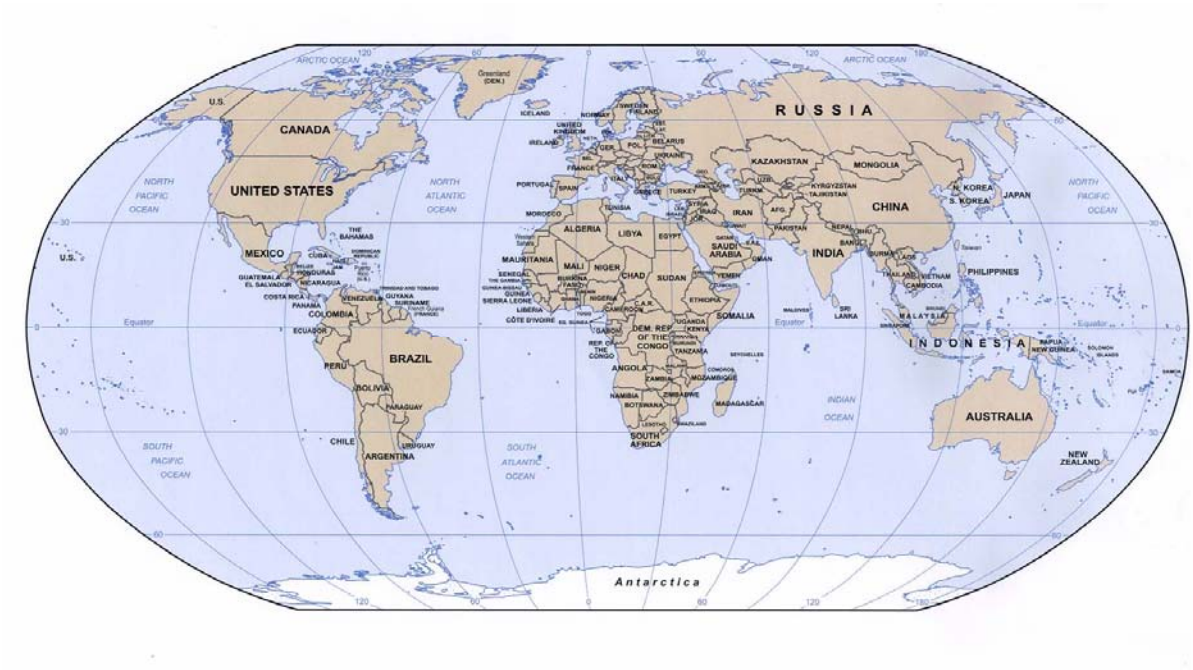
Asia-Pacific
Economic Cooperation

A monograph with commentary by international experts

A Strategic Vision for International Cooperation on Energy Standards and Labeling



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Prepared as part of the self-funded APEC project,
A Vision for Cooperation on Energy Standards and Labeling Programs

Sponsoring economy: Australia

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Australian Greenhouse Office

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A Strategic Vision for International Cooperation on Energy Standards and Labeling: **A Monograph with Commentary by International Experts**

Prepared as part of the self-funded APEC project, *A Vision for Cooperation on Energy Standards and Labeling Programs*

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ACRONYMS

AC	air conditioner
AGO	Australian Greenhouse Office
ANSES	Asia-wide Network on Sustainable Energy Standards
APEC	Asia Pacific Economic Cooperation
APEC-ESIS	APEC Energy Standards Information System (www.apec-esis.org)
BELP	Bangalore Efficient Lighting Program
CFLs	compact fluorescent lamps
CLASP	Collaborative Labeling and Appliance Standards Program
EEDAL	Energy Efficiency in Domestic Appliances and Lighting (an international conference held every three years)
EER	energy efficiency ratio (for air conditioners)
EGEE&C	Expert Group on Energy Efficiency & Conservation (under the APEC Energy Working Group)
eS&L	energy standards and labeling
ESCOs	energy services companies
EU	European Union
ICT	information and communications technologies
IEA	International Energy Agency
MEPS	minimum energy performance standard
PEPS	Promoting an Energy-efficient Public Sector
REEEP	Renewable Energy and Energy Efficiency Partnership
S&L	standards and labeling
TEPS	target energy performance standard (used in Korea)
WSSD	World Summit on Sustainable Development

EXECUTIVE SUMMARY

This monograph is centered around a White Paper that presents a vision for international cooperation on energy standards and labelling. The paper grew out of an APEC[1] self-funded project (The Standards Vision Project), in which the Australian Greenhouse Office (AGO) sponsored a series of invited workshops on four continents to prompt discussion about a common strategic vision on energy-efficiency standards and labelling, with the aim to develop a consensus on implementing the best possible scheme in each economy within APEC. Indeed, the Standards Vision Project has also helped to foster inter-regional cooperation by initiating discussions among and between networks of interested standards and labelling experts who might continue to exchange ideas and critique proposals through on-going informal dialogues outside of formal channels (i.e. EU, APEC, IEA, etc.).

Participants at the "Vision Workshops" agreed that energy-efficiency standards and labelling are among the most cost-effective programs for achieving energy savings and simultaneously mitigating climate change. The White Paper synthesizes the many discussions that occurred in the four workshops and attempts to crystallize them in a single document aimed at energy policymakers and regulators.

In order to test the robustness of ideas in this White Paper, it was decided to invite commentary from a range of international experts and organize it all into a monograph. The commentaries are presented at the front of this volume and come from a range of experts:

- Dr. Paul Waide, International Energy Agency
- Mr. Chris Baker, International Task Force for Sustainable Products (UK)
- Mr. John Cockburn, Natural Resources Canada
- Mr. Jeffrey Harris, Lawrence Berkeley National Laboratory
- Dr. Stephen Wiel, Collaborative Labeling and Appliance Standards Program (CLASP)
- Dr. Nitin Pandit, International Institute for Energy Conservation (IIEC)
- Mr. Stuart Jeffcott, International CFL Harmonisation Initiative

The commentaries recognize the value of the White Paper in laying out a coherent and compelling vision for international cooperation on energy standards; yet at the same time, they point out areas for expansion, including public procurement, enhanced *regional* cooperation, and emphasis on the non-energy aspects of product use. A common comment was that the framework of the White Paper is a bit narrow and it therefore omits the larger context (climate change, the global imperative for increased efficiency, international trade institutions) in which energy standards and labelling programs operate. The common denominator, however, is that the implementation of energy standards and labelling programs needs to be accelerated; that there is an urgency for increased international cooperation and coordination, using mechanisms such as the APEC Energy Standards Information System (www.apec-esis.org) and Communities of Practice; and that more effort needs to be made to link the implementation and results of these programs to broader policy objectives in the areas of climate change and energy.

[1] Asia Pacific Economic Cooperation

EDITOR'S FOREWORD

Background to this Monograph

My task as editor of this monograph has been very easy. With this gathering of world experts in end-use energy efficiency, my role has been confined to reminding everyone of our publishing deadlines and to encourage the use of commonly-defined terms to communicate the differing points of view. With such widely published experts giving their own unique perspective, I would have been ill-advised to do otherwise.

Perhaps my small contribution can be to assist readers in understanding the context of this work by reporting upon the unfinished journey that resulted in this monograph. The history of this project provides an insight into where the future might take national standards and labeling programmes.

In 2000, a New Zealand official named Frank Pool raised in dialogue with his Australian counterparts his "vision" for a better scheme than the then-voluntary labeling programme for several consumer appliances in his country. At the same time, Dr Stephen Wiel, then with Lawrence Berkeley National Laboratory., a technical advisory agency to U.S. government departments, was propounding, at events both in the U.S. and internationally, the need for concerted international effort to leverage real energy-efficiency and greenhouse benefits for electrical products

Management within the Australian Greenhouse Office recognized that the Australian program could benefit from a change to its then-insular approach. Rather than negotiating with resident industry representatives about possible improvements in the energy efficiency of products manufactured in, or imported into, Australia, an opportunity existed to shift the focus to examining and matching the product-efficiency targets proposed in the major trading economies in North America, Asia and Europe. The Ministerial Council on Energy accepted recommendations for sweeping changes to the Australian standards and labeling program, allowing any product consuming energy to be considered for inclusion in mandatory or voluntary measures *based on equivalent efficiency standards in a major trading partner economy*.

The Australian Greenhouse Office also devised a transition strategy for its standards and labeling program that involved fostering links with other nations actively engaged in regulating efficiency requirements and engaging with technical advisors to those governments. It was felt that such outreach would facilitate the creation equivalent efficiency standards for our domestic economy and demonstrably meet our trade obligations to the WTO and APEC.

As part of the transparency in the framework for our domestic program, Australia volunteered to report on program developments within the APEC committee system. In 2002, it went further and agreed to sponsor a series of workshops involving energy-efficiency experts that resulted in the White Paper by Dr. Peter du Pont in this monograph. The resulting discussion and synthesis of these views is recorded as the vision for a better approach to energy-efficiency standards and labeling, capturing comments from more 100 experts based in four continents.

This amalgam of views represents a consensus of what these experts thought reasonable for a national standards and labelling program. It however cannot capture the breadth of opinions

postulated by various experts, nor could it reflect the varying perspectives that experts within in industry, government and environmental advocacy agencies bring to the debate. For example, several industry advocates based in Australia reminded government officials that manufacturing companies are all subject to the discipline of competitive markets and operate under strictures like the ISO 9000 series (encouraging the creation of management structures that strive for continuous improvement).

The Gleneagles Challenge

At the Gleneagles Summit in July 2005, world leaders highlighted the critical importance of climate change, and the key role of energy efficiency in mitigating the impacts of global warming. In particular, with regard to appliances and equipment, the Gleneagle Plan of Action stated:

To encourage co-ordination of international policies on labeling, standard setting and testing procedures for energy efficiency appliances, we will:

(a) *promote the application of the IEA's 1 Watt Initiative;*
(b) *ask the IEA to undertake a study to review existing global appliance standards and codes, building on its existing capacity on energy efficiency in appliances;*
(c) *extend the use of clear and consistent labeling to raise consumer awareness of energy consumption of appliances;*
(d) *work nationally and in co-operation with other countries to seek improvements in the efficiency and environmental performance of products in priority sectors; and*
(e) *explore the potential to co-ordinate standards with other countries, building on the examples provided by existing international bodies.*

This statement captures the spirit and intent of the vision that we have tried to document through the International Vision Workshops and the resulting White Paper. Therefore, in the spirit of responding to the Gleneagles challenge, we have invited critiques of the White Paper by a range of different experts drawn as representatives from various categories within the epithet of "world expert." These perspectives obviously reflect the professional "baggage" of each proponent, but this is potentially the real strength in assembling their viewpoints.

The Australian Greenhouse Office will share this monograph with the APEC Expert Group on Energy Efficiency & Conservation (www.egeec.apec.org), and we also intend to share the ideas at a number of other international meetings and fora in order to allow further improvement to the vision.

While energy-efficiency improvement may not be as easily defined, nor capture the popular imagination as some other greenhouse abatement measures, it is clearly the keystone in our common efforts to deal effectively with the threat posed by climate change. Indeed, we live in exciting times.

Shane Holt
Director, Equipment Energy Efficiency
Australian Greenhouse Office **June 2006**

COMMENTARY: INTERNATIONAL AGENCY

Submitted by:
Dr. Paul Waide, Energy Efficiency and Environment Division, International Energy Agency
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The issues raised in this White Paper on energy standards and labelling are timely and accurately presented; however, it could be said that the paper plunges quickly into the detail of mechanisms without fully fleshing-out the context in which standards and labelling programs operate. My comments below aim to provide some of that context and thereby provide a backdrop against which standards and labelling programmes may be viewed before addressing some of the specific issues raised in the paper.

The world faces serious challenges in developing a clean, affordable and secure energy system ready to provide our energy service needs over the coming decades. Energy demand is rising while energy supply has struggled to keep pace such that near-term energy security is no-longer as assured. Meanwhile climate change appears to pose a growing threat. In recognition of this, the 2005 Summit of G8 leaders made the realization of a clean, smart and sustainable energy future a cornerstone of their collective plan of action and tasked the International Energy Agency (IEA) with assisting them in its development. IEA Energy Ministers have already acknowledged that the adoption of stronger energy-efficiency measures is the area of government policy that holds the best promise of meeting these broad objectives.

Recent analyses by the IEA and others have reinforced both the scale of the challenge and the opportunities. The *Reference Scenario* of the IEA's *World Energy Outlook* projects an energy future based on continuing with current trends and practices. It paints a picture of rising energy demand driven by economic growth, greater population and increasing use of commercial fossil fuels. It also foresees a need for vast investment in energy supply-side capital equipment reaching a cumulative expenditure of US$ 16 trillion by 2030 globally, of which US$ 10 trillion would be required outside the countries of the OECD and two-thirds would be needed in the electricity sector. Unfortunately, this future is not only economically challenging -- it also entails ever increasing emissions of energy-related carbon emissions. The *Alternative Policy Scenario* from the same publication examines what could happen if policies currently under discussion were to be implemented over this time frame. In this alternative scenario, there is a slowing growth in carbon emissions, which reach a peak in OECD countries before 2030 and rise more slowly in non-OECD economies. The principal means of reducing carbon emissions and simultaneously improving energy security is greater energy efficiency, which provides over half the net carbon savings. Nor is this future a more costly option than continuing with current energy usage patterns – in fact, quite the converse. The incremental cost of the extra energy-efficiency investments in the *WEO Alternative Policy Scenario* are half the magnitude of the avoided investments they stimulate in electricity generation, transmission and distribution. *They therefore pay for themselves in terms of capital investments alone, regardless of the additional fuel costs that they avoid.*

It is against this macro-scale context and challenge that the current strategic White Paper addresses international standards and labelling; but what is the link? Equipment energy efficiency standards and labels are among the first and most self-evident energy-efficiency delivery mechanisms; because

they aid market transparency of life-cycle costs (including the energy price and equipment cost) while removing the least efficient equipment from the market. The vision paper clearly explains the value of equipment efficiency standards and labelling programmes, which over the last 15 years have spread from just a handful of economies to now apply in almost 60 countries that account for 80% of the world's population. As the paper correctly identifies, their success has arisen because of their effectiveness (when properly implemented) at delivering extremely cost-effective energy savings – largely because they address long-standing market barriers and imperfections and because they can sweep away many of the transaction costs consumers face in identifying and purchasing energy-cost optimized products. The analysis in the paper marries well with that presented in four IEA publications addressing equipment energy efficiency. The two most recent of which *Cool Appliances: Policy Strategies for Energy-Efficient Homes* and *Light's Labour's Lost: Policies for Energy-Efficient Lighting* clearly set-out the large remaining cost-effective savings potentials which could be realized through stronger policy settings for energy-using equipment. Why would a society invest in carbon-intensive electricity supply at a cost to the end-user of 6 to 20 US cents per kWh, when they could offset demand (and emissions) by strengthening energy-efficiency policy at a cost of from 0 to 3 cents per kWh? *This is and remains the context in which standards and labelling policies are placed. They are among the principal means of delivering cost-effective and low-polluting energy services.*

The challenge is to extend their application and stringency to reach optimal settings as rapidly as possible. The related challenge is to minimise leakage through inadequate implementation and compliance. Achievement of both these objectives requires good programme design and implementation, and the vision paper sets out many of the elements needed to this end. It invites international cooperation on harmonisation of equipment energy performance test procedures. It proposes the development of informal "Communities of Practice" that can facilitate knowledge transfer from region to region and accelerate the acquisition of expertise in this domain. It envisages broader and more comprehensive use of bench-marking to readily determine the relative stringency of policy settings and to facilitate comparisons of market performance.

These objectives are all sensible and pragmatic steps that governments can take to lower the costs of developing effective standards and labelling programmes. But there is more that could be done. Cooperation could also focus on developing a better international understanding of the techno-economic costs and benefits associated with reaching specific equipment energy performance levels, and the implications of sharing this knowledge for policy setting. Cooperation could help strengthen fiscal incentives, R&D efforts, cooperative and bulk procurement actions and public awareness efforts. Cooperation in policy settings among governments sharing a common regional product market can greatly increase the beneficial impact of comparative energy labelling by creating common efficiency thresholds that apply to a large enough market volume to make it attractive for producers to develop products targeted at the common higher performance levels. Lastly, much can be done to reduce costs and improve programme impacts if governments co-operate and co-ordinate their efforts on product policy compliance.

The White Paper is therefore a useful and commendable contribution in this area and should serve to stimulate the international energy policy community to continue to roll-out equipment energy efficiency initiatives more fully in-line with their broader policy objectives.

COMMENTARY: INTERNATIONAL TASK FORCE

Submitted by:
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The White Paper on energy standards and labeling provides a very helpful contribution towards the development of international policy to promote more energy-efficient and sustainable products. The goals of harmonising test procedures to facilitate freer, fairer trade and to allow effective cross-economy comparisons of product performance are very much in tune with the aims of the International Task Force for Sustainable Products, as are the proposals to develop effective networks for international co-operation.

