalize the labeling and standards working group' – coordination between Standards and Labeling program – membership and agenda for 2010
- Plan B – Consider alternative activities in the case of persistent lack of attention to S&L.
- Address 'opposition by interest groups' – Develop stakeholder consultation process
- Investigate harmonization within region – motors and other products.
- Consider evaluation of the energy price impacts of standards (by slowing energy demand growth)
- Plan of action for assurance of institutional capacity (hiring plan, staff time commitment, technical roles).
- Report on product prioritization criteria and results.
- Strengthen S&L working groups + develop membership and agenda for 2010
- Coordination between S&L and building codes – ensure labeling for lighting and HVAC equipment – grades to be included in building codes and building labels.

Appendix 3

Suggested Next Steps to Develop Appliance Energy Efficiency Standards & Labeling:

PEOPLE'S REPUBLIC OF CHINA[9]

1. Next Steps Identified in Workshop #1

1.a Wider and Stricter Standards

- Stricter standards
  - Study whether it would be technically feasible and economically viable to implement stricter standards
    - Note that Chinese manufacturers may be meeting stricter standards in other economies (e.g. Chinese Taipei)
- Pace of standards updates
  - Consider if this is keeping up with technology
- Experiment with lifecycle-based labeling
  - Perhaps, can use MEPS in leading economies as an example
- Involve other stakeholders in standard setting

1.b Compliance

- Labs
  - Continue work to ensure labs are producing consistent results
  - Build capacity in the many local labs rather than starting from scratch
- Improve sampling procedure
  - Address wider range of efficiencies
  - Second-tier cities and retailers
- Challenge tests between manufacturers may be useful
  - Allow manufacturers to report the products of other manufacturers that they have found non-compliant
    - for targeting products for testing

[9] As the delegate of China was unable to attend, these suggestions to China for the Next Steps were prepared by an expert of LBNL for the consideration by the delegate of China to prepare the draft proposal on the Next Steps at the 2nd Workshop.

- Define who is responsible for monitoring and enforcement of the energy efficiency standards and labeling programs
  - Provide a voice to obtain needed resources
  - Provide a voice to pursue penalties when non-compliance is found
- Are penalties (for example, fines) severe enough to encourage compliance?

1.c Evaluation

- Build on comparative label database to include MEPS products
- Survey energy use:
  - Begin a regular survey of energy consumption in both residential and commercial buildings
  - Understand how the consumers are responding to labels and information campaigns

1.d Harmonization

- Harmonization of test procedures
  - Internationally
    - Consider within the context of a large APEC effort
    - Build on ongoing work with other countries
- Cross-recognition of standards
- Targeting
  - A globally traded product with a large potential
  - New Products (e.g. LED or external power supplies)

1.e Awarding Stakeholders for Participation

- Retailers, utilities, etc…
- Has proven a valuable tool in Japan
- Include stakeholders to be sure important attributes are awarded

2. Developments between CEEDS Workshops #1 and #2

2.a Energy efficiency standards in China

- More than 30 EE standards are developed and published, including:
  - *Home Appliances:* Refrigerators, room ACs, washing machine, rice cooker, TV sets, electric fans, VS room ACs, electric water heaters, gas water heaters, induction cookers
  - *Lighting Products:* Double-capped fluorescent lamps, ballasts for fluorescent tubes, single-capped FL, CFLs, high-pressure sodium lamps and the associating ballasts, metal halide lamps and the associated ballasts

- *Industry Products:* Motors, air compressor, fans, centrifugal pumps, distribution transformer, contactor;
- *Office equipments:* Copiers, monitors;
- *Commercial equipments*: Unitary ACs, water chillers, MC AC units, adapters
- *Vehicles*: Passenger cars, commercial vehicle, low-speed goods vehicles, tri-wheel vehicles, mopeds, motorcycles

- *Research and development of EE standards in 2010*
  - *Household appliances:* washing machine, air compressor for ACs
  - *Commercial equipments:* vending machine
  - *Lighting products:* CFL, double-capped FL, LED lamps, Electrodeless lamps
  - *Office equipments:* external power supply

2.b Enforcement of MEPS

- Regular market monitoring by AQSIQ
  - Safety
  - Quality
  - Efficiency
- Implementation of EE Comparative Labeling Programme
  - Products with efficiency lower than MEPS are not allowed to enter into market;
  - Market monitoring by local quality supervision authority

2.c Endorsement Labeling Product Categories

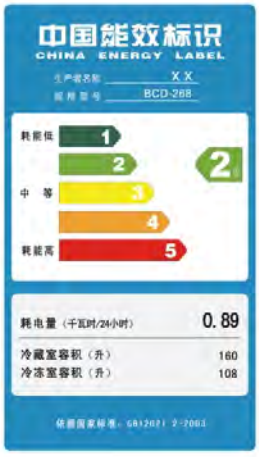
- *Home Appliances:* Refrigerators, air conditioners, electric water heaters, residential micro-wave ovens, rice cookers, washing machine, etc.
- *Lighting Products:* Ballasts for fluorescent tubes, double-capped fluorescent lamps, CFLs, high-pressure sodium lamps and the associating ballasts, metal halide lamps and the associated ballasts, etc.
- *Industry Products:* Air compressors, electric motors, line traps for AC power system, electric power fitting, power control devices, etc.
- *Standby power Products*: Color TVs, DVD/VCD, printers, copiers, fax machines, computers and displays, etc.
- *Building materials:* Window, sealed insulating glass unit, polystyrene, etc.

2.d Government Procurement for EE labeled Products

- On December 17, 2004, MOF and NDRC jointly issued the *Procurement Policy for Energy Efficient Products*.
- Government agencies at all levels (public sector non-profits units and organizations) are required in the procurement process to *give priority to products certified as energy-efficient*.

- The List of Energy-Efficient Products for the Government procurement scheme draws on the results of China national energy efficiency endorsement labeling programme.
- The energy-efficiency product list has been updated in a timely manner
- Product List of Government EE Procurement
  - Air Conditioner
  - Refrigerator
  - Lighting Products
    - Double-capped FLs
    - CFLs
    - Single-capped FLs
    - Ballast for FLs
    - High-pressure sodium lamp
    - Ballast for high-pressure sodium lamp
  - TVs
  - Water Heater
  - Motor
  - Computer
  - Printer
  - Fax
  - Copier
  - Transformer
  - Monitor
  - Adaptor

2.e EE Comparative Labeling program in China



- Energy efficiency labels are the labels attached to energy consuming products that indicate the level of energy performance.
- Efficiency Comparative Label is used to inform the energy efficiency performance to customers (industries, government, as well as individuals)
- Self-claim + Registration + Monitoring.
- Policy and programme development for EE S&L Policy:
  - Subsidy programme for home appliances
  - Subsidy programme for efficient lighting
  - Government Procurement
- Programme:
  - End-use Energy Efficiency Programme

- Asia: Barrier Removal to the Cost-Effective Development and Implementation of Energy Efficiency Standards and Labeling Project
- Sustainable Building Interior Renovation and Decoration Initiative in China
- Phasing-out of Incandescent Lamps and Energy Saving Lamps Promotion

2.f Asia: Barrier Removal to the Cost-Effective Development and Implementation of Energy Efficiency Standards and Labeling Project (BRESL) (UNDP/GEF)

- BRESL funded by GEF is aimed at rapidly accelerating the adoption and implementation of energy standards and labels (ES&L) in Asia, and in so doing bring about energy savings from the use of energy efficient appliances/equipment.
- The project also facilitates harmonization of test procedures, standards and labels among developing countries in Asia, when appropriate.
- Target Countries: Bangladesh, China (leading country), Indonesia, Thailand, Vietnam and Pakistan
- Products covered by BRESL:
  - Refrigerators
  - Room air conditioners
  - Electric motors
  - Ballasts for FLs
  - Electric fans
  - Compact fluorescent lamps
  - Rice cookers
- Promotion
  - Awarding Programme for EE products and manufactures
  - Training programme for manufactures
  - Training programme for retailers
  - Education and information campaigns to consumers on EE products
  - Annual Energy Conservation Week
  - Annual exhibition on EE products