In particular, the proposal to create frameworks for developing sets of internationally recognized performance standards and compliance mechanisms appears to be a pragmatic approach to harmonisation. This will allow governments, *if they wish*, to align their own policies with the most appropriate tier for their own market conditions. Manufacturers appear to be generally welcoming of this approach, which could reduce the plethora of standards with which they have to comply. Consumers may also benefit by the increased transparency of the scheme, encouraging demand for products that can meet the highest international performance standards.

Through the International Task Force on Sustainable Products (ITFSP), the UK Government is itself actively encouraging and developing policy approaches and initiatives that are supportive of the strategies contained in the White Paper including:

- taking a leading role in developing the international "Communities of Practice for Home Entertainment" network;
- actively supporting the development of other Communities of Practice for Standby Power, CFLs and Electric Motors; and
- hosting the Energy Efficiency in Domestic Appliances and Lighting Conference (EEDAL 2006), which will encourage the sharing of knowledge and experiences in the fields of standards and labelling.

The ITFSP is, itself, a UK Government initiative that provides a framework for governments to deliver on World Summit for Sustainable Development (WSSD), G8 and other policy commitments to international co-operation, in order to bring forward more energy-efficient and sustainable products. Therefore, the ambition of the ITFSP extends beyond the scope of this White Paper on standards and labelling paper and into other areas of sustainability, such as hazardous waste, water consumption and to whole life impacts. It may be possible, though international product standards to address these wider issues associated with the production and disposal phases, including the potential to prevent or reduce exposure to hazardous chemicals, and to ensure that markets for sub-standard products do not persist and are not created, for example, in developing countries.

COMMENTARY: GOVERNMENT AGENCY

Submitted by:
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Thank you for providing the opportunity to comment.

The theme of vision laid out in the White Paper is that energy-efficiency standards and labelling are among the most cost-effective energy-efficiency programs available. Canada is a leading jurisdiction with respect to the use of these programs, with more than 35 products subject to minimum energy performance standards and all major household appliances, heating and cooling systems subject to labeling and rating programs. More than 80% of the energy consumed in Canadian households is consumed by an apparatus that is subject to an energy-efficiency performance requirement, and more than 50 % of the energy consumed in the commercial institutional sector is similarly covered. While Canada certainly agrees that these programs are fundamental, this should not be intended to diminish the importance of other types of interventions that are designed to overcome other barriers to the uptake of energy efficient products and services. Standards and labelling programs are often pre-requisites for other types of policy instruments that comprise a comprehensive demand-side approach to energy management.

Equipment efficiency, price and performance trends contained in the vision are consistent with those observed in Canada. For example, primarily as a result of standards and labelling programs, the unit energy consumption (UEC) of new refrigerators sold in Canada declined by 49% from 1990 to 2003. Similar performance improvement is evident in other major household appliances and other types of energy using equipment in all sectors of the economy.

The focus of the document is on the APEC/Australasian community, and the examples are drawn from these economies. While there is a risk of increased complexity by expanding the scope of the vision geographically, many of the conclusions and recommendations may well be applicable on a wider basis. Canada has circulated the document within the Energy Efficiency Experts Group within the North American Energy Working Group with the hope of informing their deliberations on standards and labeling program alignment on relevant developments in the Asia Pacific sphere.

Canada agrees that the primary focus on energy performance test procedures is appropriate as the most useful basis for comparability and a pre-requisite for the benchmarking of product and program performance. This was the primary rationale for the inception of the Steering Group on the Harmonization of Energy Efficiency Standards, established by APEC in 1996 and chaired by Canada. The outputs of this Group as endorsed by APEC Ministers laid the groundwork for subsequent efforts of the APEC Expert Group on Energy Efficiency & Conservation. Canada's has continued to support the effort through support for the APEC Energy Standards Information System (APEC ESIS, www.apec-esis.org).

The White Paper puts forward the concept of "Communities of Practice", and this may be a useful way of developing international consensus of standards and labeling priorities. Often difficulties

emerge when standards authorities engage on policy goals such as energy-efficiency standards and labeling program design. Equally problematic is a policy maker's engagement in technical standards development. These "Communities of Practice" efforts hold the promise of providing the initial step toward international consensus building and action on high-priority products.

COMMENTARY: NATIONAL LABORATORY

Submitted by:
Mr. Jeffrey P. Harris, Lawrence Berkeley National Laboratory, USA
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The White Paper provides important strategic directions to individual economies and to collaborative international efforts to advance appliance energy labeling and efficiency standards, including:

- An emphasis on efficiency standards and labels as among the most cost-effective means of improving the energy efficiency of appliances and equipment.
- The importance of continued international information exchange (including the proposed use of "communities of practice" organized around product categories), and of increased emphasis on harmonization (or "alignment") of standards and labels, beginning with common or readily translatable test procedures.
- The value of international benchmarking of appliance standards and labeling "tiers," as a means to better inform policy-makers when setting performance levels within a single economy, and of advancing Best-Practice levels of performance.

However, in my view the strategic vision could be further strengthened with a more explicit statement of how standards and labels can function as one element integrated into a broader portfolio of programs and policies aimed at a long-term transformation of the market toward more energy-efficient products and practices. The reality is that many of the standards and labelling (S&L) success stories – including but not limited to the progress on refrigerator energy efficiency in the US described in the White Paper – do not reflect the impact of labeling or standards in isolation, but rather a combination (sometimes intentional, sometimes fortuitous) of testing, labeling, standards, and a broad set of complementary actions by government at all levels.

While there is a brief mention of how standards and labels interact with other programs, and another suggestion that APEC consider broadening the ESIS database to include tracing of other closely related policies, the White Paper could go farther in identifying the essential ways that appliance standards and labels both build on and contribute to other market-transforming measures – a topic explored in depth in Chapter 10 of the recently released CLASP Guide (2nd Edition).

In particular, more attention could be paid to the strategic role of **public procurement** in reinforcing the market message that energy-efficient appliances are the economically sensible choice, encouraging other buyers to follow the government's lead, making it profitable for manufacturers and suppliers to offer more efficient products, and creating or expanding entry markets for new energy-saving technologies.

With the public sector representing between 10 and 20% of economic activity in most APEC (and non-APEC) economies (Van Wie et al. 2002), it is important to emphasize the need to harness government buying-power in leading the way to widespread implementation of government policies.

Examples of government procurement policies that have built on and in turn contributed to S&L include:

- A 1993 US government policy requiring purchase of Energy Star labeled computers and other office equipment, which is generally credited with a strong acceleration in manufacturer participation in Energy Star.
- Another US Executive Order by President Bush in 2001, directing federal agencies to buy products with standby power at or below 1 W, which in turn helped accelerate the revision of Energy Star labeling criteria to lower levels of standby power and the incorporation of standby power in revised testing and labeling methods for some appliances. The complementary role of standards, voluntary programs, and government procurement was further explored at an international workshop in early 2005, on strategies to achieve 1-Watt Standby.
- Use of the EU appliance efficiency label's top tier of efficiency as the basis for a voluntary program of procurement commitments, mainly by municipalities and other public agencies in Denmark (the "A-Club"). More recently, as of 2005 the Danish government has formally adopted the same criteria ("A-rated" appliances) as a requirement in all its purchasing (Harris et al. 2005).
- An EU-funded study examined the potential savings and market-leading effects from widespread adoption in Europe of energy-efficient government procurement based on common efficiency specifications (Borg et al. 2003).
- Also this year, the US Energy Policy Act of 2005 (enacted 8/05) now requires all federal agencies to buy either products that qualify for the Energy Star label, or in other categories those products designated by the USDOE Federal Energy Management Program (FEMP) as among the top 25th percentile for energy efficiency.
- These same procurement criteria are being adopted by a growing number of state and local governments in the US. The use of common specifications represents an important step in aggregating the market for efficient products, since all state and local jurisdictions collectively represent about 4 times the buying power of the US federal government, which is already the world's largest customer for most energy-using products (Harris et al. 2004).

This two-way relationship between S&L and other policy instruments extends beyond government procurement and incentive programs. For example, MEPS and appliance labels can make it much easier to adopt and monitor compliance with energy-efficient building codes, which in addition to improved thermal envelopes often require more efficient lighting and HVAC equipment (specified based on testing, labeling, and often standards).

This integrated approach, with testing and labeling to create a foundation for incentives, government procurement, utility demand-side management, and various voluntary programs – and these programs in turn helping to prepare the market for (the next round of) mandatory standards – will increasingly be the norm as S&L programs move beyond the first few rounds of updating, as subsequent efficiency gains often posing more of a challenge for technical innovations, containment of added first-cost, and in some cases consumer acceptance.

To reflect this broader perspective, I would suggest several additions to the S&L vision as it evolves:

- A more detailed discussion of the complementary (two-way) relationship between S&L and other market-transforming strategies, including but not limited to government procurement.
- As "Communities of Practice" are formed, encourage these groups to also exchange information and benchmark best-practice for government procurement specifications. (But

only where applicable – i.e., for products where government purchasing represents a significant market share, as in the case of air conditioners and motors but not most consumer electronics.)

Partners in the PEPS initiative ("Promoting an Energy-efficient Public Sector") would be interested in working with APEC and CLASP in broadening the recently launched Global S&L database to include public procurement programs and efficiency specifications. PEPS is a collaborative network committed to increasing the focus on public sector energy efficiency and market leadership throughout the world. PEPS, which is registered as a WSSD partnership, was an active contributor to the 2004 APEC-sponsored workshop in Kunming, China, on public sector energy efficiency.

Thank you again for the opportunity to offer these comments.

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COMMENTARY: NON-GOVERNMENTAL ORGANIZATION (NGO)

Submitted by:
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In one sense, "A Strategic Vision for International Cooperation on Energy Standards and Labeling" is an historic document. This is so because it documents for the first time a newly-forming consensus on the importance of regional and international collaboration among nations adopting energy efficiency standards and labels.

In another sense, the report is of only moderate interest. This is because it contains nothing that those of us who are practitioners in the field don't already know. There is no new information; there is no dissent, there is no controversy. The remarkable thing about this report is how obvious its conclusions seem in retrospect. Yet they hadn't before been recorded in this form, and for this reason, with its documented consensus of experts from four continents, the report provides an enormously valuable service.

The number of nations adopting energy efficiency standards and labels is growing rapidly, from 9 in 1984 to 36 in 1994 to 56 in 2004. The number of regulations worldwide on individual appliances and equipment is growing even more rapidly, increasing from 543 to 878 between 2000 and 2004. There is a need among these countries for harmonized test facilities and protocols, mutual recognition of test results, common comparative energy label content, harmonized endorsement energy labels, harmonized minimum energy performance standards for some markets, shared learning of the labeling process, and shared learning of the standard-setting process. Such an approach allows countries, companies, and consumers to avoid the costs of duplicative testing and non-comparable performance information, while benefiting from a reduction in non-tariff trade barriers and access to a wider market of goods. Such an approach reduces the aggregate cost among the world's governments of designing and implementing the energy-efficiency standards and labels.

The report presents the results of four vision workshops on energy efficiency standard and labels in an easily digestible manner. While it doesn't paint a picture of a distant future, it shows a clear path toward that future. It is well organized and clearly written. It documents the content of the workshops and their common themes in a factual, documentary style. The sponsor of the project and the author deserve our appreciation.

If I have one reservation about the report, it would be an underemphasis on *regional* collaborations relative to *international* ones. This is not to diminish the importance of the international efforts that the discussants addressed and the author describes. They are crucial to the evolution of the practice of standard-setting and labeling, and in the long run the inter-regional activities the discussants and author address will likely dominate. Rather my concern is the brevity of the author's attention to the already extensive and rapidly increasing regional collaborations that are occurring in all corners of the globe (quirk of the English language that

fosters the belief that the earth is square). Regional activities directed at harmonizing energy efficiency standards and labels and the testing that underlies both these measures are being undertaken by the Asia-Pacific Economic Cooperation (APEC), the South Asia Regional Initiative for Energy Cooperation and Development (SARI), the Pan American Standards Commission (COPANT), the Asia and South East Asia Network (ASEAN), the North American Energy Working Group (NAEWG), and the first of several emerging UNDP/GEF projects in the Andean Region of South America . The European Union (EU) has a rich history of regional coordination surrounding conversion from individual country standards and labels to a unified EU-wide program. These regional collaborations, it appears to me, are a bridge between the historical emphasis on national programs and the future for energy efficiency standards and labels that this APEC-sponsored report envisions.

COMMENTARY: NON-GOVERNMENTAL ORGANIZATION (NGO)

Submitted by:
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The White Paper is an attempt to create a touchstone for the energy-efficiency community to foster international cooperation in energy standards and labeling (eS&L) through policy. As such, the effort is much needed and the White Paper is well constructed. Substantively however, it misses an opportunity to move the discussion of energy standards and labelling beyond the community of experts who wish to research, design, and implement such programs. As the vision evolves, this lacuna can be addressed, and the comments below are designed to provide suggestions for this purpose.

The report does not describe the context of the big-picture issues that can bring international parties together to cooperate. The substantial recommendation that "**There is a high strategic value in timing the development of standards to fit with overall energy policies and plans."** is hidden on page 12 of the report, and the linkage of S&L to the overarching policy framework is only briefly mentioned in the conclusions and executive summary. By raising this recommendation onto a higher level, several other suggestions follow.

- **Trade Institutions Context.** The report recognizes that international economic cooperation is driven by trade and that there is an urgent need to align or harmonize eS&L. However, while the report discusses briefly the role of ISO/IEC, there needs to be recognition that there are bilateral treaties, multilateral organizations, such as APEC and several regional trading blocks, and global organizations, such as WTO, who are critical institutions within which the eS&L community must make an impact on policy. This is also the institutional context within which the multi-nationals who deliver EE products also operate to influence policy.
- **Context of National Considerations Larger than eS&L.** The report comments on the overall need for harmonization and alignment, and implies that it is good. There is a need to recognize that the short- and long-term benefits for different local and global stakeholders may be different. More often than not, even countries in favor of alignment need to provide a time period or temporary incentives to enable the local industry to adjust. The eS&L community must respect the commensurate pace of progress toward harmonization and alignment.
- **Context of Sectoral Institutions.** On p. 13 and elsewhere, an important stakeholder, the electric utility, is completely missing. The fact that they can identify the complementary role of eS&L programs within DSM programs for reducing peak power requirements, resulting in avoided and deferred costs of investment through DSM programs promoted by a policy impetus, should be emphasized. A good example may be IIEC's Bangalor Efficient Lighting Program (BELP) project in India, where the standards of the Efficient Lighting Initiative (ELI) were adopted by the utility in the preparation of competitive bids for vendors to participate in the DSM program.
- **Context Relevant to End-user.** The concept of appliances being within the context of the building/built environment is missing. As a consequence, the report misses the opportunity to look at eS&L within the framework of total energy (thermal, electrical) needed to meet customer needs. A good example may be the solar water heating (SWH) and LPG program in

Maharashtra, and the LPG heating systems being distributed by Eskom to reduce peak load on the electric system.

- **Implementation Context:** The critical issue facing the eS&L programs is the need for establishing consistent and cost-effective mechanisms for collection and analysis of end-use data, which can, in turn, provide a baseline and monitored information on savings for the investor/funder. Otherwise, the belief that efficient appliances leads to energy conservation or savings can be challenged by the Jevon's paradox or some variant thereof.

Thank you for the opportunity to provide comments.

COMMENTARY: INTERNATIONAL INITIATIVE

Submitted by:
Stuart Jeffcott, Coordinator, International CFL Harmonisation Initiative
Contact: stuart_jeffcott@yahoo.co.uk

The International CFL Harmonisation Initiative is highlighted within this White Paper as a working example of an international "Community of Practice" in the area of energy efficiency. Put simply, a Community of Practice is a web-based platform that can serve to link together experts in different locations and nations through the sharing of e-mail, documents, and proposals for co-ordinated international action. These communities can act as a medium for exchange of information and discussion of proposals for co-ordinated international action. Their advantage over the regular exchange of e-mail is that they provide an open, transparent, and inclusive platform, and can thus result in more informed and broader input into policy and regulatory decisions. Led by Australia, two international Communities of Practice are currently being tested for two product types: compact fluorescent lamps (CFLs) and TV set top boxes.

The International CFL Harmonisation Initiative began with an international benchmarking exercise for compact fluorescent lamps. This international comparison identified the existence of several similar CFL testing methodologies, and more than 30 performance standards in use throughout the world; hence the potential cost benefits from harmonisation were clear. Defining and communicating the opportunities and benefits to a wide range of market actors led to the formation of a core group to take the initiative forward. The activities and proposals of this core group have been fully transparent, both through ongoing posting on the Initiative's website (www.apec-esis.org/cfl) and through semi-annual, public meetings held around the world to report on progress and plan future activities. This transparency and open participation has led to active participation in the Initiative by more than 100 manufacturers, regulators and programme managers from four continents. Such widespread participation is ensuring that the actions being undertaken remain closely aligned to market need, while still moving towards the goal of rationalisation and harmonization of technical specifications for CFLs.