3. Response to Comments from Workshop Participants

- Revise and strengthen energy performance standards for appliances
  - Review the energy efficiency performance in a timely manner as a prompt response to the market and technology development
  - Review available global standards to examine if more stringent or more comprehensive standards could be introduced
  - *Implementing agency: CNIS, draft the proposal*
    SAC, approve the proposal

- The product categories for EE standards that will be developed and revised in 2010:
  - Household appliances: washing machine (revision), air compressor for ACs
  - Commercial equipments: vending machine
  - Lighting products: CFL (revision), FL (revision), LED lamps, Electrodeless lamps
  - Office equipments: external power supply
  - *Implementing agency: CNIS, draft the proposal*
    SAC, approve the proposal
- Enforcement of EE S&L
  - Besides improving the stringency and relevance of existing standards, it makes sense to consider introducing new standards as non-MEPS products and begin to increase market penetration, e.g. clothing dryer, dishwasher.
  - An EE endorsement labeling programme for such new products could be developed and the programme will be an important input for the MEPS development in the future.
  - *Implementing agency: CNIS, CQC*
  - Set aside funding from local Energy Conservation Special Fund for a further enforcement of EE S&L
  - Capacity building for the local supervision agencies on the monitoring programme for the EE S&L
  - *Implementing agency: MOF, local governments, CNIS, NECC*
- Data gathering
  - Regularly undertake national surveys on buildings characteristics, household demographic characteristics, devices types, indicator of energy consumption and expenditures data, etc, by learning the international experience and best practice such as US Residential and Commercial Energy Consumption Survey
  - *Implementing agency: NBS, government agencies both central and local level*
- Supervision and Monitoring of the S&L
  - Improve and refurbish the national check-testing programme on MEPS and enhance the implementation of a long term and sustainable market monitoring scheme;
  - Improve the current Implementation Protocol of EE Comparative Labeling Programme, research and address the financial and institutional issues for consolidating a monitoring scheme for the labeling programme;
    - A review will be completed during the 12^{th}-Five-Year Plan
    - Coverage of this review will include funding mechanism for check-testing
    - *Implementing agency: AQSIQ, NDRC, CNIS, NECC*
- Incentive Policies

- Further develop and implement the incentive policies as a strong back up and support to the EE S&L
  - Subsidy programme for efficient lighting
  - Subsidy programme for efficient home appliances
  - Incentive program for manufactures have high compliance
  - Government Procurement
  - Subsidy programme for rural areas for home appliances and vehicles
  - Project of Phase-out inefficient lighting in China
  - *Implementing agency: NDRC, MOF*
- Round Robin Testing
  - Lighting products, e.g. CFL
  - Refrigerator/Freezer
  - *Implementing agency: AQSIQ, Testing labs, CNIS*
- Evaluation
  - Evaluate the effectiveness and impact of the incentive policies and measures on facilitating the implementation of EE S&L and the energy savings
  - *Implementing agency: NDRC, ERI, CNIS*

Appendix 4

Next Steps to Develop
Appliance Energy Efficiency Standards & Labeling:

MALAYSIA

1. Next Steps Identified in Workshop #1

- **Policy Formulation**: Establishment of legal basis for standards and labels;
- **Capacity Building Program**: Building of institutional and individual capacity to smoothen and secure on-the-ground implementation of standard and label programs
- **Market Support Program**: Provide policy support to establish market for energy efficient electrical appliances.
- **Manufacturer Support Program**: Information and technical assistance for local electrical household appliances manufacturers to help them develop efficient products and realize profit opportunities from efficient products.
- **Other program development activities:** National Energy Efficiency Master Plan Study

2. Problems/Questions to be Answered in Order to take the Next Steps

2.a What are the appropriate methodologies to improve enforcement and compliance with standards?

- **Formulation of legal framework:** The regulatory framework is important because it provides the legal basis for implementation of mandatory energy efficiency standards and labeling programs.
- **Dedicated Agency:** A dedicated & competent agency on EE is needed to ensure compliance with & enforcement of the legislative framework provisions.
- **Institutional and Human Capacity Building:** Improvement of energy efficiency through mandatory standards and labeling requires joint involvement of various agencies at planning, implementation and evaluation stage. Therefore, institutional and human capacity is crucial. Human capacity building is important for the general public & consumer NGOs for their awareness & understanding of the principles & benefit/cost implications
- **Industry support:** Ideally the local appliance manufacturers / suppliers need to "buy-in" into the national labeling & MEPS regimes to ensure success. This can be assisted by the dedicated EE agency.

- **Increase the availability and reduce the cost of energy efficient appliances:** The local market demand for energy efficient electrical appliances is low. This results in these products carrying high price premiums and making them less attractive for users.

2.b What are the appropriate methodologies to improve consumer understanding and use of labels?

- **More aggressive awareness programs:** Aggressive awareness programs can reach more people with a stronger message. This requires the existence of a relevant (dedicated & competent) agency to drive the policy initiatives and a systematic approach on awareness programs.

3. How to Answer the above Problems and Questions?

- **Legislate Energy Efficiency Improvement of Appliances through MEPS:** Standards and labeling is an important energy efficiency program that must be carried out economy-wide to ensure that various energy consuming appliances used in the economy are energy efficient and meet certain minimum standards. To improve energy efficiency of appliances, Minimum Energy Performance Standards (MEPS) is a good and effective tool. MEPS will prevent the "dumping" of energy inefficient appliances in the market & deprive local consumers from purchasing such products on misguided perceptions of "cheapness".
- **Develop Human Capacity and Infrastructures needs for Standards and Labeling Program:** Establishment of the stated dedicated EE agency must be a first step for this purpose. The agency can strive to develop human capacities both in public and private spheres to enhance the planning, implementation and evaluation of Standards and Labeling Programs as well their adoption in everyday use, through activities like training, establishment of technical working groups for targeted appliances, development of testing and certification infrastructure, and improving data collection and reporting mechanism.
- **Availability and lower cost of energy efficient appliances:** In the absence of a reasonable market for high energy efficient appliances, the price premium for high energy efficient appliances will remain high. Market creation for those appliances can be assisted by providing financial incentives to the buyers of high energy efficient appliances. Incentives in the form of tax exemption and rebates will boost the market creation for high energy efficient appliances and penetration of those appliances in the existing market.

4. Developments between CEEDS Workshops #1 and #2

- One of the EE efforts by the Malaysian Government is the introduction of energy efficiency labels in 2005
- It is open to all manufacturers on voluntary basis.

- The refrigerator was the first household item being labelled as it is one of the largest energy users in most households and is continuously in use.
- Performance criteria and testing standards had been developed for 8 items namely:
    - Refrigerators
    - Domestic Electric Fans
    - Televisions
    - Air Conditioners
    - Insulation Material
    - High Efficiency Motors
    - Ballasts For Fluorescent Lamps
    - Electric Lamps
- 4 items are Star rated as below:
    - Refrigerators
    - Domestic Electric Fans
    - Televisions
    - Air Conditioners
- Although Energy Efficiency Labeling in Malaysia started in 2005, the number of equipments being labeled is still low.
- Currently, performance criteria and testing standards have been developed for 8 items but only 4 are Star rated.
- The barriers to Energy Efficiency Labeling in Malaysia are as follows:
    - Lack of an integrated national energy efficiency policy and action plan;
    - In adequate energy efficiency regulations and implementation (voluntary);
    - Lack of institutional framework, human capacity and funding;
    - Insufficient availability of testing facilities;
    - Lack of awareness among the public.
- Next Steps to Improve Energy Efficiency Standards and Labeling
    - National Energy Efficiency Master Plan (NEEMP) Study
        - It is a study to drive the country to a higher energy efficiency level.
        - Expected to be completed by June 2010.
- Existing policy: To promote efficient utilization of energy and discourage wasteful and non-productive patterns of energy consumption.
    - Not comprehensive enough and can be improved.
- Proposed Energy Efficiency Policy - To be based on 4 pillars:
    - Institutional - to consolidate EE&C programs with an agency supported by a dedicated EE&C legislation.