While there is still much to achieve, with the first year of activity, the International CFL Harmonisation Initiative has already developed:

- a revised CFL testing protocol which is in the process of being submitted to the International Electrotechnical Commission (IEC) for international adoption;
- a series of proposals for performance standards that may be acceptable for a range of economies; and
- initial proposals for co-operative compliance actions and internationally recognised labelling systems

The remarkable success of the International CFL Harmonisation Initiative fully demonstrates the effectiveness of the strategies proposed within the White Paper, and we fully commend the adoption of these strategies wherever possible to stimulate the process of harmonisation and to reap the benefits to all market stakeholders that result.

A Strategic Vision for International Cooperation on Energy Standards and Labeling

A White Paper prepared as part of an APEC initiative on international cooperation in energy efficiency

April 2006

Prepared as part of the APEC-sponsored project,
A Vision for Cooperation on Energy Standards and Labeling Programs

Prepared by
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Sponsoring economy: Australia

Australian Government
Department of the Environment and Heritage
Australian Greenhouse Office

Co-sponsoring economies: New Zealand and United States

WHITE PAPER CONTENTS

EXECUTIVE SUMMARY

The Standards Vision Project

As part of an APEC self-funded project (The Standards Vision Project), the Australian Greenhouse Office (AGO) sponsored a series of invited workshops on four continents to prompt discussion about a common strategic vision on energy-efficiency standards and labelling, with the aim to develop a consensus on implementing the best possible scheme in each economy within APEC.

Energy-efficiency standards and labelling are among the most cost-effective programs.

Participants at the Vision Workshops agreed that energy-efficiency standards and labelling are among the most cost-effective programs. The reason for this is that these programs have the potential to effect complete market transformations for different classes of energy-saving products, at a cost far below the cost of providing new energy supply.

The Standards Vision Workshops have delivered a consensus that energy standards and labelling programs should be a national priority; but that at the same time, in order to maximize the impact of a national program, it is essential to work internationally with like-minded governments and trading partners.

There is a need for more urgency in efforts to harmonize and align regulatory processes.

Workshop participants also agreed on the imperative for more urgent efforts to harmonize processes for regulating product energy-efficiency. The consensus of the Vision Workshops was that the first and most productive area for exploring alignment is in energy performance test procedures, since this facilitates the ability to manufacture and sell products across different markets, and also allows a consistent comparison of energy performance and energy efficiency.

A number of authoritative information sources are available.

A number of authoritative information sources are now available with data and tools on international standards and labeling efforts. Three of the most prominent are the APEC Energy Standards Information System (APEC-ESIS); the Collaborative Labeling and Appliance Standards Program (CLASP); and the International Energy Agency (IEA). It was noted that APEC has entered into a sponsorship agreement with CLASP, and that this has led to the development of a new Global Standards and Labeling Database, which was formally launched in mid-2005.

International benchmarking is a powerful new tool.

Participants in the Vision Workshops also stressed the role of international benchmarking as a powerful tool for policymakers. International benchmarking -- of minimum standard levels and labelling criteria -- is valid for most energy-using products that are internationally traded (e.g., lighting equipment, most appliances, electronic equipment, electric motors, etc.). Participants also noted that the Australian government is beginning to take the lead in the area of benchmarking, in line with the economy's

stated policy of examining "international best regulatory practice" when develop new MEPS and labeling requirements.

Testing the concept of Communities of Practice

Another emerging international trend is the use of Communities of Practice to assist in coordinating an international dialogue on selected product types and areas. The term "Communities of Practice" refers to a group of experts and stakeholders from different countries working on a specific energy-using appliance or product, who are deeply involved in efforts to regulate, promote, and develop technical specifications for that product. The Australian Greenhouse Office is supporting development and testing of three Communities for discussion of benchmarking and APEC-wide and international comparisons of product efficiencies. The initial Community, established in late 2005, serves as the home for the International CFL Harmonization Initiative (www.apec-esis.org/cfl).

Link to the overarching EE policy framework

It is essential to understand how energy standards and labeling programs fit into the energy policy framework within a country or region. It was suggested that it would be useful for the APEC ESIS database to be broadened to map and track these overarching policies and policy frameworks.

Fostering inter-regional cooperation

The Standards Vision Project has also helped to foster inter-regional cooperation by initiating discussions among and between networks of interested standards and labelling experts who might continue to exchange ideas and critique proposals through on-going informal dialogues outside of formal channels (i.e. EU, APEC, IEA, etc.).

Section 1. INTRODUCTION

An international discussion on an overarching "vision" for energy standards and labelling

Beginning in 2003, the Australian government started an international debate and discussion about an overarching international "Standards Vision" to promote strategic implementation based on international cooperation in the field of energy-efficiency standards and labelling.

As part of an APEC self-funded project (The Standards Vision Project), the Australian Greenhouse Office (AGO) sponsored a series of invited workshops on four continents to prompt discussion about a common strategic vision on energy standards and labelling, with the aim to develop a consensus on implementing the best possible scheme in each economy within APEC.

Four vision workshops were held on three continents.

Three Vision Workshops were held in 2003, two of them linked to other APEC events/meetings: Melbourne in March 2003, the day prior to a meeting of the APEC Expert Group on Energy Efficiency and Conservation (EGEE&C); in Turin, Italy, in October 2003, as special evening event at the international conference on Energy Efficient Domestic Appliances and Lighting (EEDAL); and in Kaohsiung, Chinese Taipei, as an evening event at an APEC seminar on energy standards and labelling, and linked to another APEC EGEE&C meeting. A fourth meeting was held in North America in conjunction with the Summer Study of the American Council for an Energy-Efficient Economy during August 2004. Overall, more than 100 experts participated in the vision workshops.

A vision to stimulate closer links, highlight international best practice, and prioritize information needs.

The three main objectives of the Standards Vision Project are to:

- Stimulate closer links between the desires of APEC policymakers and what happens at the technical and programmatic levels. Standards and labelling policy is developed at several levels, and there is often a disjuncture between the macro-energy policy level and the more product-specific technical standards and program implementation levels.
- Highlight international best practices. Encourage countries to examine and benchmark their own domestic program by looking at international best practices.
- Highlight and prioritize information needs. The project aims to highlight information needs of regulators and manufacturers and to identify key areas upon which international dissemination and coordination efforts should focus.

The Standards

The Standards Vision Workshops have delivered a consensus that energy

Vision Project has delivered a clear call for international cooperation.

standards and labelling programs should be a national priority; but at the same time, to maximize the impact of a national program it is essential to work internationally with like-minded governments and trading partners.

The Standards Vision Project has also helped to foster inter-regional cooperation by initiating discussions among and between networks of interested standards and labelling experts who might continue to exchange ideas and critique proposals through on-going informal dialogues outside of formal channels (i.e. EU, APEC, IEA, etc.).

Section 2. IMPACT OF ENERGY STANDARDS AND LABELING

There is a range of tools in the policymaker's toolbox.

There are a number of types of government programs aimed at improving end-use energy efficiency and thus reducing pollutant emissions from the burning of fossil fuels and resulting climate impacts. These programs include:

- energy information and education;
- energy audits and advisors;
- promotion of energy services companies (ESCOs);
- end-use energy labelling;
- minimum energy performance standards (MEPS)
- building energy codes;
- public procurement programs;
- equipment rebate programs;
- low-interest loan programs; and
- tax incentives.

Energy-efficiency standards and labelling are among the most cost-effective programs.

The discussions at the Vision Workshops made it clear that energy-efficiency standards and labelling are among the most cost effective programs. The reason for this is that these programs have the potential to effect complete market transformations for different classes of products, at a cost far below the cost of providing new energy supply.

Figure 1 shows the greenhouse gas abatement for a range of different program types in Australia. The results indicate that more than half of projected annual emissions reductions of 20 million tonnes of CO_2 equivalent in Australia will result from MEPS for appliances and equipment or building energy codes.

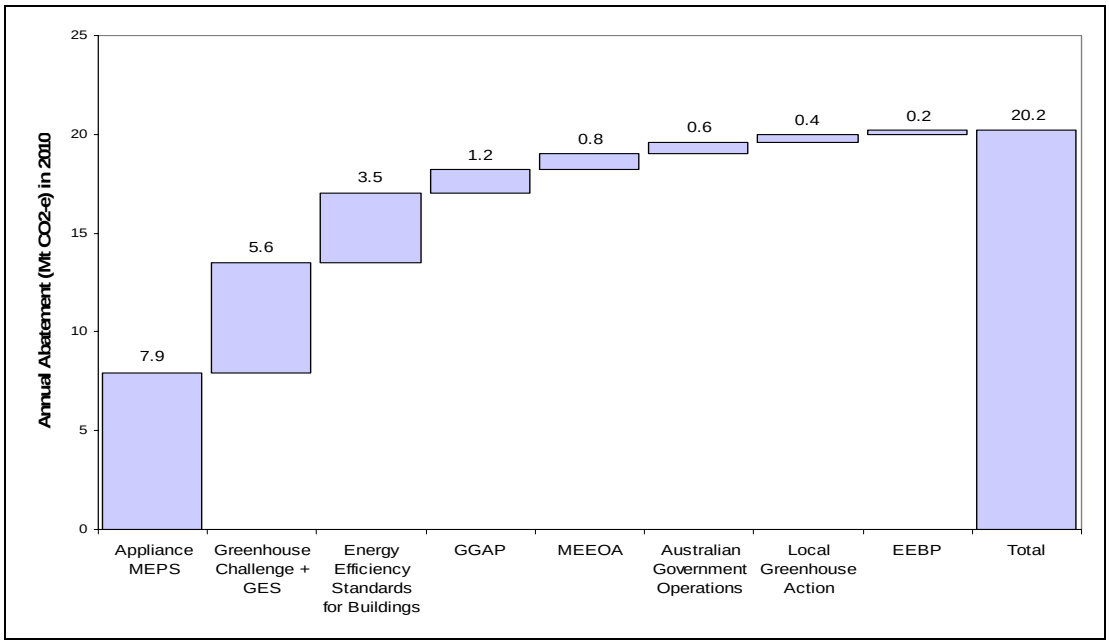

Figure 1. CO_2 Abatement through Year 2010 from Australia's Energy Efficiency Programs (Source: Australian Greenhouse Office)

Annual energy consumption of new refrigerators in Australia decreased by half `

A few examples of efficiency improvements for some specific end uses illustrate the vast potential.

Figure 2 shows the steep reduction in energy use in Australian refrigerators, since the mid-1980s. Energy labelling was introduced in 1986, and this resulted in a gradual steady reduction in unit energy consumption. When Australia developed a minimum energy performance standard (MEPS) in 1989, annual energy consumption for refrigerators decreased nearly half compared to the mid-1980s. With the proposed MEPS for refrigerators taking effect in 2006, it is expected that individualefrigerator energy consumption will fall by an additional 40% relative to the MEPS levels.

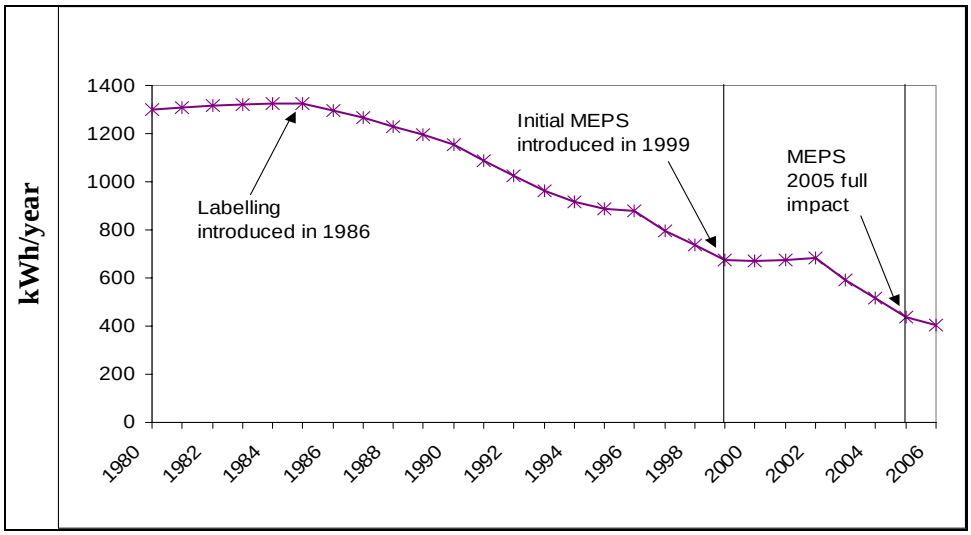

Figure 2. Energy Use of New Australian Refrigerators, 1980 – 2006
(Source: Australian Greenhouse Office)

In the United States, a refrigerator uses two-thirds less energy than in 1973, despite being more than 20% larger.

Figure 3 parallels Figure 2, in that it shows the steep reduction in energy use in U.S. refrigerators, since the early 1970s. Standards policy evolved in a different way in the United States. Initial improvements were due to the imposition of MEPS by individual states, most notably California. Eventually, manufacturers lobbied the federal government to develop a single national energy-efficiency standard in order to avoid having to meet different standards and requirements in different states state. For the most part, standards policy since the late 1980s has been driven by national MEPS (although recently, under the current Administration, the locus of movement on standards has shifted back to the states).

The lines in Figure 3 tell a compelling story:

- Since 1973, energy use of a typical new U.S. refrigerator has fallen almost three-quarters, from 1825 kWh/year to 476 kWh/year.
- During this time, the average real price of a refrigerator has fallen by more than 50%, from more than USD 1,200 to less than USD 500.
- At the same time, the average refrigerator volume has increased more than 20%, from 510 to 623 litres (18 to 22 cu.ft).

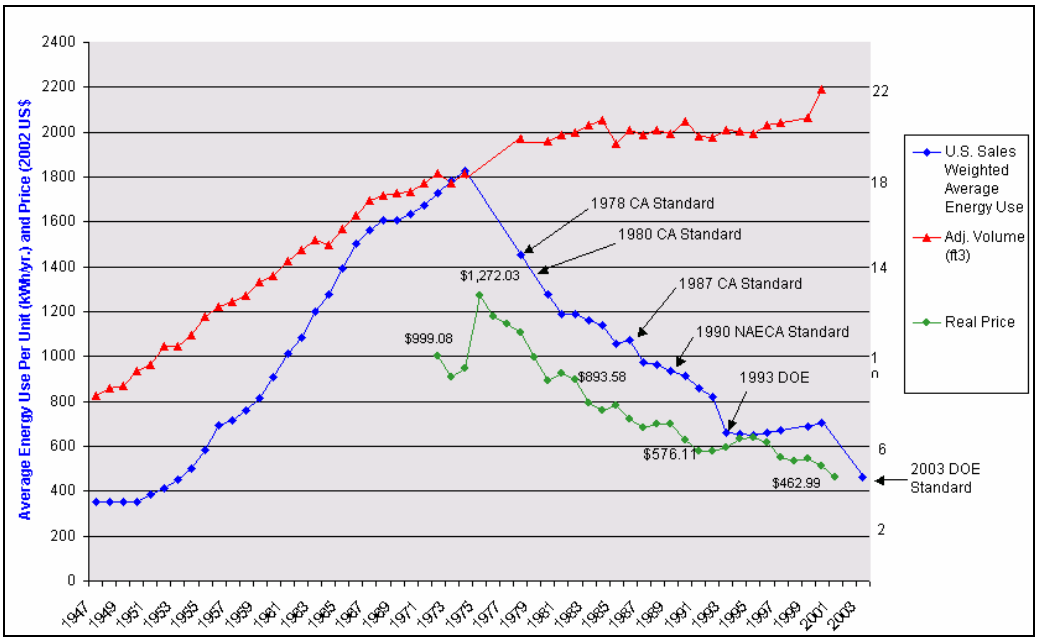

Figure 3. U.S. Refrigerator Energy Use vs. Time, with Real Price Changes. (Source: Goldstein, NRDC 2005)

Minimum energy performance standards in the U.S. will save consumers US$ 80 billion by 2015.

A recent study by Meyers et al. of Lawrence Berkeley National Laboratory estimated the energy, environmental and consumer economic impacts of U.S. Federal residential energy efficiency standards that became effective in the 1988-2001 period or will take effect by the end of 2007. The authors estimate that the standards will reduce residential primary energy consumption and CO_2 emissions in 2020 by 8-9% compared to the levels expected without any standards. The estimated cumulative net present value of consumer benefit amounts to nearly $80 billion by 2015, and grows to $130 billion by 2030. The overall benefit/cost ratio of cumulative consumer impacts in the 1987-2050 period is 2.75:1. By comparison the authors estimated the cumulative cost of the U.S. government's program to establish and implement the standards is in the range of $200-250 million.

Korea's standards policy led to startling efficiency improvements in appliances during the 1990s.