- Economy - to achieve a low-carbon economy; move the economy up the value chain and improve energy security.
- Social and Human Capacity - to increase EE&C awareness and build human capacity.
- Environment - to use EE&C instruments to address climate change for a sustainable environment.

- Conclusion: A comprehensive energy efficiency policy and action plan will be formulated when the National Energy Efficiency Master Plan Study is completed.

5. <u>Other measures suggested in the Workshop</u>

a. Phasing out incandescent lamps
b. Introduction of MEPS (legal framework)
c. Expanded consumer education
d. Dialogue with manufacturers
e. Capacity building
f. Other programs

6. **<u>Brief execution plan of the suggested measures</u>**

a. Phasing out incandescent lamps
   - Banning the import of incandescent lamps
   - CFL exchange program
   - Awareness programs

b. Introduction of MEPS (legal framework)
   - MEPS is one of the tools in many EE success stories.
   - MEPS requirements:
     - Legislation
     - Standards

c. Expanded consumer education
   - Annual EE awareness program to educate the public on:
     - EE practices
     - EE appliances (to look for energy label)

d. Dialogue with manufacturers
     - To hold dialogues with manufacturers to disseminate information

e. Capacity building:
   - Reinforce existing organization
   - Establish new dedicated agency
   - Areas for capacity building:

- Planning
- Standards development
- Testing and technical assistance
- Monitoring and evaluation

f. Other programs:
    - Rebate & tax incentives
    - Duty import and sales tax exemption for EE products.

Appendix 5

Next Steps to Develop
Appliance Energy Efficiency Standards & Labeling:

PHILIPPINES

1. Next Steps Identified in Workshop #1

Type of Appliance	MEPS	Energy Label	Test Method/IG
Room air conditioners	Recently approved a new set of MEPs	Recently approved new label design. **Pre-test the energy label design. Propose for the revision of the PNS*.**	**Revise the implementing guidelines (IG) to reflect the new MEPS and to reduce the tolerance limits.**
Refrigerators	Conduct a study for MEPS	Await the results of the pre-test on the energy label design for RACs.	**Review/revise the IG to reflect reduction of tolerance limits and to update other provisions.**
CFLs, LFLs, & Ballast	We recently approved a new set of MEPS	New energy label has been approved.	**Prepare the IG.**

* PNS: Philippine National Standard

- To review and consider revising existing standards, labels, and test methods
- To increase consumer awareness and use of labels.
    1. Conduct a survey on consumer awareness
    2. Prepare a communication plan based on the results of the survey.
- To improve compliance with efficiency standards.
    1. Establish/implement the schedule of periodic sampling and testing.
- Propose training program for laboratory staff
    1. Lamps and ballasts
    2. RACs and refrigerators
- Conduct impact evaluation of the standards and labeling program

2. Problems/Questions and Answers in Order to Take the Next Steps

Next steps	Problems/questions/ barriers	Answers to the problems/ questions/barriers
1. Pre-test the energy label design for RAC	Which units will be involved? How much is the budget required? What is the timeline?	Create a committee composed of ERTLS Director with LATL, EECD and CWPO. Cost Center: LATL. The Committee to prepare a proposal for the pre-test. (January 2010)
2. Propose new label design for RAC & Ref	Which unit will be involved? How much is the budget required? What is the timeline?	Technical Committee for HH appliances. Cost Center: DOE & DTI. DOE to write DTI after the pre-test.
3. Revise/review the IG* for RAC, Refr, CFL, and LFL.	Which unit will revise the IG? How much is the budget?	Joint DOE – DTI working group. Cost Center: LATL. LATL to draft letter to DTI. LATL to prepare a workplan.
4. Increase awareness on the energy label: Conduct consumer survey and prepare communication plan.	Which units will be involved? How much is the budget required? What is the timeline?	LATL to coordinate with the CWPO and EECD. Cost Center: LATL/CWPO/EECD. Draft a workplan in December 2009. The activities will be integrated in the individual division 2010 workplan.
5. Improve compliance with the efficiency standards. Establish/ implement the schedule for periodic sampling and testing.	Which unit will be involved?	Include a provision in the IG.
6. Propose a training program for laboratory engineers.	Identify the training venue or expert. Identify the funding source.	1. For lamps and ballasts, prepare the training proposal and write to prospective training org. (target training in November 2009). Budget is available from PELMATP 2. For RAC and ref, include this in PEEP. Include in training plan for 2010.
7. Conduct impact evaluation of the program for RAC & Ref and for Lamps and Ballasts.	Which unit will conduct the impact evaluation? What methodology to use? How much is the budget? Timeline?	DOE (LATL and Planning). Prepare a proposal (February 2009). Cost Center: PELMATP for lamps and ballasts (completion in 2010). PEEP for RAC and Ref (completion in 2011).

IG – implementing guidelines

ERTLS – Energy Research and Testing Laboratory Services

LATL – Lighting and Appliance Testing Laboratory

EECD – Energy Efficiency and Conservation Division

CWPO – Consumer Welfare and Promotions Office

PEEP – Philippine Energy Efficiency Project

PELMATP – Philippine Efficient Lighting Market Transformation Project

3. Developments between CEEDS Workshops #1 and #2

3.a Where are we now? In terms of national standards developed and implemented.

Summary Table by Equipment Type (updated on February 9, 2010)				
Yv = Yes, voluntary; **Ym** = Yes, mandatory; **U** = under consideration				
LIGHTING	**Minimum Standard**	**Labeling**	**National Test Standard**	**Reference IEC/ISO Test Standard**
Ballast (Electronic)	None	**Ym** PNS 2050-4:2007 Lamps and related equipment - Energy labeling requirements - Part 4:Ballast (Mandatory July 2010)	**PNS IEC 60929:2006** A.C. Supplied Electronic Ballast for Tubular Fluorescent Lamps - Performance Requirements.	**IEC 60929: Published 2003**
			PNS IEC 61347-1:2002 Lamp Control Gear - Part 1: General and Safety requirements	**IEC 61347-1:2002**
			PNS IEC 61347-2-3:2002, Amd. 01:2006 A.C. Supplied Electronic ballasts for Fluorescent lamps - Part 2: Particular requirements for AC supplied electronic ballast for fluorescent lamps	**IEC 61347-2-3:2002, Amd. 01:2006**
Ballast (Magnetic)	None	**Ym** PNS 2050-4:2007 Lamps and related equipment - Energy labeling requirements - Part 4:Ballast (Mandatory July 2010)	**PNS IEC 60921:2006** Ballast for Tubular Fluorescent Lamps - Performance Requirements	**IEC 60921: Published 2004**
			PNS IEC 61347-1:2002 Lamp Control Gear- Part 1: General and Safety requirements	**IEC 61347-1:Published 2002**
			PNS IEC 61347-2-8:2002 Lamp Control Gear - Part 2: Particular requirements for ballast for tubular fluorescent lamps.	**IEC 61347-2-8:2002, Amd. 01:Published 2006**
CFLs (Self-ballasted lamps)	**Ym (**Effective January 2010)	**Ym PNS 2050 -2: 2006** Lamps and related equipment - Energy Efficiency and Labeling requirements - Part 2: Self ballasted lamps for general lighting services. (Note: This revised standard took effect January 2010)	**PNS IEC 969:2006** Self Ballasted Lamps for General Lighting Service - Performance Requirements	**IEC 969:Published 1988**
			PNS IEC 968:2006 Self ballasted lamps for general lighting services - Safety requirements.	**IEC 968: Published 1988**
Fluorescent Lamps (Double capped) Linear fluorescent lamps for general lighting service T12, T8 and T5	**Ym** (Effective January 2010)	**Ym PNS 2050-1-1:2007** Lamps and related equipment-Energy efficiency and labeling requirements-Part 1-1: Double-capped fluorescent lamps. Mandatory by July 2010.	**PNS IEC 60081:2006** Double capped fluorescent lamps - Performance specifications.	**IEC 60081 Edition 5.1 2002-05**
			PNS IEC 61195:2006 Double capped fluorescent lamps - Safety specifications	**IEC 61195 Second Edition 1999-10**