Figure 4 shows how dramatically the average efficiency of the appliance stock in Korea fell during the 1990s. This was due to an aggressive program combining mandatory energy labelling and minimum energy performance standards. A feature of Korean standards policy us the establishment of not only a MEPS, but a Target Energy Performance Standard (TEPS), which eventually becomes the MEPS as appliances become more efficient over time.

The improvements in Korea are startling: a 38% increase in the average market efficiency of fluorescent lamps in just 7 years; a 42% efficiency improvement for refrigerator-freezers; and a 54% improvement for air conditioners.

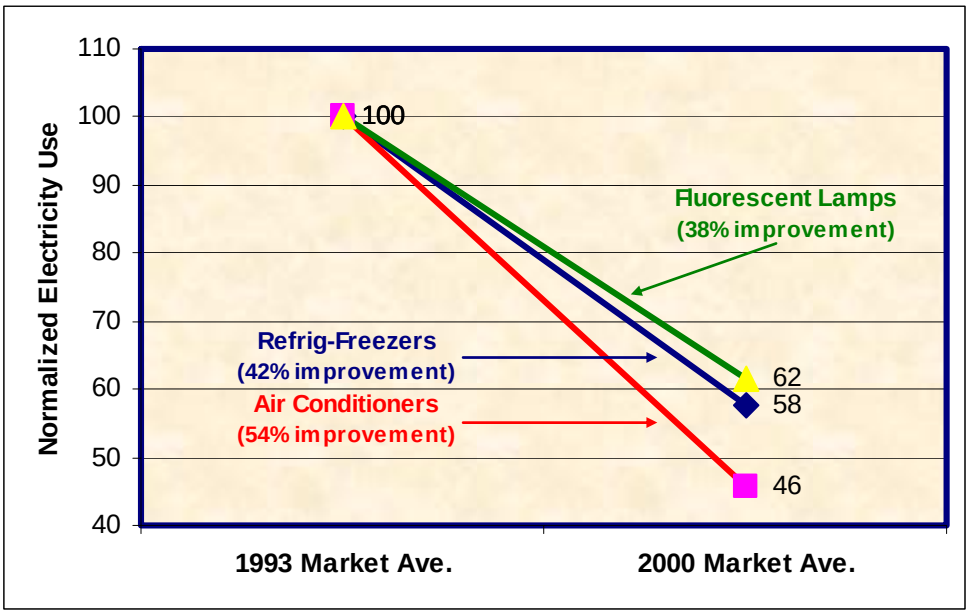

Figure 4. Change in Average market Efficiency of Korean Appliances, 1993 – 2000 (Source: Sun-Keun Lee, 2001)

Section 3. POLICY DEVELOPMENT

High level support is justified by the proven cost effectiveness of standards and labelling programs.

Participants in the Vision Workshops remarked that there is often a lack of connection between broad policy goals and the test standards, MEPS and labelling programs developed by technical experts. To address the political context, it is important at an early stage to raise awareness among key policymakers of the benefits of energy standards and labeling programs.

This is a significant first hurdle, since government officials are often by nature cautious and many countries lack experience with the whole process of developing energy standards and labeling regulations and programs. In order to overcome the lack of know-how and experience in designing energy standards and labeling programs, it is important to (a) build capacity and knowledge; and (b) demonstrate to senior policymakers that the proposed program meets international best practice.

Once the awareness and interest is there, it is essential that there be the political will to support and push the program through the initial stages. Policymakers need to be educated that, in fact, energy standards and labeling can be the engine that actually achieves broader policy objectives, such as sustainable development, climate change, etc. The justification for

such high-level support is the proven cost-effectiveness and impact of standards and labeling programs (see Section 2 of this paper).

There is a high strategic value in timing the development of standards to fit with overall energy policies and plans.

There is a high strategic value in timing the development of standards to fit with overall economic, environmental, or energy policies and plans. Energy policymakers need to have an idea of the pace and number of products to be regulated as part of the overall energy policy.

At the same time, it is also important to understand how energy standards and labeling programs fit into the energy policy framework within an economy or region. It was suggested that it would be useful for the APEC ESIS database to be broadened to map and track these overarching policies and policy frameworks.

Benchmarking labelling and MEPS levels with other countries can reduce development costs.

One of the barriers to developing new standards is cost. For example, European participants pointed out that the European test standard for washing machines required $5 million to develop. The problem of resources and costs can be addressed in two ways: first, economies can work together to develop truly international test procedures so that all economies can less expensively adopt these test procedures; and second, economies can "benchmark" their labeling tiers and MEPS levels with other countries, which means that each economy can rely on results of its predecessors to reduce its costs for independent market assessments and feasibility studies.

Section 4. HARMONIZATION AND ALIGNMENT

"Alignment" is a less threatening term than "harmonization"

A common theme of the Vision Workshops was that the term "harmonization" can mean different things to different people, and may be misinterpreted. For some, harmonization has a legal meaning, which implies that countries will be forced to follow the same procedures. According to some of the workshop participants, it may be preferable to use terms such as "alignment" or "compatibility" when discussing efforts to bring different countries test procedures to the point where they are consistent, and product test results and efficiency levels can be readily compared.

International trade in appliances and equipment calls for a new paradigm

Under the commonly prevailing paradigm of equipment energy regulation, each economy is viewed as an island, and works independently to set its own efficiency levels. The development of efficiency regulations entails an analysis of the economy's market and a determination of where to set efficiency benchmarks for a label or for a mandatory minimum energy performance standard (MEPS).

In reality, however, equipment trade is *globalized,* and for many, if not most, energy-using appliances and equipment, economy borders are becoming less meaningful in determining markets, and efficiency levels. Indeed, one of the most important drivers for alignment is to reduce barriers to trade, since appliances are internationally traded and having to retest a product for export to different countries represents a significant burden.

The first priority for alignment should be for test procedures.

The consensus of the Vision Workshops was that the first and most productive area for exploring alignment is in energy performance test procedures, since this facilitates the ability to manufacture and sell products across different markets, and also allows a consistent comparison of energy performance and energy efficiency. Accordingly, it is important to contain the proliferation of inconsistent and uncoordinated test procedures and policies.

Although there may be exceptions, the default should be to adopt test procedures of ISO/IEC.

Most workshop participants felt that, for internationally traded products, the default should be to adopt test procedures of the International Electrotechnical Commission (IEC) and the International Standards Organisation (ISO) as the testing standard. It was noted that under WTO rules the IEC standard prevails in the case of a dispute. Of course, some countries are developing labelling and MEPS programs for products not yet covered by IEC/ISO standards.

Alignment is a win-win-win proposition: regulators, suppliers, and consumers all benefit.

There are a number of benefits to aligning test procedures:

Benefit to Regulators. Alignment allows regulators in individual economies to avoid reinventing the wheel and to benefit from best practices. For example, development of test procedures can take years and cost millions of dollars. Adoption of well-established test procedures reduces program costs tremendously.

Benefit to Manufacturers and Suppliers. Product testing and registration impose significant transaction costs for manufacturers and suppliers who are selling to multiple markets. Alignment of test procedures and processes avoids multiplying this burden when products are crossing international borders, since it can eliminate the need for multiple testing: in a perfectly aligned world, suppliers would be able to "test once and sell anywhere."

Benefits to Consumers. By reducing the transactions costs to suppliers, alignment lowers the end cost of product. In addition, for many developing countries, alignment to an international standard will improve the overall quality of products by reducing the number of untested or poor quality sub-standard products in the market.

For energy labelling

There was much less enthusiasm for alignment of energy labelling

and MEPS, there are fewer benefits to aligning efficiency levels.

programs or MEPS.

With regard to energy labels, there may be some advantage to harmonizing "steps" in a comparative label; however, due to differences in cultural symbols and understanding, there is little reason to develop a single label design that would be applied across many countries.

Nonetheless, where there are trading blocs, there may be benefits in some cases to having regional labelling schemes, such as for the comparative label for the European Union or the endorsement label for lamp ballasts for the Association of Southeast Asian Nations (ASEAN).

Likewise, for MEPS, it would be intrusive to insist on alignment of MEPS levels across economies. However, for products that are widely internationally traded, there may be an evolution to a single international MEPS level (e.g., standby power loss) or to natural efficiency "tiers" from which economies can select a MEPS level (e.g., Europe's EFF1, EFF2, EFF3 labeling scheme for electric motors).

APEC has assessed potential for use of conversion algorithms for a number of products.

There was considerable interest at the Vision Workshops in the tools available for comparing the results of different energy performance tests. It was pointed out that work has been done in APEC and other fora to develop conversion algorithms to allow comparison of test results for products tested according to different test procedures. For example, APEC has commissioned studies of the potential for conversion algorithms for ballasts, refrigerators, and air conditioners.[2]

Participants encouraged an aggressive effort to recognize test results from accredited laboratories.

Past international efforts to actively co-ordinate international energy standards and labeling have been largely ineffective. One of the main reasons for this ineffectiveness is reliance on the widespread assumption that adoption of an "international" energy performance testing protocol will be a panacea to the problem of inconsistent and incompatible standards. The problem in practice is that different regions or trading blocs have their own preferred testing protocols, and it is extremely difficult to get all parties to agree on a single common international test protocol. In fact, a more modest effort to promote recognition of test results by accredited laboratories would go a long way toward reducing barriers to trade of appliances and electrical equipment.

[2] See the APEC reference (2001). Work has also been done by David Cogan, Anibal Almeida and LBNL to develop algorithms to compare the results of motor energy performance tests between the IEC and IEEE test procedures.

Section 5.
DATA AND INFORMATION ON STANDARDS & LABELING

APEC-ESIS, CLASP, and IEA have developed sets of useful information on energy-efficiency standards and labelling.

The most significant and sustained efforts to foster information sharing on energy standards and labelling have been carried out by APEC and by a U.S.-based non-profit organization, the Collaborative Labeling and Appliance Standards Program (CLASP).

In 2000, CLASP developed an international web site on energy standards and labeling (www.clasponline.org), which included a number of resources such as a document library, a guidebook, calculation tools, and a database of economy programs.

In 2002, APEC launched its Energy Standards Information System (APEC ESIS – www.apec-esis.org) in response to a call by APEC ministers to develop and maintain a Standards Notification Procedure. The APEC ESIS site has developed into a focal point for activity and coordination on energy standards and labeling, and nearly all of the 21 APEC economies regularly review and update the technical information on the site.

The International Energy Agency (IEA) has also been actively promoting the role of energy-efficiency standards and labeling and, in particular, has developed three books on the topic:

- one that covers standby power losses (IEA 2001);
- one that provides an overview of energy-efficiency standards and labeling; and
- one covering energy-efficient lighting (to be released in 2005).

The Global Standards and Labeling Database allows users to seamlessly search data from more than 50 economies worldwide.

During 2004, APEC entered into a sponsorship agreement with CLASP, which is a U.S. based non-profit organization. Under the sponsorship agreement, CLASP developed an enhanced international database, and this database now allows users visiting either the APEC ESIS or CLASP web sites to seamlessly search data on energy standards and labeling programs from more than 50 economies (both APEC and non-APEC) worldwide. Figure 5 shows a screen shot of the new Global Standards and Labeling Database, which was formally launched in mid-2005. The global database can be accessed from either the APEC-ESIS web site (www.apec-esis.org) or the CLASP web site (www.clasponline.org).

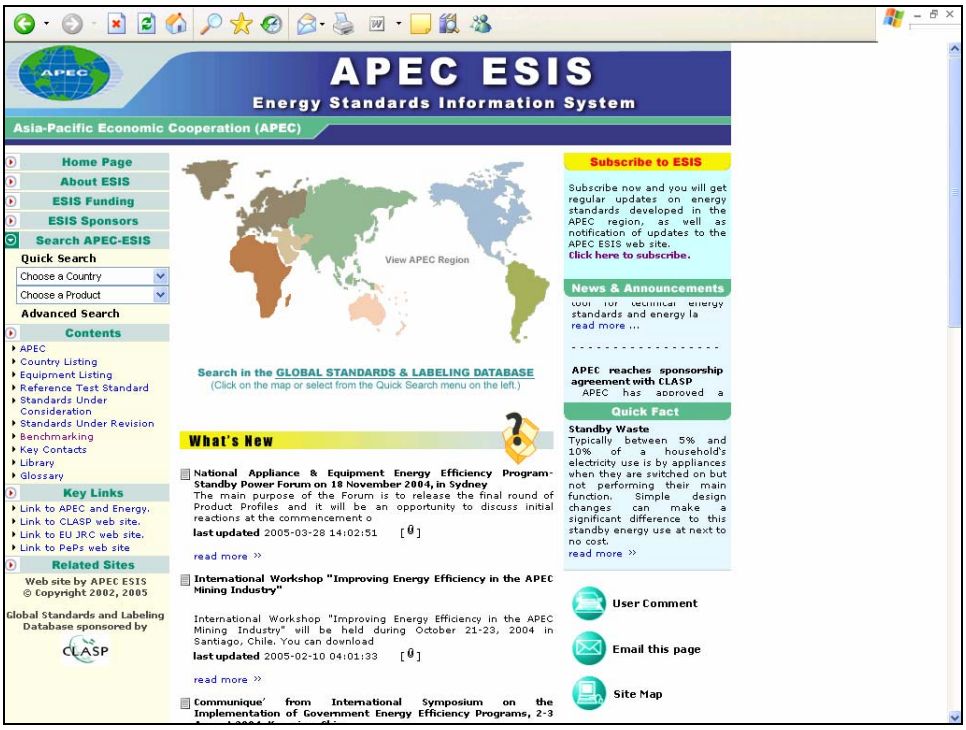

Figure 5. The Global Standards and Labeling Database was launched in mid-2005

The ANSES project will create an umbrella clearinghouse for standards covering both renewable energy and energy efficiency.

Another international initiative supporting information and networking on energy standards is the Asia-wide Network on Sustainable Energy Standards (ANSES). To avoid duplicating work done by others in the region, ANSES is working closely with the APEC Energy Standards Information System (APEC-ESIS); the Collaborative Labeling and Appliance Standards Program; the Australian Greenhouse Office, and other regional agencies.

During its first phase in 2005, ANSES has three primary objectives:

- support harmonization of compact fluorescent lamps (CFLs), including support for the CFL Harmonization Initiative described in Section 7 below;
- development of web site for a Global Clearinghouse for Sustainable Energy Standards (covering both energy-efficiency and renewable energy products and equipment); and
- Development of web-based database on building energy codes.

The ANSES project is funded by the British government, through its Renewable Energy and Energy Efficiency Partnership REEEP). REEEP was launched by the UK at the World Summit on Sustainable Development (WSSD) in September 2002. A major goal of REEEP is to expedite market growth for renewable and energy-efficient services, and to improved access to energy for the poor.

There are inherent limitations to a passive information-sharing platform.

Efforts to date have focused primarily on *information sharing*, rather than creating *knowledge* about standards comparisons. The primary thrust of international efforts has been to foster the *sharing* of basic information as a platform for co-operation and efforts to harmonize testing protocols and in some cases, MEPS. The idea has been to create a way for policymakers and technical consultants to consult an international portal or reference during the process of developing their own, independent energy standards and labeling initiatives.

Section 6. BENCHMARKING INTERNATIONAL BEST PRACTICE

User-friendly, international comparisons of data are not readily available to policymakers.

While posting and sharing of data in a real-time, web-based format is a good step forward, an additional step is needed in order for the data sets to be truly useful for policymakers. This means development of user-friendly international comparisons of MEPS and labeling levels in different countries – such comparisons are extremely rare to find. If they are available at all, they are usually in one of two formats: as a one-off report comparing MEPS levels and label tiers for a single country consultancy; or as a very small sample of (two or possibly three) countries. As described in the next section, the needed studies are beginning to be undertaken. Put quite simply, this information is only now beginning to become available to the policymakers who need it as an input to their decision-making.

Standard practice is internal benchmarking and reference within an individual economy.

Analysts developing future scenarios for energy use of appliances and energy-using equipment usually benchmark the efficiency levels against a business as usual (often referred to as BAU) scenario. The questions they typically ask are: With respect to local suppliers, what level of unit efficiency is economically feasible for the government to establish a minimum energy performance standard (MEPS)? How much can a MEPS or labeling program reduce demand compared to the BAU scenario?

There are several problems with this approach, which focuses exclusively on the domestic market. The first is that appliances and equipment are internationally traded items. The approach assumes that the economy is an "island", and it ignores regional or international trends in equipment efficiency. Another problem is that the approach does not place enough emphasis on equipment that is actually available in the market.

Participants in the Vision Workshops also recommended benchmarking of policies and

Participants in the Melbourne Vision Workshop recommended that it may also be advisable to benchmark progress in certain processes, as well as against absolute indicators such as appliance unit efficiencies. For example, the following indicators could be benchmarked as a way of comparing policy development and implementation across countries:

programs.

- number/percent of appliances are labeled;
- number/percent of appliances for which there are MEPS;
- range of product efficiency levels; and
- MEPS thresholds and labeling tiers.

Data for indicators such as these should be presented in user-friendly graphics that allow policymakers and analysts to "overlay" the standards to indicate direct comparisons of threshold and tier levels between multiple countries.

International benchmarking is a powerful policy tool.

International benchmarking– comparing proposed MEPS and labeling levels against what other comparable countries are doing now -- can be a powerful tool for policymakers. Such international benchmarking is valid for most energy-using products that are internationally traded (e.g., lighting equipment, most appliances, electronic equipment, electric motors, etc.).

The Australian government is beginning to take the lead in the area of benchmarking, in line with its stated policy of examining "international best regulatory practice" when develop new MEPS and labeling requirements. The Australian approach is that its MEPS levels should not be lower than any other economy – or stated another way, if a product is made in Australia, it should meet all energy and environmental criteria and thus be able to be sold in any market in the world. AGO's interest in benchmarking energy performance of appliances and equipment is a direct outgrowth of its focus on "best regulatory practice."

Benchmarking of air conditioners revealed the need for a more aggressive MEPS in Australia.

Two recent benchmarking reports commissioned by the Australian government demonstrate both the power of benchmarking as well as the ability of MEPS to protect a market against low-efficiency imports.

In 2002, the Australian Greenhouse Office (AGO) commissioned a comparison of air conditioner efficiency levels between the Thailand and Australia markets. The results, somewhat surprisingly to the Australians, showed the Thai air-conditioner efficiency levels to be significantly higher than for the Australian models.

AGO then built on that initial two-economy assessment by commissioning in 2004 a five-economy comparison of air-conditioner efficiency levels, which covered Australia, China, Korea, Malaysia, and Thailand. The report featured scatter-plot data comparing efficiency levels of air conditioners across the five-countries, as well as separate economy-by-economy comparisons.

The results of the five-economy benchmarking of air conditioners revealed two key facts:
Australia imports 95% of its air conditioners, and 87% from the four

countries in the study (China, Korea, Malaysia, and Thailand)
Australia and China have the lowest efficiency levels of the five countries studied.

The conclusion of the benchmarking report was that Australia's trading partners were exporting less efficient products to Australia. In light of this, the Australian suppliers of air conditioners voluntarily agreed in June 2004 to expedite the planned MEPS level for air conditioners by 18 months – from October 2007 to April 2006.

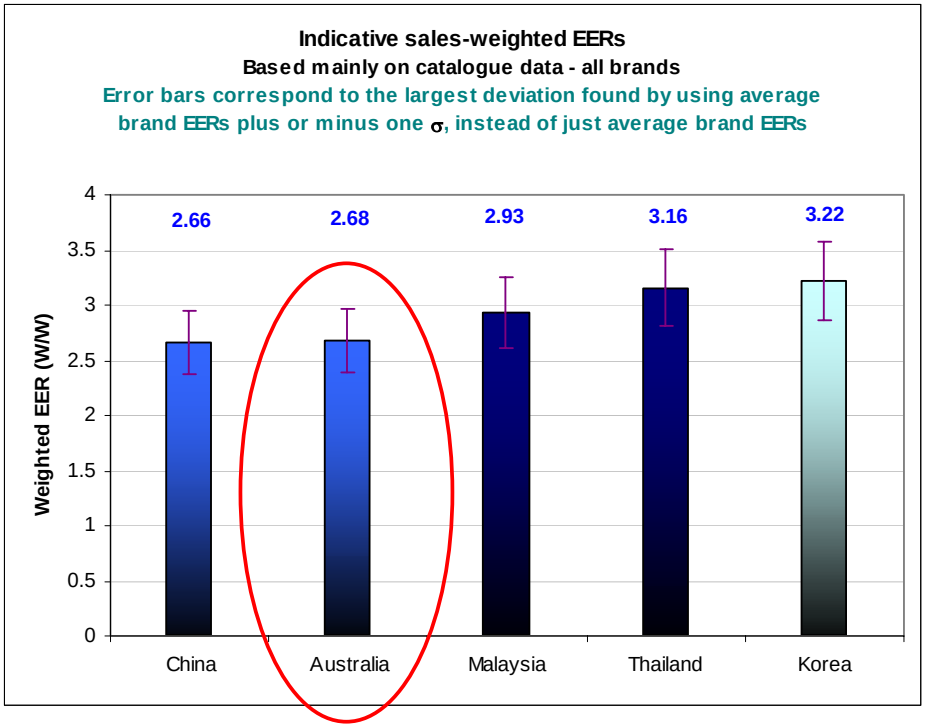

Figure 6. Comparison of sales-weighted energy-efficiency ratios (EERs) for the five economies in the air conditioner benchmarking study. (Source: DEM 2004.)

Benchmarking of electric motors revealed the benefit of a MEPS in protecting Australia from low-efficiency imports.

In 2004, AGO commissioned a similar benchmarking study for electric motors. The study examined electric motor production, trade, and efficiency levels for Australia, China, Malaysia, and Thailand. The results of the study were in sharp contrast to the benchmarking exercise for air conditioners. While Australia imports the bulk of its motors from the study countries, it has the highest average motor efficiencies of the economies studied.

Figure 7 shows the percent of models in each economy that meet Australia's proposed MEPS for 2006. In this four-economy comparison, Australia fares best, as 42% of electric motors sold in Australia currently meet the proposed 2006 MEPS; compared to 25%, 22%, and 11% for Malaysia, Thailand, and China, respectively.

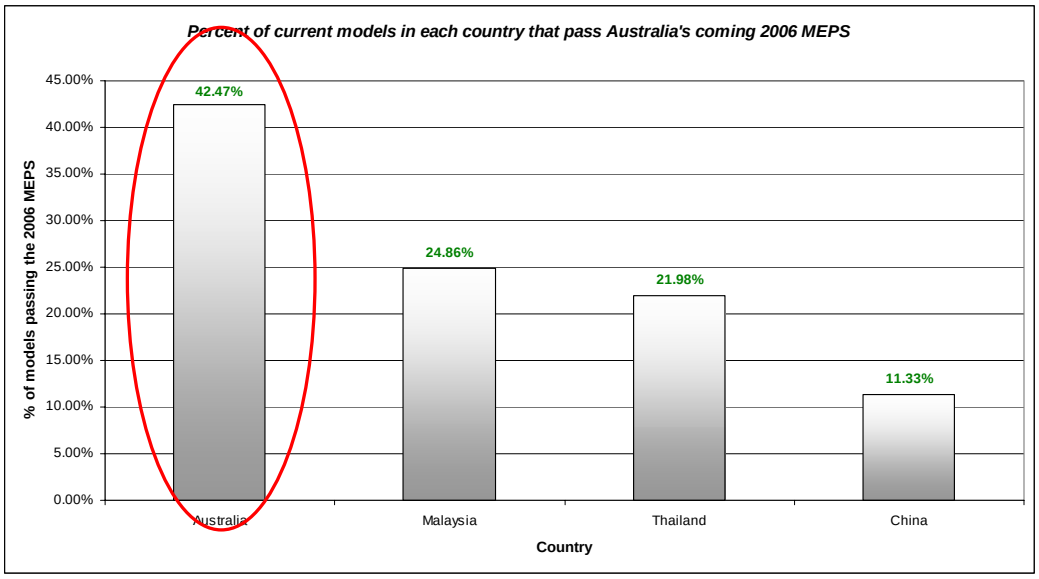

Figure 7. Percent of models in each economy that meet Australia's proposed MEPS for 2006. (Source: DEM 2005.)

Section 7. EMERGING INTERNATIONAL INITIATIVES

International efforts are on the rise to coordinate the regulation of product efficiency levels.

Discussions are currently under way on a number of fronts to coordinate the approach to regulating efficiency levels of different product types. The most active discussions include the following product areas and types:

- Standby power loss
- Set-top boxes for televisions
- Televisions
- Compact fluorescent lamps (CFLs)
- Peak demand control for air conditioners
- Electric motors
- Fluorescent lamp ballasts

Regional efforts are on the rise to coordinate the regulation of product efficiency levels.

Regional activities directed at harmonizing energy efficiency standards and labels and the testing that underlies both these measures are being undertaken by the Asia-Pacific Economic Cooperation (APEC), the South Asia Regional Initiative for Energy Cooperation and Development (SARI), the Pan American Standards Commission (COPANT), the Asia and South East Asia Network (ASEAN), the North American Energy Working Group (NAEWG), and the first of several emerging UNDP/GEF projects in the Andean Region of South America. In addition, the European Union (EU) has a rich history of regional coordination surrounding conversion

from individual country standards and labels to a unified EU-wide program.

The International CFL Harmonization Initiative

One recent initiative is the establishment of an international initiative to harmonize technical specifications for testing and performance of compact fluorescent lamps. At the sixth International Conference on Energy Efficient Lighting (*Right Light 6, Shanghai China - 10 May 2005*), more than 80 delegates participated in a special-session debate about compact fluorescent lamps (CFLs).

At this session, key lighting policy makers, practitioners, manufacturers, researchers and academics from around the world agreed in-principle to the goals of:

- creating a uniform testing method, covering the performance features of self-ballasted CFLs, suitable for submission to national and international standard bodies to measure CFL performance;
- identifying a number of performance specifications for self ballasted CFLs to facilitate testing comparisons and possible rationalisation of CFL performance requirements; and
- proposing these initiatives to the wider international lighting community.

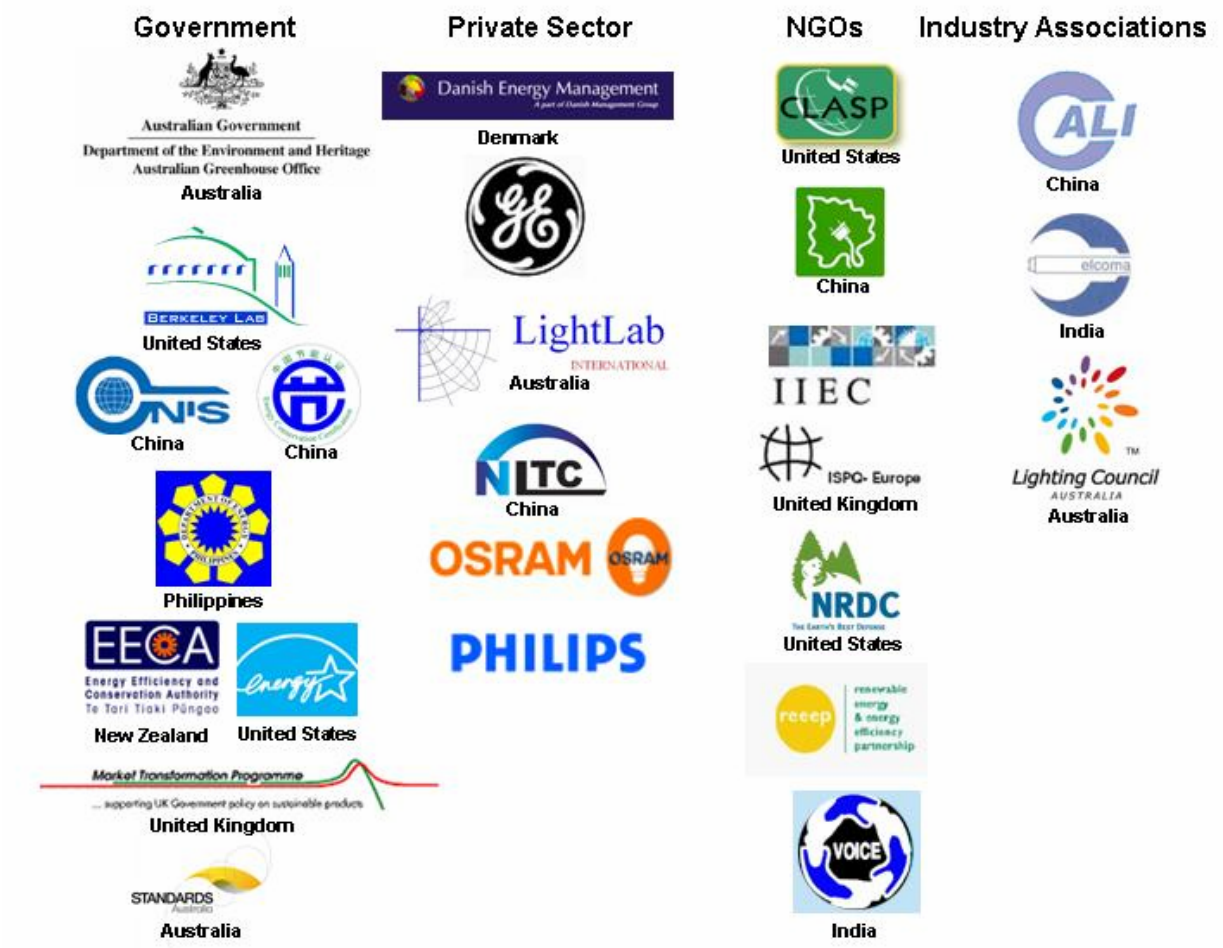

Figure 8. Logos of organizations that support the International CFL Harmonization Initiative.

Participants agreed to work together to contribute to this vision and common goal over the next three years.

Participants at the special session agreed to release a communiqué to record the outcome of their dialogue at Right Lights 6. The participants also agreed to call upon others to contribute to this vision and common goal over the next three years. The participants agreed to report progress to the international lighting community in Seoul, Korea November 2005.

The work to harmonize CFL specifications will be a deliberate and coordinated process, and the main work will be focused around (initially at least) five primary working groups:

- testing methodology,
- performance specifications,
- international test facility product testing,
- compliance mechanisms, and
- informing the international lighting community.

More information on the initiative can be found at www.apec-esis.org/cfl/. The logos of organizations that support the initiative are shown in Figure 8.

Communities of Practice are a novel experiment to coordinate international action.

Another emerging international trend is the use of Communities of Practice to assist in coordinating an international dialogue on selected product types and areas. The term "Communities of Practice" refers to a group of experts and stakeholders who are deeply involved in efforts to regulate, promote, and develop technical specifications for a specific energy-using appliance or product.

The communities will be accessible through the newly established benchmarking section of the APEC ESIS web site. The idea is to use the web site and related information and communications technologies (ICT) tools to coordinate an international dialogue among regulators, suppliers, consultants, and NGOs on international efforts to harmonize and coordinate technical requirement, standards, and labelling for energy-using products.

The Australian Greenhouse Office will support development and testing of three Communities for discussion of benchmarking and APEC-wide and international comparisons of product efficiencies. These Communities will cover:

- compact fluorescent lamps (CFLs);
- peak demand issues related to residential and small commercial ACs; and
- home entertainment equipment (i.e. TVs and set-top boxes).

Section 8. CONCLUSIONS

The imperative for international coordination

The Standards Vision Workshops have delivered a consensus that energy standards and labelling programs should be a national priority; but that at the same time, in order to maximize the impact of a national program, it is essential to work internationally with like-minded governments and trading partners.

Harmonization should being with energy performance test procedures and processes.

Workshop participants agreed on the need for more urgent efforts to harmonize processes for regulating product energy-efficiency – while specifying that the first and most productive area for exploring alignment is in energy performance test procedures, since this facilitates the ability to manufacture and sell products across different markets, and also allows a consistent comparison of energy performance and energy efficiency.

The power of benchmarking

Participants in the Vision Workshops stressed the role of international benchmarking as a powerful new tool for policymakers. International benchmarking is valid for most energy-using products that are internationally traded (e.g., lighting equipment, most appliances, electronic equipment, electric motors, etc.). The Australian government is beginning to take the lead in the area of benchmarking, and its recent benchmarking of air conditioners and electric motors show the power of benchmarking as a policy tool.

Such dynamic comparisons allow policymakers to review international practice and market efficiency levels before making a decision or revision for their economy, and to ultimately track and measure their progress against other countries. Perhaps most important, such pro-active benchmarking will allow policymakers to justify and claim credit for achievements of their standards and labelling programs.

Testing "Communities of Practice" as a collaboration tool

Another emerging international trend is the use of Communities of Practice to assist in coordinating an international dialogue on selected product types and areas. The term "Communities of Practice" refers to a group of experts and stakeholders working on a specific energy-using appliance or product, who are deeply involved in efforts to regulate, promote, and develop technical specifications for that product. The Australian Greenhouse Office will during 2005 and 2006 support development and testing of three Communities for discussion of benchmarking and APEC-wide and international comparisons of product efficiencies.

Link to the overarching EE policy framework

It is essential to understand how energy standards and labeling programs fit into the energy policy framework within a country or region. It was suggested that it would be useful for the APEC ESIS database to be broadened to map and track these overarching policies and policy frameworks.

Section 9.
CONTACT PERSON

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Section 10.
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ANNEXES

Annex A: Asia-Pacific Experts Workshop, Melbourne, 24 March 2003

Annex B: European Workshop, Turin, Italy, 1 October 2003

Annex C: APEC Experts Workshop, Kaohsiung, Chinese Taipei, 17 November 2003.