Fluorescent Lamps (Single capped) Circular fluorescent lamps for general lighting service	**None**	**Ym** **PNS 2050-1-2:2006** Lamps and related equipments – Energy labeling requirements – Part 1-2: Single-capped fluorescent lamps. Mandatory by July 2010.	**PNS IEC 60901:2001 Amd. 01, 02, & 03:2006** Single capped fluorescent lamps - Performance specifications	**IEC 60901: Second Edition 1996 Amd. 01: 1997, 02: 2000, & 03:2004**
			PNS IEC 61199:2006 Single capped fluorescent lamps - Safety specifications	**IEC 61199: Second edition 1999-10**
High Intensity Discharge lamps (High pressure sodium vapor lamps)	**None**	**U** **PNS 2050-3:2007** Lamps and related equipment-Energy labeling requirements-Part 3:High intensity discharge (HID) lamps	**PNS IEC 60662:2006 (IEC Published 2002)** Test protocol and technical data sheet of HPS	**IEC 60662 Edition 1.10 2002-11**
			PNS IEC 62035:2005 Amd 1:2006 Discharge lamps (excluding fluorescent lamp)-Safety specifications	**IEC 62035:2005 published 1999 Amendment 1: 2003-06**
Luminaires	**None**	**U** **PNS 2050-5: 2006** Lamps and related equipment – Energy labeling requirements – Part 5: Luminaires	**PNS IEC 60598-1: 2006 (IEC Published:2003)** Luminaires - Part 1 General Requirements and Tests **PNS IEC 60598-2-1:2005 (IEC Published 1979)** Luminaires part 2: Particular requirements Section one – Fixed general purpose luminaires **PNS IEC 60598-2-2:2005** Luminaires – Part 2 Particular requirements – Section 2: Recessed luminaries Amd. 01:1997	**IEC 60598-1: Sixth edition 2003-10** **IEC 60598-2-2** **IEC 60598-2-2: 1996**
APPLIANCE	**Minimum Standard**	**Labeling**	**National Test Standard**	**Reference IEC/ISO Test Standard**
Room Air Conditioners (RACs)	**Ym** On-going	**Ym** **PNS 396-1:1995** Household appliances - Energy efficiency ratio (EER) and labeling requirements Part 1: Air conditioners. Note: a new label design for RACs is under consideration (targetted before end 2010).	**PNS 240: 1998/ISO 5151:1994** Non-ducted air conditioners and heat pumps - Testing and rating performance.	**ISO 5151 : 1994**
RACs (Split)	**Ym** On-going			
Refrigerators-freezers	**None**	**Ym** **PNS 396-2:1997** Energy efficiency factor (EEF) and labeling requirements for refrigerators and freezers On-going.	**PNS 1476:1996/ISO 8187:1995** Household refrigerating appliances - Refrigerators-freezers - Characteristics and test methods.	**ISO 8187:1991**
			PNS 1477:1996/ISO 8561:1995 Household frost-free refrigerating appliances – Refrigerator-freezers, frozen food storage cabinets and food freezers cooled by internal forced air circulation – Characteristics and test methods.	**ISO 8561:1995**

			PNS IEC 60335-2-24 Household and similar electrical appliances – Safety – Part 2-24 - Particular requirements for refrigerating appliances, ice-cream appliances and ice-makers.	**IEC 335-2-24**
Refrigerators	**None**		**PNS 1475 / ISO 7371:1995** Household refrigerating appliances - Refrigerators with or without low-temperature compartment – Characteristics and test methods	**ISO 7371:1995 Amd. 1: 1997**
			PNS IEC 60335-2-24 Household and similar electrical appliances – Safety – Part 2-24 - Particular requirements for refrigerating appliances, ice-cream appliances and ice-makers	**IEC 60335-2-24**
Note: ISO 7371, ISO 8187, and ISO 8561 will be replaced by just one standard, that is, IEC 62552:2007 "Household refrigerating appliances – Characteristics and test methods.				
Television	**U**	**U**	Note: The development of the national standard for this starts in 2010.	**IEC 62087: 2002**
Clothes Washers	**U**	**U**	Note: The development of the national standard for this starts in 2010.	**IEC 60456**

- Warranty guidelines for energy efficient lighting approved last quarter 2009.
- Monitoring scheme for energy efficient lighting implemented last quarter 2009.
- Laboratory accreditation for CFLs and linear fluorescent lamps acquired in 2009.

3.b <u>What are the next steps?</u>

- Continue to develop and/or implement national standards for MEPS and energy labeling requirements:

Type of Appliance	Next steps
Lighting Products: Ballasts, Fluorescent lamps (CFLs, double cap, single cap)	• Implement the MEPS and energy labeling requirements, conduct market monitoring 2nd half of 2010. • Conduct regional briefings on standards and warranty guidelines for retailers, 1st half, 2010. • Conduct market monitoring, 2nd half, 2010
High Pressure Sodium Vapor Lamps	• Develop the implementing guidelines, 1st half, 2010. • Implement the energy label requirement, 2nd half, 2010
Lighting Luminaires	• Review the national standard for the energy labeling of luminaries, 2nd half of 2010. • Implement the energy label requirement in 2011.

Room air conditioners	• Develop the implementing guidelines for the new label design and for the higher MEPS, 2010. • Implement the new energy label design in 2011. • Develop standard test method for the inverter type (long term)
Refrigerators/freezers	• Develop new energy label design for refrigerators/freezers and increase the size range to cover all sizes up to 12 cubic feet. 2010 - 2012. • Implement the new energy label design by 2011. • Procure additional test chambers to accommodate additional sizes. 2010 to 2011 • Develop the MEPS, 2011 - 2012.
Television and audio/visual equipment	• Procure test facility for energy consumption tests. 2010. • Develop the national standard by 2011.
Clothes washers	• Procure test facility for energy performance testing. 2010. • Develop the national standard by 2011.

- Develop laboratory research plan relevant to energy efficient lighting. Areas of concern:
  - relationship between input voltage and energy performance of CFLs.
  - relationship between frequent switching and average life of CFLs.
  - relationship between ambient temperature and energy performance of CFLs.
  - use of software for forecasting average life of CFLs.
  - comparative testing between current lamp technologies (ex. Linear fluorescent lamps) and equivalent LED lamp
- Conduct regional briefings for retailers on the new standards and warranty guidelines for EELs. 1st half 2010.
- Improve compliance of retailers to the efficiency standards. Conduct regional monitoring and market sampling and testing, 2010.
- Conduct nationwide monitoring of use, application and implementation of EEL in residential, commercial, and industrial sectors. 1st half 2010.
- LATL to apply for laboratory accreditation of its RAC, refrigerator and ballast testing capabilities.
- Participate in interlaboratory comparison testing (regional or local) prioritize CFL, RAC, ref, ballasts, and LFL.
- Draft energy conservation bill which will contain a provision that will strengthen the energy standards and labeling program.2010.
- Conduct IEC on the energy standards and labeling program. 2010.

- Evaluate the EES&L in terms of national energy savings.
- Conduct a market research for new products to be covered by S & L.
- Develop a lamp waste management system to address collection and recovery of mercury from busted fluorescent lamps

3.c Problems/Questions to be answered (or barriers to be overcome) in order to take the next steps

Next steps	**Problems/questions /barriers**	**Answers to the problems/questions/barriers**
1. Continue to develop and/or implement national standards for MEPS and energy labeling requirements.		
Lighting Products: Ballasts, Fluorescent lamps (CFLs, double cap, single cap). Implement the MEPS and energy labeling requirements	• Which units will be involved? • Budget source? • What is the timeline? • Potential problem: Manpower constraint.	• DOE (ERTLS / LATL) and DTI(BPS Product Certification Group) • DOE, PELMATP, PEEP • 2010 and onwards • Propose additional permanent positions to augment manpower shortage. • Encourage the private sector to set up test laboratories
High Pressure Sodium Vapor Lamps. Develop the implementing guidelines, 1st half, 2010. Implement the energy label requirement, 2nd half, 2010	• Which units will be involved? • Budget source? • What is the timeline? • Potential problem: Manpower constraint.	• DOE (ERTLS / LATL) and DTI(BPS Product Certification Group) • DOE, PELMATP • 2010 and onwards • Propose additional permanent positions to augment manpower shortage. • Encourage the private sector to set up test laboratories

Lighting Luminaires. Review the national standard for the energy labeling of luminaries, 2nd half of 2010. Implement the energy label requirement in 2011.	• Which units will be involved? • Budget source? • What is the timeline? • Potential problem: Manpower constraint	• DOE (ERTLS / LATL) and DTI(BPS Technical Committee and/or BPS Product Certification Group) • DOE, PELMATP • 2010 and onwards • Propose additional permanent positions to augment manpower shortage. • Encourage the private sector to set up test laboratories
Refrigerators – Develop new energy label design for refrigerators/freezers and increase the size range to cover all sizes up to 12 cubic feet. 2010 - 2012. Implement the new energy label design by 2011. Procure additional test chambers to accommodate additional sizes. 2010 to 2011 Develop the MEPS, 2010 - 2012.	• Which units will be involved? • Budget source? • What is the timeline? • Challenge: Get the support of DTI – BPS and the stakeholders.	• DOE (ERTLS / LATL) and DTI(BPS Technical Committee and/or BPS Product Certification Group) • PEEP • 2011 approved PNS for new energy label design, expanded coverage of size range, and MEPS. • 2012 Implementation of the standards. • Closer coordination among DOE, DTI and the stakeholders • DOE to encourage the private sector to put up test facilities in support of the program.
Television and audio/visual equipment - Procure test facility for energy consumption tests. 2010. Develop the national standard by 2011.	• Which units will be involved? • Budget source? • What is the timeline? • Challenge: Get the support of DTI – BPS and the stakeholders.	• DOE (ERTLS / LATL) and DTI(BPS Technical Committee and/or BPS Product Certification Group) • PEEP • 2010 to 2011 • 2012 Implementation • Closer coordination among DOE, DTI and the stakeholders
Clothes washers - Procure test facility for energy performance testing. 2010. Develop the national standard by 2011.	• Which units will be involved? • Budget source? • What is the timeline? • Challenge: Get the support of DTI – BPS and the stakeholders.	• DOE (ERTLS / LATL) and DTI(BPS Technical Committee and/or BPS Product Certification Group) • PEEP • 2010 to 2011 • 2012 implementation • Closer coordination among DOE, DTI and the stakeholders

2. Develop laboratory research plan relevant to energy efficient lighting. This will be subcontracted to a local consulting firm.	• Which unit will be involved? • Budget source? • What is the timeline? • Potential problem? Delay in procurement of goods and services.	• DOE (ERTLS / LATL) • PELMATP • 2010 • Closer coordination with PELMATP and subcontractor.
3. Conduct regional briefings on the new standards and warranty guidelines for energy efficient lighting. Assess level of understanding on the energy label. This will be done jointly with DTI regional offices / BPS.	• Which unit will be involved? • Budget source? • What is the timeline? • Potential problem? Delay due to tight schedule.	• PELMATP, LATL, CWPO • PELMATP • 1st half 2010 • Closer coordination with concerned DTI offices.
4. Improve compliance of retailers to the standards and labeling requirements for lighting products. Conduct regional monitoring of retailers and distributors to check compliance with the energy label requirement. This will be done jointly with DTI.	• Which units will be involved? • Budget source? • What is the timeline? • Potential problem? Delay due to administrative procedures	• PELMATP, LATL, CWPO • PELMATP • 1st half 2010 • Closer coordination with concerned DTI offices.
5. Conduct nationwide monitoring of use, application and implementation of EEL in residential, commercial, and industrial sectors. This will be subcontractor to a local entity.	• Which units will be involved? • Budget source? • What is the timeline? • Potential problem? Delay due to misunderstanding of the terms of reference by subcontractor.	• PELMATP, LATL, IIEE • PELMATP • 1st half 2010 • Closer coordination among the concerned units

6. LATL to apply for laboratory accreditation of its RAC, refrigerator and ballast testing capabilities.	• Which units will be involved? • Budget source? • What is the timeline? • Potential problem? Manpower constraints.	• PELMATP, PEEP, ERTLS/LATL, Philippine Accreditation Office • PELMATP, PEEP • 2010 to 2011 • Proper time management and closer coordination among the concerned units.
7. Participate in interlaboratory comparison testing (regional or local) prioritize CFL, RAC, ref, ballasts, and LFL.	• Which units will be involved? • Budget source? • What is the timeline? • Potential problem? Lack of available profiency testing programs.	• PELMATP, LATL, Philippine Accreditation Office • PELMATP, DOE regular budget • 2010 and 2011 • Inquire from PAO and APLAC
8. Draft energy conservation bill which will contain a provision that will strengthen the energy standards and labeling program.2010.	• Which units will be involved? • Budget source? • What is the timeline? • Potential problem? Delay due to lack of commitment among implementing units.	• DOE (EUMB/EECD, Planning Bureau, ERTLS / LATL) and stakeholders • DOE regular budget • 2011 draft enercon bill submitted to Congress. • 2013 signed into law. • 2014 Prepare the IRR • Closer monitoring and better coordination among the concerned units
9. Conduct IEC on the energy standards and labeling program. 2010. These are regular programs. Strengthen this activity.	• Which units will be involved? • Budget source? • What is the timeline? • Potential problem? Delay due to tight schedule of implementing units.	• PELMATP, DOE (LATL,CWPO) • PELMATP, PEEP, DOE regular • 2010 • Proper time management and closer coordination among implementing units.

10. Conduct evaluation of EES&L in terms of energy savings: One option is to use available tools such as the Bottom-Up Energy Analysis System (BUENAS).	• Which units will be involved? • Budget source? • What is the timeline? • Potential problem? Lack of knowledge on the available tools and implementation scheme.	• DOE (ERTLS/LATL, EUMB/EECD) and stakeholders • DOE regular budget • 2010. Participate in available training programs/initiatives on the adoption of available tools such as BUENAS. • 2011 Propose for a budget for this activity. • 2012 Implement the activity.
11. Conduct market research to come up with the additional products. A study for the expansion of the energy standards and labeling program. Subcontract this activity.	• Which units will be involved? • Budget source? • What is the timeline? • Potential problem? Lack of knowledge on the available tools and implementation scheme.	• DOE (ERTLS/LATL, Planning) • Locally-funded project • 2011 for the budget request • 2012 for the implementation • Seek technical assistance from energy experts
12. Develop a lamp waste management system to address collection and recovery of mercury from busted fluorescent lamps.	• Which units will be involved? • Budget source? • What is the timeline? • Potential problem? Lack of support from concerned government agencies and private stakeholders.	• DOE will undertake this together with the DENR • 2010 Purchase a mercury recovery facility • 2011 develop guidelines for collection of lamp wastes • 2011 Develop Extended producers responsibilty • Develop a closer working relationship with concerned stakeholders.

Legend:

BPS – Bureau of Product Standards, DTI

CWPO – Consumer Welfare and Promotions Office, DOE

DOE – Department of Energy

DTI – Department of Trade and Industry

EECD – Energy Efficiency and Conservation Division, DOE

EELs – Energy Efficient Lamps
EES&L – Energy Efficiency Standards and Labeling
ERTLS – Energy Research and Testing Laboratory Services, DOE
EUMB – Energy Utilization Management Bureau, DOE
IIEE – Institute of Integrated Electrical Engineers
LATL – Lighting and Appliance Testing Laboratory, DOE
LFL – Linear fluorescent lamp
MEPS – Minimum Energy Performance Standard
PEEP – Philippine Energy Efficiency Project
PELMATP - Philippine Efficient Lighting Market Transformation Project

Appendix 6

Next Steps to Develop
Appliance Energy Efficiency Standards & Labeling:

THAILAND

1. General Philosophy

- It is very important to prepare the all **required basic institutions** for the **whole process** of S&L in place so that the consumers as well as manufacturers will be well aware of the importance of S&L.
- Therefore, it may be sensible **to focus on major products** out of 11 set MEPS to reach the end of the whole MEPS process first.

  <Done> Designed by DEDE → send draft MEP to TISI

  <Waiting> Public hearing by TISI (enforcement)

  → Ministry of Industry (Approval) → Announcement

  → TISI (control monitoring)
- **Prioritization** of products to kick start will be necessary.