Annex D: North American Workshop, Asilomar, California, 23 August 2004.

ANNEX A
Energy Standards and Labelling Programs: A Strategic Vision and Road Map for the Future

Report on Communiqué and Recommendations from Asia-Pacific Experts Workshop organized by Australian Greenhouse Office,, Melbourne, Australia, 24 March 2003.

24 March 2003
Melbourne, Australia

EXECUTIVE SUMMARY OF RECOMMENDATIONS

In accordance with APEC's desire to enhance trade amongst its economies, each APEC member should, for every product traded substantially within APEC economies:

- *strive to adopt methods of testing the energy performance already in place within APEC economies or endorsed by international standard-setting bodies;*
- *agree to adopt minimum energy performance standard (MEPS) levels where these MEPS levels already exist within other APEC; and*
- *agree to adopt, where practical, common threshold levels for any labelling scheme.*

With this simple vision for the future, a gathering of experts from the Asia Pacific called on international energy and environmental organisations to accept responsibility to help APEC and other economies to achieve this vision for every nation's standards and labelling program. The experts pointed to a continuing and growing need for facilitation and information transfer amongst funders, economies, and stakeholders who are implementing energy-standards-based programs *in parallel* – often with little co-ordination and sharing of methods and lessons -- in scores of economies internationally.

The experts developed a set of specific recommendations in four primary areas, for consideration by APEC and other international bodies promoting co-operation in energy efficiency and climate change programs.

> **Information Sharing.** The experts urged economies within APEC and elsewhere in the world to commit to share information about the energy performance testing, minimum energy performance standards (MEPS), and labelling programs in their country. They underlined the need for donors, agencies, governments, and industry to invest money and resources into information-sharing mechanisms and platforms that will benefit the energy efficiency and conservation efforts of all economies.
>
> **Harmonisation and Alignment.** The current plethora of energy peformance testing protocols, MEPS levels, and labelling requirements creates unnecessary trade difficulties for suppliers to sell energy-efficient products across economies. This situation also creates unnecessary complexity for individual economy policymakers and technical experts who "recreate the wheel" by creating new standards and labelling programs for countries without

such programs instead of copying the best of these programs from the 50 such economies worldwide that already have working programs. The experts recommended concrete steps to facilitate the harmonisation and alignment of energy standards wherever possible.

Commitment to benchmarking progress. The experts recommended a set of benchmarks that could be used by economies to assess their progress in reducing barriers to trade in energy-efficient products and equipment, created by inconsistent, or un-aligned energy test procedures and MEPS requirements. APEC economies should benchmark their own performance and compare this to international best practice and to other economies of similar circumstance wherever possible.

Commitment to international action and co-ordination. The experts recommended that APEC and other international agencies work to actively and transparently promote standards and labeling programs as a crucial way of achieving substantial efficiency gains and greenhouse gas abatement. The experts recommended the continuation and expansion of the APEC developed Energy Standards Information System (ESIS), and other such tangible initiatives to promote international co-ordination and partnership.

Finally, the experts recommended that a set of focused program activities or "milestones" be commenced within the next two years for delivery in the next five years. The experts considered such projects would provide tangible proof that the aspirational vision for standards and labelling programs could deliver real greenhouse abatement and energy conservation benefits to APEC economies.

INTRODUCTION: AN INTERNATIONAL VISION

In accordance with APEC's desire to enhance trade amongst the economies, each APEC member should, for every product traded substantially within APEC economies:

- *strive to adopt methods for testing the energy performance already in place within APEC economies or endorsed by international standard-setting bodies;*
- *agree to adopt minimum energy performance standard (MEPS) levels where these MEPS levels already exist within APEC; and*
- *agree to adopt, where practical, common thresholds for any labelling scheme.*

With this simple vision for the future, a gathering of energy "standards and labelling" experts from the Asia Pacific called on international energy and environmental organisations to accept responsibility to help APEC and other international economies achieve this vision for every nation's standards and labelling program.

Repeating the calls of past gatherings, the experts urged international funding bodies to provide additional support to allow standards and labelling programs to help all economies meet their energy efficiency and climate change goals more rapidly. International support and funding is crucial if APEC economies are to help themselves mobilize domestic stakeholders, establish appropriate legal/regulatory frameworks, and launch successful energy standards based policies and programs.

However, unlike those other past gatherings, the experts identified the prior inaction of international bodies (by not funding "international" projects) as a major factor limiting APEC economies from achieving the potential presented by energy standards and labelling programs at this time.

The experts noted that every economy must have the right to consider its own unique economic status, environmental concerns, energy supply mix, industry development and other valid considerations when taking energy standards and labelling decisions at any point in time. But within those constraints, the experts called on each APEC economy to adopt the vision as its ultimate policy goal and strive to deliver the best possible program at any point in time. Further, they urged APEC economies to accept being benchmarked against the international vision in the future and work together in regional collaborations to address regional product markets.

The experts also called upon their peers within organisations elsewhere in the world to support national, regional, trans-national and international efforts to establish or promote standards and labelling programs in every country throughout the world.

WORKSHOP REPORT

An international group of experts on energy efficiency from the Asia-Pacific region gathered at a workshop in Melbourne, Australia in March 2003 to consider the future of energy-efficiency standards and labelling initiatives. Specifically, the experts met to consider the merits of a strategic vision and road map for national standards and labelling programs for the Asia-Pacific region, and eventually all countries internationally.

The workshop was sponsored by two Australian government agencies, the Australian Greenhouse Office and the Sustainable Energy Authority of Victoria. The participants included government officials, equipment manufacturers and technical experts invited from all APEC economies.

The workshop was held immediately prior to the APEC Expert Group on Energy Efficiency and Conservation meeting also in Melbourne, Australia. This workshop report and accompanying recommendations were developed to provide a vehicle for those experts attending the workshop to submit their views to that APEC meeting.

This workshop report is divided into the following sections:

Executive Summary	An overview of the experts' key recommendations for moving toward the shared future vision
Introduction	A description of the experts' shared international vision for the future shape and impact of energy standards and labelling policies and programs.
Section 1	Recommendations to the APEC Expert Group on Energy Efficiency and Conservation for specific steps and proposals that form a road map to achieve the common vision for standards and labelling programs.
Section 2	Primary conclusions of the experts during the workshop.
Section 3	General statements and findings of the experts during the workshop.
Section 4	Summary of recent international statements establishing the mandate for energy standards and labelling (S&L) experts to advise responsible international agencies of their views.

Section 1: Workshop Recommendations

The experts recommended that the APEC Expert Group on Energy Efficiency and Conservation adopt the following recommendations as a policy package to be put to APEC:

The International Vision -- Harmonisation

Initially, APEC economies should agree to the principle of an *APEC regional* vision for energy standards and labelling programs and also, through that example, seek an *international* commitment to a similar vision for standards and labelling programs throughout the world. The simple vision for APEC could be:

In accordance with APEC's desire to enhance trade amongst the economies, each APEC should, for every product traded substantially within APEC economies:

- *strive to adopt methods of testing the energy performance already in place within APEC economies or endorsed by international standard-setting bodies;*
- *agree to adopt minimum energy performance standard (MEPS) levels where these MEPS levels already exist within APEC; and*

- *agree to adopt, where practical, common category steps for any labelling scheme.*

This vision could be modified to become a statement of intent applicable to all economies.

Giving effect to the vision will require a concerted effort by not only those national programs that adopt this vision but also from the international community to fund and otherwise aid those economies that need assistance to achieve the aspirational vision.

The Road Map

The experts developed a set of specific but integrated recommendations in four primary areas, for consideration by APEC and other international bodies promoting co-operation in energy efficiency and climate change programs.

1. Information Sharing

1. All APEC economies (and other countries who adopt this vision) should commit to share information about the energy performance testing, MEPS, and labelling programs in their countries. As part of the suite of measures flowing from adopting the vision and road map, APEC economies should agree to individually provide the resourcing necessary to maintain accurate information to be submitted to ESIS. That individual economy input is essential to building a global information resource that will benefit all countries.
2. As a general rule, major industry stakeholders should be involved in the development of energy standards and labeling initiatives from the outset, so as to build upon their experience curve, ensure that they share ownership and support the program initiatives.
3. All national, regional, and international standards should be made widely and freely available. The current situation, where product standards are not freely shared due to many reasons including cost and language barriers, constitutes an unacceptable barrier to trade of energy-efficient products.
4. ASEAN and APEC should develop mechanisms for sharing information on their energy-standards-related activities and results, between their regional fora, as well as amongst the individual economies. The regular exchange of information between economies within APEC and ASEAN on these issues will help to promote greater co-ordination in development and implement of standards and labelling programs throughout the Asia-Pacific region.
5. APEC's Energy Standards Information System (ESIS) should become the reference for technical data on energy performance test procedures, MEPS, and energy labelling for APEC economies and the rest of the world. At the same time, those responsible for ESIS should strive to build strong linkages with important standards web sites such as that of the Collaborative Labelling and Appliance Standards Program, or CLASP (www.clasponline.org) and any other international bodies working in this field.
6. Information sharing is the essential platform for developing and maintaining effective standards programs. As such, it is important for donors, agencies, governments, and industry to invest money and resources into various information-sharing mechanisms and platforms, which will benefit the energy efficiency and conservation efforts of all economies.

7. Efforts should be made to report and showcase "best practices" for the design of potential standards and labelling programs targeting all stakeholders within a particular economy (government, industry, consumer).

2. Harmonisation and Alignment

The current plethora of energy performance testing protocols, MEPS levels, and labelling requirements makes it extremely difficult for suppliers to sell energy-efficient products across economies. It also creates significant work for the policymakers and technical experts who "recreate the wheel" when developing new standards and labelling programs for economies that have not had such programs in the past. The following steps should be taken to facilitate the harmonisation and alignment of energy standards (testing protocols, MEPS, and labelling category steps) wherever possible.

1. Each economy has and should retain the sovereign right to determine its own S&L program within the practical constraints of its international environmental commitments, its own climatic considerations, the state of economic development, its industry capacity to deliver and its consumers' capacity to pay.
2. APEC and other international agencies should strive to promote development of uniform and consistent energy performance testing protocols that reflect as much as possible the energy efficiniency of appliances and equipment in actual operation.
3. Where individual APEC economies introduce energy performance test standards that differ from those already in use by other APEC member economies, the economy involved should be ready to justify the reasons for the difference using published and peer-reviewed data, research and analysis. This justification should specifically address the efforts taken to minimise the potential for unintended trade barriers being created.
4. Each APEC economy should commit to using available international energy performance testing standards to measure product performance, where such testing standards exist, are suitable and take account of any economy specific features. Each APEC economy should also commit to developing broad equivalencies between different test methods currently used and commit to a timetable to move towards the ultimate goal of achieving worldwide compatible energy performance levels.
5. In circumstances where international energy performance testing standards are not available, each APEC economy should agree to support endeavours to develop such a testing standard in the medium to long term.
6. Each APEC economy should support energy performance testing by facilities with the capacity to measure energy standards. Mutual recognition of laboratory accreditation via mutual recognition agreements reduces the need to re-test products sold in several different countries and is therefore very important to avoid technical barriers to trade.
7. As an interim measure until harmonized or aligned standards can be achieved, APEC economies should use conversion algorithms and modelling methods where possible to reduce technical barriers to trade where incompatible energy performance testing standards exist and cannot be amended in the short term.

The APEC Steering Group on Energy Standards proposed in its final report in 2001 (after 4 years of deliberations) a comprehensive plan for reaching the alignment of test standards envisaged by APEC

leaders. It is critical that these recommendations be implemented by the relevant bodies in a timely fashion.

3. Commitment to benchmarking progress

Measuring progress by benchmarking is essential to the successful implementation of energy standards and labelling programs. A key objective of the benchmarking will be to assess progress in reducing barriers to trade in energy-efficient products and equipment, created by inconsistent, or un-harmonised energy test procedures and MEPS requirements. APEC economies should provide data about their own program in order to assess their progress against their own performance criteria, and compared to international best practice. The experts considered that data along the following lines would demonstrate economy efforts to give effect to the vision:

1. The range and average efficiency levels of model types for the main energy-using appliances and equipment within the economy.
2. The actual MEPS levels set for energy-using appliances within the economy, compared to other economies regionally and internationally (taking into account differences in test methods where applicable).
3. The energy performance test protocols referenced in that economies MEPS and labelling programs, including the number or percentage of those protocols that are:
    a. identical with,
    b. substantially in accordance with, or
    c. not in accordance with international test protocols.
4. The percent of products traded (local production, imports and exports) that are covered by:
    a. international test protocols,
    b. international MEPS levels,
5. regulated for energy efficiency in APEC economies. This data would update the 1997 APEC Trade Flows study prepared for the Steering Group on Energy Standards, benchmarking improvements over time.
6. The percent of energy performance test results for MEPS or labelling compliance carried out by test laboratories within and outside the economy.
7. The degree of convergence between the MEPS levels within an economy and the MEPS levels of its main trading partners.

4. Commitment to international action and co-ordination

APEC economies cannot alone deliver the international vision necessary to unleash the full potential of these programs. APEC however can adopt the lead to demonstrate to other economies what is achievable:

1. APEC and other international agencies should work to increase the visibility of standards and labelling programs as a crucial way of achieving substantial efficiency gains and greenhouse gas abatement.
2. Each APEC economy should endorse the package of measures comprising the vision and road map as key parts of the APEC EWG (Energy Working Group) Pledge and Review

initiative and encourage nations outside APEC to similarly adopt the vision and road map. As expressions of that commitment, each APEC economy could:

a. support the further development of the APEC Energy Standards and Labelling Cooperation Initiative, as endorsed by APEC Energy Ministers in their Fifth Energy Ministerial Meeting in Mexico City in July 2002,
b. urge international agencies to fund increased co-ordination on energy standards and labelling programs through strategic projects that have clear objectives, and should provide tangible outcomes,
c. encourage the use of APEC's established International Facilitation Assistance Teams (IFAT) as a practical means to assist developing economies learn about effective standards and labelling programs,
d. encourage the funding of a Best Practice Guide on how to implement energy standards and labelling programs. The Guide could provide specific and detailed case studies of the process and impact of successful programs from a range of industrialised and developing economies. The Guide could also provide specific case studies for how energy standards (e.g., testing protocols, MEPS, and labelling categories) are used as the basis for complementary policy measures programs (eg fiscal such as grant and rebate schemes for high-efficiency equipment).

3. APEC should call on other international bodies with responsibilities in this field to take action and provide the funding necessary to deliver the vision. The experts noted that the IEA proposal under the IEA DSM Implementing Agreement on Energy Standards Cooperation could be a key means to advance the necessary enhanced co-operation and co-ordination between the EU, APEC and North American regions.

The Milestones

The experts considered that The APEC Expert Group on Energy Efficiency and Conservation should encourage APEC to fund several demonstration projects showcasing the capacity of the vision and road map to deliver energy efficiency and greenhouse abatement. These short-term project activities could be commenced within the few years for delivery no later than in the next five years. These projects would verify that:

- the aspirational vision propose for all standards and labelling programs,
- supported by the road map of recommendations identified in this report can deliver real greenhouse abatement and energy conservation benefits,

The first milestone projects might be chosen from amongst the following:

Overarching

- Initiate and develop a strong foundation for the APEC Standards Notification Procedure, by working directly with Country Contacts, educating them on APEC-ESIS, and regularly notifying technical experts and policymakers about progress toward achieving harmonization of test procedures and more effective energy standards and labeling programs.
- Develop APEC-wide and international benchmarks for MEPS and energy labeling programs. Conduct analyses to show the relative level of MEPS and energy label categories;

past progress of MEPS and labeling programs; and the impact and cost effectiveness of MEPS and energy labeling programs. These benchmark comparisons can be tracked on an ongoing basis to show progress for any particular country relative to itself, or to other APEC economies.

Testing

- Lighting ballast testing – the use of the APEC developed method-of-test standard (now published as an Australian / New Zealand standard) as a new IEC world standard;
- Air conditioner testing – implement the 1999 APEC colloquium recommendations to include a range of part-load test points within the ISO testing standard that can better reflect the performance of inverter technology in real use;
- Inclusion within the ISO test standard for air conditioners mathematical corrections to account for small deviations in indoor and outdoor conditions as recommended at the 1999 APEC colloquium;
- Three-phase electric motor testing – the rapid world wide adoption of the recently published IEC method of test;
- Standby power testing – international survey and APEC workshop to promote international co-operation and reduce barriers to trade that could arise from incompatible methods for testing of standby power losses.

Labelling

- Energy Star – an assessment of the value of this endorsement label for internationally traded products;
- Regional energy labelling initiatives – support within APEC for the sharing of ideas, resources and information, including cooperation workshops to share experience, and technical assistance to economies that are considering the introduction of labelling schemes;
- CLASP – support for and use of CLASP tools that can be used in the development and maintenance of energy labelling programs;
- Development of standardized approaches for evaluation of energy impacts and economic analysis of costs and benefits of energy programs such as S&L;

MEPS

- Regional MEPS initiatives within APEC for the sharing of ideas, resources and information;
- Identify products that are subject to MEPS within the APEC region and undertake a comparative study to assess the relative MEPS levels and requirements, with a view to making recommendations for future levels for consideration and adoption by APEC economies (eg moderate, stringent).