→ Choose a few products to go forward first.

2. Information and Awareness Barriers

- As 11 MEPS and 8 HEPS are ready, it is important to **raise awareness** of the consumers and retailers as well as manufactures.
- More education and information on AEEESL related issues through various kinds of channels and activities.

AEEESL: Appliance Energy Efficiency Standards & Labeling

3. Investment-Related Barriers; Insufficient Fund Barriers

- In order to encourage investment by manufacturers to produce more efficient products, **financial support** is required.
- Provision of financial supports both from public and private sides already exists.
- But scaling-up and acceleration of **existing funds** are required.
- Provision of **upfront- investing** incentive for the investors

4. Procedures and Administrative Barriers

- MEPS and HEPS can be set more swiftly, if the **administrative procedures** are simpler.
- **Simplify** the process of **administrative works**.
- Focus on **result–oriented** rather than process oriented.

- **Top-down order** to simplify the process as the energy efficiency oriented **S&L** is (among others) for the best interest of the people of Thailand.

5. Technical Capacity Barriers

- If domestic accreditation organization under Ministry of Industry is not available, it may be a good option to approach other **accreditation organization** outside the country, such as **APLAC**[10] which already has an observer status at **SCSC**[11] of APEC.
- More **capacity building** for related key players.
- Enhancement of **information sharing** among all stakeholders.

6. Developments between CEEDS Workshops #1 and #2

- Department of Alternative Energy Development and Efficiency (DEDE), Ministry of Energy (MOEN) has planned to develop energy efficiency standards for 54 products. These Standards are perspective to High Energy Performance Standard (HEPS) and Minimum Energy Performance Standard (MEPS).
- HEPS will be used by DEDE and Electricity Generating Authority of Thailand (EGAT) to promote high energy efficiency products, while MEPS will be submitted to Thailand Industrial Standards Institute (TISI) for issuing the compulsory standard for the products sell in Thailand.
- In the end of 2009, studies of 20 products were finished and 11 drafts of MEPS were sent to TISI. In addition, 8 products have been issued for Ministerial Regulation to voluntarily promote as HEPS.
- From 1st CEEDS Workshop, summary of barriers for energy efficiency improvement such as :
    - Information & Awareness Barriers
    - Investment-Related Barriers and Insufficient Fund Barriers
    - Procedures and Administrative Barriers
    - Technical Capacity Barriers
- To overcome some of those barriers in the short term approach, three projects have been proposed are as follows:
    - Testing Laboratory Network Improvement Project
    - High Energy Efficiency Labeling Promotion Project
    - High Energy Efficiency Products and High Energy Efficiency Labeling Advertisement Project

a) Testing Laboratory Network Improvement Project

[10] APLAC: Asia Pacific Laboratory Accreditation Cooperation.

[11] APEC-SCSC: Sub-Committee on Standards and Conformance.

Introduction

DEDE established the testing laboratory network in 2006 for support Energy Efficiency Standards and Labeling. The tasks of the testing laboratory network are as follows:

- cooperate between testing laboratories
- manage database system of testing laboratories
- exchange energy conservation knowledge , standards , testing and quality products development
- disseminate information and news

DEDE established the testing laboratory network in 2006 for support Energy Efficiency Standards and Labeling. Members of Lab Network consist of:

- Government: 15 laboratories
- Private: 8 laboratories
- Total **23 laboratories**

(only 1 air conditioning lab was accredited by ISO 17025)

Objectives

This project designs for develop the testing laboratory network to enable support Energy Efficiency Standard which have to test products. The member of network will progress to standard and sufficient for testing.

Project Description

Scope of work is as follows:

- the data of testing laboratories
- classify accredit and non accredit testing laboratory
- prepare non accredit testing laboratory to be accredit testing
- evaluate testing laboratory for accreditation
- set database of accredit testing laboratories
- disseminate information on website

Evaluation

Key indicator for success this project shows on among of testing laboratories that enough to support testing energy efficiency products.

Time duration

Project start:	October 2009
Project finish:	September 2010

Budget

Project management:	3,300,000. -	Baht
Accredit:	1,200,000. -	Baht
Total:	4,500,000. -	Baht

b) High Energy Efficiency Labeling Promotion Project

Introduction

DEDE sets a pilot project namely “High Energy Efficiency Labeling Promotion Project” for four products consists of LPG gas stove, variable speed drive control, insulation and glazing. This project is high success and manufacturer request project again.

Objectives

To introduce manufacturer awareness to produce high energy efficiency products and push market transformation with market mechanism.

Labeling for electric products

Labeling for non-electric products

Project Description

Scope of work as follows:

- survey the current products and decide what products should be promoted
- invite manufacturers and suppliers to submit the project
- test products for sure that they reach energy requirement
- register products and enterprises
- label high energy efficiency label

Evaluation

The key indicator for the successful this project is shows by number of manufactures and suppliers who involve the project and number of high energy efficiency labels which are approved

Time duration

Project start: April 2010

Project finish: March 2011

Budget

Project management: 6,500,000. - Baht

Testing:	11,000,000. -	Baht
Label:	12,500,000. -	Baht
Total:	30,000,000. -	Baht

c) High Energy Efficiency Products and High Energy Efficiency Labeling Advertisement Project

Introduction

High Energy Efficiency Labeling is popularly known as the "Number 5" labeling scheme and have been operating by Electricity Generating Authority of Thailand (EGAT) for the last sixteen years. In order to promote the high efficiency appliances and equipment, several activities have developed such as event exhibitions for manufacturers and households which are expected to promote the high efficiency product by high energy efficiency labeling**.**

Objectives

To expand people awareness to using high energy efficiency products and push market transformation with market mechanism.

Project Description

Scope of work as follows;

- event exhibitions at four regions
- disseminate information to academy
- advertise through television and radio program
- cooperate with state procurement

Evaluation

Key indicator for success this project shows on request for high energy efficiency label from manufacturer and supplier.

Time duration

Project start:	April 2010
Project finish:	March 2011

Budget

Project management:	5,000,000. -	Baht
Exhibition:	5,000,000. -	Baht
Advertisements:	20,000,000. -	Baht
Total:	30,000,000. -	Baht

6. Response to Comments from Workshop Participants

6.a Present Status and Target – MEPS

- Drafted Standard for 11 products
- Submitted to TISI for announcement as mandatory program

- Targeting for studying MEPS up to 50 products in 2011

6.b Present Status and Target – HEPS

- Issued HEPS as Ministerial Regulations for 8 products
- Promoting on voluntary basis by labeling
- Targeting for 54 products by 2011

6.c Recommendations from 1st CEEDS

- Raise awareness of consumers, retailers and manufacturers
- Consider for more financial supports for manufacturers
- Simplify process and administrative works
- Strengthen the capacity of testing labs

6.d Recommendations from 2nd CEEDS

- Consider more capacity building programs for testing labs with existing mechanism and possible supports from APEC by cooperating with other economies
- Targets :
  1) Increase no. of domestic labs to comply with ISO 17025
  2) Increase the ability of existing labs to test for more products
- Experience sharing from proposed actions of Thailand with other economies

6.e Next steps for Thailand

- Improve capability of testing labs
- Targets:
  1) Increase no. of domestic labs to comply with ISO 17025 up to 8 labs to cover HEPS
  2) Increase the ability of existing labs to test for more products
- Raising for more awareness and information sharing due to the present implication on HEPS
  - Consumers
  - Retailers
  - Manufacturers
- Target : Good awareness and cooperation from all stakeholders

6.f Short-term Actions

- 3 projects have been proposed for short-term actions (2010-2011)
  - Testing Laboratory Network Improvement (to overcome technical capacity barrier)
  - Awareness programs for EE products (to overcome awareness barrier)
  - High Energy Efficiency Labeling Promotion (to accelerate target achievement)

6.g Mid-term/Long-term actions

- Considering for more financial incentives to manufacturers
- Reviewing of existing standards in MEPS and HEPS

- Phasing out program for inefficient equipments

6.h Areas of interested capacity building

1. Enhance high quality end-use and market data collection for EE S&L, e.g. in cooperation with CLASP/LBNL through BUENAS, PAMS
2. Strengthen lab-test capability and certification procedure, e.g. In cooperation with APLAC
3. Standard for highly advanced products e.g. LED

Appendix 7

Next Steps to Develop
Appliance Energy Efficiency Standards & Labeling:

VIETNAM

1. Next Steps Identified in Workshop #1

- **Identification of local factors (Feasibility Study)** that may impact the S & L programs
- **Set product priorities: by considering products** with high energy and CO2 savings potential
- **Formulate a road map for S&L programs** by product identified on point 2 in line with EE&C master plan.
- The road map would be include for the products selected
  - Engineering and Economic Analysis Study of selected products if data available. If data not available, training on how to use suitable method to generate data for Vietnam.
  - Stakeholders involvement
  - Regional & international best practices
  - Explore regional collaboration on testing procedures and facilities
  - Clear definition of the role of each agency
  - Financial and fiscal mechanism
  - Consumer & retailers education and information
- **In parallel: Develop and complete necessary additional legal documents** related to standards and label (like regulation on enforcement and monitoring S&L mechanism and testing for example) so that the law on EE &C will be enforced and smoothly implemented just after its approval (by 2010)
- **Market support program**: Development and implementation and commutations plan aimed at educating and gaining participation from manufactures/importers, retailers and consumers.

2. Problems/Questions to be Answered in Order to Take the Next Steps

A. Institutional barriers

- Lack of the strong enough legal framework and enforcement of legal provisions for implementation of ES&L programs
- Lack of a comprehensive and long-term program for MEPS and labeling program.
- Lack of an evaluation and monitoring system after certification
- Lack of close cooperation among stakeholders.

B. Technical/information barriers

- Lack of accredited EE standard testing laboratories and regular testing programs for energy performance of end-use equipments
- Lack of human resources to carry out the ES&L programs
- Lack of training programs on ES&L framework and implementation
- Insufficient public awareness (manufactures, distributors, customers) of EE equipments

C. Fiscal/Financial barriers

- Lack of financial and fiscal incentives e.g. a suitable financial mechanisms) for manufacturers, distributors and consumers participating in ES&L programs

D. Market/Data barriers

- Penetration of EE equipments in the market is limited (due to high cost and lack of knowledge of ES&L benefit among sellers and customers)
- Lack of end-used and market data e.g. electricity consumption by appliance and building types; the energy efficiency equipment selling data in the market; etc.

3. How to Answer the above Problems and Questions?

3.1 Policy measures:

A. Institution measures

- It is the most important that Viet Nam Government approves the law on EE&C and related legal documents on S&L such as:
  - requirements to provide information on energy use;
  - requirements for standardized energy consumption labeling on designated equipment;
  - Regulation on mandatory energy efficiency standards for certain equipment; penalties for non-compliance; testing protocols, etc.
- Establishing a dedicated Agency on energy efficiency including enforcement and monitoring S&L programs.

B. The government continue to improve the energy pricing especially electricity bring toward cost-based tariff.

C. Finance measures

- Provision of concessional finance to subsidize the initially high transaction costs during development phases, to reduce risk involved in S&L program startup for manufacturers, distributors and end-users
- Intensive support to the local banks in marketing and refining their EE lending schemes

D. Government issues the government procurement for EE product.

3.2 Technical/information

- Establishment national comprehensive testing laboratory program including expanding the EE equipment testing laboratories and development of human resources.
- Launch an information dissemination campaign introduce EES&L for lighting and household appliances for suppliers, end-users; increasing the visibility of information and consumer confidence in EE appliances.

3.3 Market measures

- Aim to increase penetration of more energy efficient appliances into specific appliance markets, it is necessary to:
  - Establish programs providing customers with commonly available, credible, correct but simple information about the efficiency characteristics of the choices
  - Create initiatives working with suppliers to encourage expanded marketing of efficient products.
  - Establish programs to help customers to cope with the initial higher costs of some more efficient appliances until market transformation can take hold

4. <u>Developments between CEEDS Workshops #1 and #2</u>

4.a Local factors influencing ES&L

- Institutional factors:
  - Government Decree 102/2006/ND-CP
  - Prime Minister's Decision on National EC Program
  - MOIT's Circular on ES&L
  - Now: EC Law to be issued 2010; detailed legal documents for EC and ES&L also to be issued to formulate comprehensive legal framework for ES&L
- Cultural Factor- consumption pattern changed fast:

Average number of appliances per 100 households in 2002 and 2009

Appliances, Unit	2002	2009
fluorescent-tube lamp	497.76	609.24
Compact lamp	9.55	219.86
Air-conditioner	55.73	69.18
Refrigerator	67.22	124.26
Electric rice cooker	71.20	116.12
Wash machine	27.86	68.84
Water pump	22.69	47.46
Iron	0.80	73.21
Microwave oven	1.34	20.65

- Regional factor:
  - Quick urbanization and increase in income will increase the use of electric appliances.

- "Long" country allocated in different weather regions – defines the pattern of appliance use: in Hanoi and Danang, air conditioners are used for 4 months/year, whereas in Ho Chi Minh City most air conditioners function all year round.

4.b Principles to define priorities for ES&L

- Large amount of energy used - Products using large enough amount of energy nationwide will be subject to EE labeling
- Popularity – products are used popularly
- Larger share of the products in energy bill of users.
- Impact on the public attitude – EE labeled product can influence the public.

4.c A Roadmap of ES&L

- Availability of a ES&L Roadmap is a factor which promotes ES&L
- Why need a Roadmap?
  - VN lacks of MEPS – need to develop gradually
  - Testing facilities limited – need to create new facilities and improve the existing
  - ES&L should balance interests of users and producers
  - A Road-map helps to solve these step by step

4.d Primary Features of a ES&L Road-map for VN

A. For home appliances

- In 2010-2011: Volunteer labeling continues for the following appliances:
  - Lighting (CFL, compact, magnet and electronic ballast, lamp-shade)
  - Air-conditioner (excluding the ones with higher 28 KW capacity)
  - Refrigerator and freezer
  - Home washing machine
  - Rice cooler
  - Electric water heater, and
  - Electric fan.
- In 2011-2013:
  - The products with volunteer labeling before 1 January 2011 will be subject to compulsory EE labeling.
  - After 1 January 2013, CFL, ballasts of all kinds, air-conditioner, refrigerator, rice cooker, water heater, fans with energy efficiency lower than MEPS will not be allowed for import and production.
  - From 1 January 2013, the following appliances will be labeled voluntarily: electric water heater, microwave oven, dust cleaner, smell cleaner, cloth dryer.
- In 2014-forward:

- From 1 January 2014, compulsory labeling will be applied to electric water heater, microwave oven, dust cleaner, smell cleaner, cloth dryer.
- From 1 January 2015, the appliances, such as electric water heater, microwave oven, dust cleaner, smell cleaner, cloth dryer having energy efficiency lower than MEPS are not allowed to import and produce.

B. For Industrial equipment

- In 2011 Volunteer labeling will be applied to
  - Electric motor with capacity lower than 20 kW
  - Industrial fan
  - Three-phase transformer
- In 2012 - Compulsory labeling will be applied to:
  - Electric motor with capacity lower than 20 kW
  - Industrial fan
  - Three-phase transformer
- In 2013:
  - The products: electric motor, industrial fan , three-phase transformer with energy efficiency lower than MEPS will not be allowed to produce and import

C. For Office equipment

- In 2013: Volunteer labeling will be applied to:
  - Desk computer
  - Printer
  - Photocopier
  - Fax machine
  - Computer screen
  - Commercial freezer
- In 2014 Compulsory labeling will be applied to:
  - desk computer,
  - printer,
  - photocopier,
  - fax machine,
  - computer screen,
  - commercial freezer.
- In 2015:
  - The products: desk computer, printer, photocopier, fax machine, computer screen, commercial freezer with energy efficiency lower than MEPS will not be allowed to produce and import.