Section 2: Outcome of the workshop – conclusions and reasoning

The experts agreed that meeting a common international vision for energy standards and labelling programs would help achieve tangible and durable end-use energy efficiency and greenhouse abatement gains in a number of ways. In particular, they concluded that:

- There is a continuing and growing need for facilitation and information transfer among funders, economies, and stakeholders who are implementing energy standards and labelling programs *in parallel* – often with little co-ordination and sharing of methods and lessons -- in scores of economies internationally. APEC's ESIS, and its Standards Notification Procedure, is one tool that can be used to reduce duplication and misalignment of different and incompatible energy standards being developed simultaneously in many economies around the world.

- Beyond sharing information about the content of national programs, there is a need for a shared vision of where policies and programs based on energy standards are likely to develop and expand in the future. The development of an international consensus view on the ultimate goal of standards and labelling programs will naturally lead to recognition of the importance of enhancing regional and international co-ordination.

- Such a common vision would greatly assist all stakeholders and officials from developing countries who want to design or implement energy standards and labelling programs; multinational and local product suppliers seeking information on their future research and development priorities; international organisations and funders wanting to better direct resources to areas of most need and likely success; and bodies like the APEC Expert Group on Energy Efficiency and Conservation who have a charter to enhance their member economies' energy-efficiency and climate change programs .

8. There has been a lack of formal strategic co-ordination in the past, which has limited the effectiveness of standards and labelling programs, and there is a clear need for much more active, strategic and visionary co-ordination on energy standards by organisations and gatherings that transcends national boundaries.

9. The geographical coverage, stringency levels, and product class coverage of policies and programs will need to dramatically increase in order for developed economies to meet their greenhouse targets. An inspirational vision would help secure the political commitment to deliver this increase.

10. Energy standards and labelling programs created for environmental and energy conservation goals have been accused in world trade fora as potential instruments creating international trade barriers when the opposite is the goal. A clear visionary statement of the ultimate goal for standards and labelling programs would help communicate to international trade bodies that such is not the goal of energy standards and labelling programs, and also identify and overcome any unintended transitory trade issues, if they exist, and point the way to averting the creation of barriers during each country's implementation of standards and labelling programs.

Section 2: Outcome of the workshop -- findings

The experts noted that:

- Within the energy sector of many countries, strengthened S&L policies and programs alone could achieve around one-third of the necessary GHG reductions at a proven overall negative cost to society

- Energy performance test standards are particularly important because, in addition to being the core of Standards and Labelling programs, they underpin a broad range of policies and programs including:
    - new technology deployment programs;
    - programs to support energy audits;
    - voluntary or mandatory *comparative* energy labels;
    - voluntary or mandatory *endorsement* energy labels;
    - minimum energy performance standards (MEPS);
    - procurement policies and programs;
    - technology development programs;
    - financial or rebate programs; demonstration, marketing and market transformation programs; and
    - benchmarking activities.

- When the full suite of policies and programs based on energy performance testing are included, then such programs account for the majority of potential energy efficiency GHG reductions worldwide. These related program elements unleash the full potential of S&L programs.

- Current international or regional activities to promote co-ordination and co-operation generally occur late in the process, due to an initial lack awareness or identified need for such co-ordination, or in some cases due to perverse incentives (i.e. institutional self interest) that perpetuate this situation. Without some international benchmarking, such national schemes and responsible officials are not held accountable.

- Strong bi-lateral and regional activities to promote co-operation in energy standards have been under way in APEC, the EU, Australia-New Zealand, and North America for as long as ten years to reduce the costly and energy efficiency inhibiting impact of duplication and incompatibility of energy standards. More recently, co-operation activities have begun in the Australia-New Zealand, South Asia, ASEAN, and other regions. Modest progress has been made in alignment and harmonisation of energy performance test protocols and MEPS for a few products in some regions. Greater awareness of the extensive studies undertaken on label design will help to ensure that new label schemes utilise effective types rather than invent new types.

- Good progress has been made on bilateral and regional co-operation in energy standards through the development of ESIS, the work of CLASP and information sharing through a range of regional and international gatherings, meetings and conferences. This experience

proves that the vision is possible, at least for some products, in the near term.

Section 4: The mandate from related international initiatives

Energy consumption worldwide is growing rapidly. Some countries have experienced a four-fold increase in energy use between 1980 and 2000. Some APEC economies have peak electricity demand deficits of as much as 15 percent below existing generating capacity, largely due to rapid increases in demand for appliances and energy-using equipment such as lighting and motors.

In May 2001 in Bangkok, a meeting of Asian-based standards experts organised by the Collaborative Labelling and Appliance Standards Program (CLASP) agreed on a consensus set of policy imperatives and prescriptions as recommendations for national standards and labelling programs:

- Energy standards and labelling programs (including but not limited to energy performance testing, minimum energy performance standards, or MEPS, and energy labelling) are one of the most cost-effective ways for countries to realize their energy-efficiency goals.
- Standards and labelling programs have proven to be an effective climate change mitigation measure in all countries in which they have been implemented.
- Worldwide, the potential savings from all applicable appliance standards could reduce energy demand by nearly 30 percent by the year 2050.
- Harmonizing or aligning standards, labels and test procedures across countries results in expanded trade for manufacturers, as well as improved choices and lower energy bills for consumers; harmonization efforts should be encouraged through increased global exchange of information.
- Many countries in Asia have only recently taken note of the magnitude of the problem of standby power losses in home electronics and office equipment, which can range from 5% to15% of residential energy use. To address this problem, partnerships are needed between government and industry for voluntary agreements, research and development, and inclusion of standby power use in existing labelling programs;
- It is the right of every country to determine the appliances and equipment that are included in its national standards program and the stringency of the standards applied.
- International support has played a key role in the establishment of standards and labelling programs in developing countries through such activities as capacity building, strengthening of testing facilities, support for market research and analysis, and evaluation of impacts on manufacturers and the role of consumers in advocacy and in raising awareness.

The discussions and deliberations during and after the CLASP meeting have resulted in applications to the Global Environment Fund for support for standards and labelling programs on an international basis.

In 2002 in Johannesburg, a major feature of the World Summit on Sustainable Development (WSSD) was the announcement of voluntary partnerships. Such partnerships in the energy sector are particularly important, as energy underpins all aspects of development. Two such WSSD "Type 2 Partnerships" provide both opportunities and instruction to this workshop.

The *Energy for Sustainable Development* was submitted as a Type 2 Initiative on behalf of the Asia Pacific Economic Cooperation (APEC) Energy Working Group. This partnership seeks to showcase how voluntary regional partnerships can be utilised to achieve sustainable development objectives. This partnership is to be implemented via the APEC Energy Working Group.

The USA government also initiated a partnership entitled *Energy Efficiency for Sustainable Development.* The objective of EESD is to improve productivity and efficiency of energy operating systems in developed and developing APEC economies, while reducing waste and emissions. One of the five key focus areas within EESD is technical energy-efficiency standards.

These partnerships could provide a delivery vehicle for the proposed vision and road map discussed at the Melbourne workshop.

For nearly a decade, the APEC forum has been actively working to reduce the barriers to trade from the proliferation of different energy standards, and hence to facilitate energy efficiency improvements. APEC Energy Ministers have directed that *economies introducing or preparing mandatory energy-efficiency requirements should advise other economies of these proposals* before they are implemented. In addition, they have directed APEC to *develop a Standards Notification Procedure* to facilitate the co-ordination of the development of energy standards and technical requirements. This directive led APEC to develop an interactive, web-based Energy Standards Information System (ESIS – www.apec-esis.org), a user-friendly, web-based database that has regularly updated, comprehensive information on technical standards for energy-using equipment in the 21 APEC economies.

In November 2002 in Taipei, for example, the APEC EWG *Symposium on Energy Efficiency Standards and Programs under Energy Market Restructuring*, concluded:
"There is a strong need for… energy performance standards and associated labelling programs … regardless of energy market reform." The symposium also concluded "There is a broad need for enhanced co-operation and information exchange on all aspects of standards and labelling"

In March 2003 in Melbourne, in preparation for the APEC Expert Group on Energy Efficiency and Conservation, the experts at this workshop met to build on these previous meetings and discuss in more detail a vision a road map for aggressive and effective international implementation of standards and labelling programs.

The subsequent meeting of the APEC Expert Group on Energy Efficiency and Conservation represented a key opportunity for the experts to promote the vision and road map proposals to more senior APEC officials and Ministers.

ANNEXES

List of workshop participants

Workshop program

ANNEX B
Finding the Best Way Forward:
Building International Cooperation on Standards and Labelling

Report on the Special Workshop on *Vision, Strategy, and Actions Needed to Enhance International Cooperation in Energy-Efficiency Standards and Labelling*. Organized at the 3rd International Conference on Energy Efficiency in Domestic Appliances and Lighting (EEDAL). Turin, Italy. Wednesday 1 October 2003.

Abstract

Nearly 50 international participants from 16 countries[1] attended a workshop in Turin, Italy to discuss prospects for increased international coordination and cooperation between governments and agencies developing and operating appliance labelling and minimum energy performance standards (MEPS) programs.

- It was generally agreed that the first and most productive area for exploring alignment is in energy performance test procedures, since this would facilitate trade and would allow consistent comparison of energy performance and energy efficiency.
- It was observed that test standards, MEPS, and labelling programs fit within a larger framework of policies (sustainable development, climate change, etc.). It is important to understand the policy framework within each country or region, in order to build strong support for standards and labelling policies and programs at a high political level.
- It was agreed that benchmarking product efficiencies, MEPS, and labelling tiers across economies is a very important and useful tool for promoting international best practice.
- The idea of an international coordination framework was suggested, in order to facilitate exchange of information and work plans on initiatives developed by different fora (APEC, IEA, EU, Mercosur, ASEAN, etc.) on standards and labelling.
- There was general agreement on the need to strengthen and enhance existing networks of communication between agencies and individuals involved in development of energy standards and labelling activities internationally.

Introduction

Nearly 50 international participants from 16 countries attended a workshop in Turin, Italy to discuss prospects for increased international coordination and cooperation between government programs to develop minimum energy standards and energy labelling programs for appliances. The workshop was co-sponsored by the Australian Greenhouse Office (AGO) and APEC's Energy Standards Information System (ESIS)[2]. It follows on from a workshop on the same theme, attended primarily by Asian region experts, held in Melbourne, Australia in March 2003 (see Annex A).

[1] Australia, Belgium, Brazil, China, Chinese Taipei, Czech Republic, Denmark, France, India, Italy, Netherlands, New Zealand, South Africa, Thailand, United Kingdom, and the United States

[2] See www.apec-esis.org

Purpose of the Workshop

This special workshop was designed to create an informal environment for international participants at the EEDAL conference to share information about their experiences, and to stimulate discussion about an overarching vision, strategy, and actions needed for international cooperation in energy-efficiency standards and labelling. The main objectives of the workshop were to:

- *Stimulate closer links* between desires of policymakers and what happens at the technical and programmatic levels. Standards and labelling policy is developed at several levels, and there is often a disjuncture between the policy level and the technical standards and program implementation levels.
- Encourage countries to coordinate their programs and look at *international best practice*
- Provide an opportunity for *informal dialogue* outside of formal channels (i.e. EU, APEC, IEA, etc.)

The workshop commenced with presentations by four officials and experts involved in international alignment efforts, covering technical issues in alignment and convergence; regional initiatives; and information and benchmarking.[3] This was followed by a moderated discussion among all participants.

Harmonization and Alignment

It was generally agreed that the first and most productive area for exploring alignment is in energy performance test procedures, since this would facilitate the ability to manufacture and sell products across different markets, and to allow consistent comparison of energy performance and energy efficiency.

Much of the discussion focused around the potential for alignment of test procedures and the positive impact that this would have by reducing barriers to trade and lowering the costs of energy-efficient products.

Several participants pointed out that "harmonization" is a loaded term and can mean different things to different people. For some, harmonization has a legal meaning, which implies that countries will be forced to follow the same procedures. It is preferable to use terms such as "alignment" or "compatibility" when discussing efforts to bring different countries test procedures to the point where they are consistent, and product test results and efficiency levels can be readily compared.

An important impetus for alignment is to reduce barriers to trade, since appliances are internationally traded and having to retest a product for export to different countries represents a burden.

It was suggested that there are (a) cases where alignment may not be necessary; (b) cases where it would be very difficult; and (c) cases where it is achievable and there would be clear regional and global benefits from harmonizing. The focus should be on identifying and capitalizing on this last category of positive opportunities.

It was generally agreed that it is important to contain the proliferation of inconsistent and uncoordinated test procedures and policies.

For internationally traded products, the default should be to adopt test procedures of the

[3] The presentations will be made available on the ESIS web site: www.apec-esis.org.

International Electrotechnical Commission (IEC) and the International Standards Organisation (ISO) as the testing standard. It was noted that under WTO rules the IEC standard prevails in the case of a dispute. Of course, some countries are developing labelling and MEPS programs for products not yet covered by IEC/ISO standards.

Alignment is occurring within trading blocs. For example, it was pointed out that for the 10 new member states that will join the EU, there is no need to discuss which test standards, MEPS and labelling requirements are best, since the EU standards will apply to all countries. The issues are more open in countries and blocs that are implementing new programs, or where alignment rules are not yet agreed.

One participant noted that India is establishing an energy labelling program, and that the Indian policymakers have been reviewing information on energy labelling programs in many other countries. One of the first key questions was whether to adopt the U.S., IEC, or Japanese test standards. Indian policymakers would like to know the rationale behind the differences in test procedures in order to make informed decisions on which to adopt. Ultimately, the decision depends not only on the technical merits of a standard, but on many factors, including the standards in use within the region in a country's main trading partners.

A participant wanted information about the tools available for comparing the results of different energy performance tests. It was pointed out that work has been done in APEC and other fora to develop conversion algorithms to allow comparison of test results for products tested according to different test procedures.[4]

Policy Development

There is often a disjuncture between broad policy goals and the test standards, MEPS and labelling protocols developed by technical experts. One problem is that senior energy efficiency policymakers do not sit on the technical standards committees.

One policymaker pointed out the importance of timing in the development of standards in relation to overall energy policies and plans. Policymakers need to be confident that the test standards needed to underpin energy-efficiency programs will be in place as and when products need to be addressed. They also need to have an idea of the pace and number of products to be regulated as part of the overall energy policy.

This led to the observation that test standards, MEPS and labelling fit within a larger framework of policies (sustainable development, climate change, etc.) It was stressed that it is important to understand how they fit into this policy framework within a country or region. It was suggested that it would be useful for the ESIS database to be broadened to map and track these overarching policies and policy frameworks.

One of the barriers to developing common standards is cost. For example, the European test standard for washing machines required $5 million to develop. Participation in standards development is voluntary, and this is one reason it takes so much time. If governments were able to allocate budgets for the standard development up front, standards could be developed within a year.

Test variability and tolerance are also important issues. In Europe, there has been discussion over the accuracy and reliability of the energy label data. Lawsuits have been filed over alleged false representation on the label. It turns out that the tolerances in the test and the label algorithms are

[4] APEC has carried out studies of the potential for conversion algorithms for ballasts, refrigerators, and air conditioners. Work has also been done by David Cogan, Anibal Almeida and LBNL to develop algorithms to compare the results of motor energy performance tests between the IEC and IEEE test procedures.

large, and that it is thus very difficult to prove deliberate misrepresentation.

One policymaker pointed out the problem of resources and how this could be overcome by building strong support for standards and labelling policies and programs at a high political level. If there is a commitment at this level, the standards will get done.

The ultimate goal of standards and labelling policy should be to maximize the rate of innovation in product efficiency and performance.

Data and Information on Standards and Labelling

There is an increasing amount of data on the internet. For instance, the U.S. Federal Trade Commission will release all of its information on EnergyGuide labeled products, and the U.S. EPA will make performance data on Energy Star complying products available on the web. Japan has made available much of the data for its Top Runner program. Australia provides a great deal of information on its energy labelling and MEPS processes, and details of all registered products at www.energyrating.gov.au.

It was recognized that there is a need for a database covering which countries are using which test procedures. It was pointed out that it is already possible to do this on APEC's Energy Standards Information System (ESIS), which has fairly complete information about test procedures, MEPS and labelling programs for the 21 APEC economies. Plans are under way to expand ESIS to include non-APEC economies, and CLASP has agreed to merge its international database of energy standards and labelling programs in order to develop a broader international database.