- Responsibilities of related Ministries
  - MOIT:
    - Set up budget plans for improving technical capacity;
    - Organize EE labeling, issue of procedures and guidelines;
    - Organize inspection and control over the labeling;
    - Submit a proposed list of products for EE labeling to the Government for decision;
    - Mobilize international cooperation;
    - Assign organizations for EE labels printing.
  - MOST:
    - Set up MEPS in accordance with the EE labeling roadmap;
    - Mobilize international cooperation in developing MEPS;
    - Cooperate with MOIT in other functions related to EE labeling.
  - MOF:
    - Set up regulations on public procurement of energy using equipments;
    - Set up financial incentives for producing, importing ES&L products;
    - Allocate finance for the National Target Program on Efficient Use of Energy, including the EE labeling component;
    - Develop cost norms for EE testing service
  - MOC:
    - Organize EE labelling for construction equipment/machines.

4.e Problems for the next steps

A. Institutional barriers

- Lack of the strong enough legal framework and enforcement of legal provisions for implementation of ES&L programs
- Lack of a comprehensive and long-term program for MEPS and labeling program
- Lack of an evaluation and monitoring system after certification
- Lack of close cooperation among stakeholders

B. Technical/information barriers

- Lack of accredited EE standard testing laboratories and regular testing programs for energy performance of end-use equipments
- Lack of necessary standards, particularly MEPS.
- Lack of human resources to carry out the ES&L programs
- Lack of training programs on ES&L framework and implementation
- Insufficient public awareness (manufactures, distributors, customers) of EE equipments

C. Fiscal/Financial barriers

- Lack of financial and fiscal incentives e.g. a suitable financial mechanisms) for manufacturers, distributors and consumers participating in ES&L programs

D. Market/Data barriers

- Penetration of EE equipments in the market is limited
- Lack of end-used and market data e.g. electricity consumption by appliance and building types; the energy efficiency equipment selling data in the market.

4.f Measures to address the problems

A. Institutional measures

- Approve the law on EE&C and related legal documents:
  - Guidelines for organization and operation of energy auditing institutions;
  - Compulsory measures for appropriate energy use in industrial bases
  - List of target industrial, transportation and construction bases and their energy use levels
  - Guidelines for the target industrial, transportation, construction objects
  - MEPS for products, equipment
  - ES&L roadmap
  - Procedures for EE labeling
  - List of equipment, products be removed due to their low energy efficiency
  - 5-10 years national target programs on EE, and Fund for energy conservation
  - Regulation on statistical energy indicators
  - Regulation on mandatory EE standards; penalties; testing protocols,
  - Regulation on government procurement of EE products
- Establishing a dedicated EE Agency:
  - Regular collection of general statistical data related to energy use and saving.
  - Specific survey on energy use and EE labeled products
  - Regular evaluation
- Regular review and update of the efficiency levels used for MEPS standards
  - Set up a clear plan

B. Improve the energy pricing, especially electricity bring toward cost-based tariff

- The price policy should balance the interests of energy generators and that of the end users.
- Vietnam is now in the process toward the market principles in pricing energy

C. Finance measures

- Provision of financial subsidies to reduce risk for manufacturers, distributors and end-users
- Intensive support to the local banks
- Allocation and mobilize enough resources for EE labeling programs
- Establishment of a fund for EE

- Mobilization of resources from the existing sources: Environment Protection Fund, Fund for Science and Technology Development…

D. Government issues the government procurement for EE product:

- Ministries to issue their relevant guidelines to implement the general regulations in their units/organizations. (For example, MOF should guide the procurement of EE labeled products for public offices, public health facilities, public schools and colleges. MOC should guide the procurement of EE labeled products for public lighting)

E. Technical/information Measures

- Establishment of a national testing laboratory program:
    - Equipping the labs with additional testing machines
    - Training program for testing technicians
    - Professional accreditation for the labs
- Development of MEPS:
    - Priority given to home appliances, office equipment
    - A plan for regular review and revision of the MEPS
- Support to local manufacturers:
    - Workshops and dialog with government agencies
    - Support to prepare investment projects in EE
    - Support to getting EE technology transfer
- Launch an EE information campaign:
    - Development of marketing/mass media programs on EE labeling
    - Inclusion of EE labeling information to local mass media programs
    - Training on EE labeling for journalists
    - Formulation and dissemination of EE labeling database

F. Market measures

- Establish a program to provide customers credible, correct information on EE of appliances
- Promote manufacturers and suppliers to expand marketing of EE products.
- Establish a program to help customers overcome the initial higher costs of EE appliances

G. International cooperation measures

- Capacity improvement of ES&L expertise: training, workshop, seminar
- Foreign expertise involvement
- Cooperation between Vietnam's testing institutions and foreign ones,
- Vietnam's participation in the regional and international ES&L schemes

5. Response to Comments from Workshop Participants

5.a The progress of road map for labeling and MEPS in the period 2010-2015

No.	Kind of product	2011	2012 - 2013	2014 - 2015	after 2015	2015-2020	Remark
1	Electric motor	Voluntary	Compulsory	MEPS to be implemented			EE Standard are developed
2	Industrial fan	Voluntary	Compulsory	MEPS to be implemented			
3	Ditribution transformer		Voluntary	Compulsory	MEPS to be implemented		
4	Printer			Voluntary	Compulsory	MEPS to be implemented	
5	Photocopier			Voluntary	Compulsory	MEPS to be implemented	
6	Fax machine			Voluntary	Compulsory	MEPS to be implemented	
7	Computer screen			Voluntary	Compulsory	MEPS to be implemented	
8	Commercial freezer			Voluntary	Compulsory	MEPS to be implemented	

No.	Period/kind of product	2010-2011	2012-2013	2014-2015	After 2015	Remark
1	Lighting (CFL, TFL, magnet and electronic ballast)	Voluntary labelling	Compulsory labelling	MEPS to be implemented		EE Standard are develope
2	Air-conditioner	Voluntary labelling	Compulsory labelling	MEPS to be implemented		EE Standard are develope
3	Refrigerator and freezer	Voluntary labelling	Compulsory labelling	MEPS to be implemented		EE Standard are develope
4	Home washing machine		Voluntary labelling	Compulsory labelling	MEPS to be implemented	
5	Rice cooker		Voluntary labelling	Compulsory labelling	MEPS to be implemented	EE Standard are develope
6	Electric water heater		Voluntary labelling	Compulsory labelling	MEPS to be implemented	EE Standard are develope
7	Electric fan	Voluntary labelling	Compulsory labelling	MEPS to be implemented		EE Standard are develope
8	TV		Voluntary labelling	Compulsory labelling	MEPS to be implemented	

5.b Problems and proposal for the next steps

Items	Problem/questions/Barries	Answers to the problem/questions/barries
Institutional barriers	- Lack of the strong legal framework and enforcement of legal provisions for implementation of ES&L programs -Lack of a comprehensive and long-term program for MEPS and labeling program - Lack of an evaluation and monitoring system after certification - Lack of close cooperation among stakeholders	- Approve the law on EE&C and related legal documents. - Establishing a dedicated EE Agency. - Update of the EE standards
Technical/information barriers	- Lack of accredited EE standard testing laboratories and regular testing programs for energy performance of end-use equipments - Lack of necessary standards, particularly MEPS. - Lack of human resources to carry out the ES&L programs - Lack of training programs on ES&L framework and implementation - Insufficient public awareness of EE equipments	Establishment of a national testing laboratory program (work with APLAC) - Support to local manufacturers. - Launch an EE information campaign.
Fiscal/Financial barriers	- Lack of financial and fiscal incentives e.g. a suitable financial mechanisms) in ES&L programs	- Provision of financial subsidies for manufacturers, distributors and end-users
Market/Data barriers	- Penetration of EE equipments in the market is limited - Lack of end-used and market data e.g. electricity consumption by appliance and building types; the energy efficiency equipment selling data in the market.	- Establish a program to provide customers credible, correct information on EE of appliances - Promote manufacturers and suppliers to expand marketing of EE products. - Establish a program to help customers overcome the initial higher costs of EE appliances

5.c Next step for International Cooperation

- Capacity improvement of ES&L expertise: training (data collection and product prioritization), workshop, seminar
- International expertise involvement in S&L program including establish EE database system (APEC).
- Cooperation between Vietnam's testing institutions and International.
- Vietnam's participation in the regional and international ES&L schemes