International Best Practice

It is possible to move toward alignment of MEPS levels even in the absence of common test procedures. In Australia, the initial MEPS level for refrigerators was set at a low level, but the government has adopted a strategy of matching "World Best Regulatory Practice" over time. In 2005 Australia will adopt new MEPS levels equivalent to the U.S .2001 MEPS. This is a major step, in that it would exclude 95% of the models on the market today. The MEPS development process required time and money, in particular flying U.S. refrigerators to Australia in order to carry out comparison testing.

A common question asked by policymakers is whether the introduction of labels has led to an energy impact. The difficulty in obtaining evidence of impacts may have delayed the introduction of energy labelling in South Africa. It was agreed that advocates, consultants, etc. need detailed case studies showing what the impact of a labelling or MEPS program has been for a particular appliance in a particular country, or range of countries. There is also a need for better collection, dissemination, and publicity of the considerable evaluation material that already exists.

It is useful for agencies planning the introduction of new appliance programs to review international practices as they develop their programs. The Association of South East Asian Nations (ASEAN) has agreed to develop an endorsement label for energy-using products, starting with ballasts for fluorescent lamps. Early on, the work may have focused too much on the label design and not enough on the underlying test procedures or the need for consistency across countries. ASEAN officials responsible for label development recently went on a study tour to Europe to assess EU experience in designing, managing, and implementing its energy labelling program.

It was agreed that benchmarking product efficiencies, MEPS, and labelling tiers across economies is a very important and useful tool for promoting international best practice. ESIS is one tool for assisting international comparisons and benchmarking, but for the ESIS database and

similar comparison tools to be useful, they have to be dynamic and up-to-date. They have to establish themselves over the years, and then people will have an interest in both using them and regularly updating them. One participant pointed out a pitfall of benchmarking – the uneven quality of test labs and results. Benchmarking should be based on data collected from accredited test laboratories.

It was noted that in less developed countries local manufacturers may be put out of business if stringent MEPS levels are adopted (assuming they are enforced). In addition, energy standards and labelling will not be a high priority for the poorest countries, which must focus on dealing with more urgent problems related to energy availability, public health, water quality, etc.It was pointed out that there are significant opportunities for harmonizing qualifying levels for endorsement labels, even if the labels are different in different countries/regions. The case of compact fluorescent lamps (CFLS) produced in China was raised. The Chinese certification agency and national testing laboratory are both interested in harmonizing the China certification levels with international programs such as the Efficient Lighting Initiative (ELI) and Energy Star. This would allow one-stop testing of CFLs produced in China, so that they could be tested and sold in China with the China certification label; exported to the U.S.and sold with an Energy Star label; and sold in other countries with the ELI label.

It was agreed that while APEC has taken the lead in developing the ESIS database, the need for better international coordination and cooperation is truly global. To take just one example, it would be very useful for international funding agencies to have use of a tool like ESIS to help coordinate their assistance efforts, projects, and initiatives, reduce overlap, and find synergies. The idea of **an international coordination framework was suggested, in order to facilitate exchange of information and work plans on initiatives developed by different fora (APEC, IEA, EU, Mercosur, ASEAN, etc.) on standards and labelling.**

ANNEX C
What's Next? Identifying Steps for Improved International Cooperation on Standards and Labeling

Report on the Special Workshop on *Vision, Strategy, and Actions Needed to Enhance International Cooperation in Energy-Efficiency Standards and Labeling*, organized at the APEC[1] Seminar on Cooperation on Energy Labeling, Kaohsiung, Chinese Taipei, November 17 –19, 2003. Sponsored by the Australian Greenhouse Office.

Abstract

Twenty-two participants from 13 economies[2] attended a workshop in Kaohsiung, Chinese Taipei to discuss prospects for increased international coordination and cooperation between governments and agencies developing and operating appliance labeling and minimum energy performance standards (MEPS) programs. This was the third in a series of "International Standards Vision" workshops organized in 2003 to identify a road map for international cooperation in energy efficiency standards and labeling.[3] At the Kaohsiung workshop, there was broad agreement on the need for increased and enhanced cooperation among economies in order to increase the overall program effectiveness and accelerate energy savings. The report below highlights the main findings of the discussion across six main topics: cooperation; harmonization and alignment; test standards and procedures; consumer marketing; program approaches; and manufacturer involvement.

Harmonization and Alignment

Pick an easy success. When aligning or harmonizing energy performance test procedures, it is important to pick a product(s) with a high likelihood of an easy success (pick winners). For example, it is easier to align test procedures for air conditioners (based on ISO 5151) than for refrigerators.

Harmonize to a good test procedure. Harmonization should not be pursued just for the sake of harmonization. It is not helpful to harmonize to a poor test procedure that does not reflect product performance or where there are problems with repeatability or reproducibility. In addition, harmonizing to a bad test procedure can stifle innovation as they can penalize good design or features. Poor test procedures can also be tricked by smart products to show lower energy than would be found in normal use. Good test procedures should be as generic as possible and take into account the needs of different regions and product designs. (See "Limitations of test procedures" below.)

Subregional harmonization. It was suggested that perhaps some harmonization efforts should be based and patterned on trade regions. For example, it may be more practical and useful to harmonize test procedures for some products within ASEAN than across the entire APEC region.

Convergence of test procedures. The opportunity for convergence varies by product class. Has to be taken case by case. For some universal products, like power supplies, it may be

[1] Asia Pacific Economic Cooperation, an intergovernmental network

[2] Australia, China, Chinese Taipei, Hong Kong, Korea, Malaysia, New Zealand, Philippines, Russia, Singapore, Thailand, United States, and Vietnam

[3] The first workshop was held in Melbourne, Australia in March 2003; the second in Turin, Italy in October 2003. Background papers on the results of the first workshop can be found on the APEC Energy Standards Information System web site: www.apec-esis.org.

possible to agree on harmonized test procedures as well as threshold levels for an endorsement program.

Cooperation

Data clearinghouse/portal. There was a strong demand in the group for data, facts, analyses and case studies in order to help each other perform better in our own economies. There is a need for a common repository for the information on standards and labeling. There is an agreement, within APEC, that ESIS is such a useful common tool.

Expand and strengthen ESIS. There is agreement within APEC that it would make sense to expand ESIS to include more economies, if there is an offer and funding available. APEC economies must commit to make ESIS sustainable by having their representatives review the data regularly and ensure it is updated and thus useful for other economies.

Coordination framework. The current ad-hoc arrangement of international cooperation on standards and labeling information exchange is inadequate. There is a need for an international coordination framework to exchange information. This framework would facilitate information exchange across trading blocs and could serve as both a worldwide dissemination tool.

Sub-regional cooperation. There is a need for cooperation, information, and sharing information at sub-regional level as well. For example, APEC has a role, for example with ESIS, but ASEAN can also strongly benefit from its own sub-regional cooperation and initiatives. Exchange of information between regional groupings can be used to minimize trade disruptions.

Expert network. People in the field need answers to their questions. These questions are related to the specific problems and issues they face, and they often require customized answers. It was proposed, for example, that there could be "Ask the Expert" section, or a "Membership Club" on the ESIS web site or other information-sharing tool. Experts could be made available to answer questions on a retainer basis. For example, for ESIS, this service could be a quid pro quo for Key Contacts – a service that they get in exchange for volunteering to review a country's data.

Need to be inclusive. Cooperation schemes (whether they be for information-sharing, test procedures, etc.) should be inclusive and not exclusive. In general, there should be an open-door policy, so that any economy that wants to join in can join in. There is a pressing need to have share information and details about technical standards and programs shared and to regularly communicate as regulators design and implement programs.

Link the information to action. Exchanging information is very good, but it is hard to get people to pay for it, since the benefits are often not very tangible. The information gathering and exchange needs to be linked to some additional activity. In APEC, the updating of ESIS has some urgency because of the Ministers' mandate to establish a Standards Notification Procedure. A tool like ESIS can be made more vital and valuable if the users see some tangible benefit. For example, adding comparative tools like benchmarking could generate more interest.

Test Standards and Procedures

Limitations of test procedures. Test results, even if adjusted, say for ACs or refrigerators in different economies, do not reflect what actual use in situ. But a good test procedure should account for differences in local conditions, etc. to remove those differences. A good test procedure should also encourage manufacturers to innovate and improve product performance. Unfortunately, some key international product test methods do not take into account some important factors such as climate or consumer conditions.

Participation on international standards committees. There is an urgent need for broader participation in developing international test procedures (i.e. on the technical committees that formulate IEC and ISO standards). Currently, European experts and European concerns tend to dominate the IEC and ISO technical committees because of their higher levels of participation. On a general level, it is important to involve policy people in the technical committees, because they are the ones who know how the test procedures are used to support the policy. In addition, it is urgent for experts from Asian economies to participate more in the relevant international standards committees. The benefits from such participation would be two-way – the IEC or ISO standard will better reflect the needs of APEC Economies, and the economy will also benefit by accessing and using the improved standard.

Usefulness of algorithms. Algorithms can be useful for comparing product performance across a range of conditions. For many products, an algorithm can allow testing to an international test protocol, but then translating the results to account for performance under local conditions (e.g., different usage patterns or temperature conditions). Algorithms are particularly powerful for products where usage patterns and climate have a strong impact. While there are a range of algorithms that are available for use already (water heaters, air conditioners), some of these are also only in the early development phase.

Refrigerator test procedures. Refrigerator test procedures are very hard to harmonize because different countries use different standards, different temperatures, with and without test packs. The Singapore participant mentioned that Singapore uses ISO test procedure for refrigerators, but Singapore chooses a different ambient temperature from what most countries use (ISO tropical), and this means that importers often need to retest the refrigerator.

Air conditioner test procedures. Air conditioners are a good option for implementing algorithms, since models to simulate air conditioner energy performance under a range of different climate and use conditions are already available and this could reduce overall testing requirements.

Economies need technical assistance. Economies developing their own test procedures and participating in international standards processes often need technical assistance. It was suggested that it would be useful to have targeted assistance (e.g., through APEC) in interpreting practical aspects and impacts of proposed IEC and ISO test procedures. It was also suggested that a tool like ESIS could be used to link countries up with technical experts in various areas (e.g., testing procedures, specific products, etc.)

Consumer Marketing

Market acceleration. A big question faced by regulators is how to accelerate and activate MEPS and labeling programs. Regulators need to understand why manufacturers are often not interested in advertising energy efficiency and best practice. There is a need to somehow tap mass marketing and advertising experience to stimulate energy efficiency standards and labeling programs.

Need for consistency and continuity. Energy efficiency and environmental conservation campaigns (e.g., water conservation) campaigns tend to stop and start, spurred by a crisis and stopping or slowing down after the crisis has abated. This lack of continuity makes it hard to build momentum. To overcome this problem, governments need to spend money for campaigns to raise public awareness of benefits and motivations for energy efficiency where consumer decisions have an influence on the purchase or use of a product. However, awareness is not enough, if consumers do not know why there are labels, or what the benefits are, they will not use the label to make a purchase decision.

Activate the consumer. Consumers can have a great impact on the acceleration of the

S&L programs. But this will not happen by itself – there is a need for extensive consumer education and outreach. But this outreach cannot be done in isolation – it has to be carried out IN TANDEM with a labeling program that helps them to identify which products they should buy and not buy.

Select and focus promotional efforts. There is little point in promoting mandatory efficiency standards to consumers, since all products have to meet the requirements in any case, and there is nothing the consumer can do in response. Similarly, publicity on the existence and magnitude of standby power only distresses consumers, since they feel powerless to improve their current situation.

Program Approaches

Program design templates. Participants expressed a need for a model or template(s) for standards and labeling[4] programs that could be used as reference for countries when they develop their own programs. They could be regionally based and for countries at similar stages of development. Vietnam, for example might benefit from closely studying the stakeholder participation process being developed and used in Malaysia.

Start with an "easy win." Economies might want to start with a simpler product type, which would have lower testing costs, etc. This can make it easier to have a quick success. For example, programs for CFLs and ballasts are easier than programs for refrigerators, air conditioners, or electric motors.

Encourage innovation. Policies and programs should be positive, encouraging manufacturers to innovate and stimulating consumers to demand energy-efficiency products. Demand for energy efficient products by consumers can motivate manufacturers to improve the energy efficiency of all of their products when they have the opportunity to do so.

Menus of efficiency levels. To reduce the need for each country to develop entire standards and labeling programs from scratch, it could be useful to develop program menus. For example, it could be possible to develop "families" of levels for minimum energy performance standards (MEPS) that to pre-define a range of efficiency levels for a particular product. This would provide a menu of MEPS levels, and economies could choose to adopt a level appropriate for their conditions at a timing that suits their program plan. Such a system would provide both a common set of test procedures and a basis for defining energy efficiencies within the product type.

Need for mandatory labeling. It was recognized that voluntary labels can effectively stimulate the market by spurring manufacturers and consumers to produce and purchase higher-efficiency models. However, two points were made: (a) for consumers to buy energy-efficient products, there needs to be a common and reliable way of comparing product energy performance for ALL products; and (b) unless labeling is mandatory, there is a high likelihood that consumers of lower cost, low-efficiency products will not be informed that the products they purchase waste energy.

Idea of a disendorsement label. Australia is experimenting with the idea of a "disendorsement label," which would provide consumers with a signal for products that are real energy wasters. This approach has the advantage of putting costs onto only those products and manufacturers with poor energy efficiency products rather than all stakeholders. The disendorsement label is likely to have a powerful negative effect in the market, steering

[4] Throughout this workshop summary, the term "standards and labeling" is used to refer to the range of activities associated with energy performance test procedures, minimum energy performance standards, and energy labeling programs.

consumers away from products with the lowest energy efficiency.

The Australia-NZ ballast standard. At the APEC ballast meeting in Korea in 1999, it was realized everybody was basically measuring the same thing, but using the numbers to do slightly different calculations. Based on the recommendations from this APEC meeting, Australia and New Zealand developed a new ballast test standard. The idea is that this could be picked up and adopted as an international test standard within IEC.

The Malaysia stakeholder process. Malaysia has targeted several products for MEPS and labeling programs. These include fans, electric motors, refrigerators, ballasts. But the Malaysian participants stressed that what is important is not choice of products but rather on the process of program development and building the capacity among the regulators and consultants designing and implementing the programs. Once the process works, they can adapt and use it for other products. It is important for countries to learn themselves how to make the program work within their own political structure and system. This cannot necessarily be "learned" from outside.

Eastern Europe. It was suggested that there is a need for a specially focused regional program to introduced and promote standards and labeling in the Economies in Transition of Eastern Europe.

Use the Kyoto mechanism. The Kyoto protocol should be used to benefit producers of energy-efficient equipment. Policymakers should start thinking now about how Kyoto can be used to stimulate standards and labeling programs and in particular to provide incentives to manufacturers of energy-saving equipment.

Manufacturer Involvement

Broaden the discussion. Regulators and consultants working on standards and labeling need to go outside their normal peer group and talk to manufacturers. There is an urgent need to involve them more in the process of how to better coordinate harmonization, how to accelerate development of standards and labeling programs, etc.

Examples of involvement. The North American Energy Working Group (NAEWG) will have a workshop in March 2004 to tell government officials what successes they have had in harmonization and what further barriers they face, and how the governments could help overcome those barriers. Similarly, Australia will have an international workshop on air conditioner energy efficiency in March as 2004 well, which will highlight benchmarking of regional data, and which will involve manufacturers, distributors, and installers.

Comparison to Earlier Vision Workshop

The outcome of this workshop is in broad general agreement with the earlier "Standards Vision" workshops held in Melbourne, Australia and Turin, Italy earlier this year. A primary common theme is the need for increased, systematic sharing of information and data, through database/web site tool such as ESIS. This information exchange should include not only baseline information on standards and programs, but also dynamic and comparative tools such as international benchmarking of product efficiencies, MEPS, and labeling levels. The overall conclusion from the series of three workshops is that the participants have proposed a number of specific technical and policy recommendations that can improve the efficiency and results from energy standards and labeling efforts. The recommendations cover information sharing; benchmarking of policies and efficiency levels; harmonization and alignment, primarily of energy performance test procedures; the need for development of an international coordination network; and the need to link standards and labeling programs to the overarching energy policy framework of which they are an essential component.

ANNEX D
A Vision for Standards and Labeling

Notes from a Workshop on A *Vision for Standards and Labeling.* Workshop organized by Australian Greenhouse Office and held at ACEEE Summer Study on Energy Efficiency in Buildings, Asilomar, California. 23 August 2004.

Abstract

Twenty-six participants from 7 economies[1] attended a workshop in Asilomar, California to discuss prospects for increased international coordination and cooperation between governments and agencies developing and operating appliance labeling and minimum energy performance standards (MEPS) programs. This was the fourth and final in a series of "International Standards Vision" workshops organized in 2003 and 2004 to identify a road map for international cooperation in energy efficiency standards and labeling.[2] Workshop participants agreed that in general, industry want harmonised test methods as it makes their job easier. There is a need for government commitment to adopt international test methods when these are suitable. However, one problem is that international test procedures tend to become out of date very quickly when there is rapid technology change. Participants agreed that it could be helpful to engage manufacturer associations to assist in international harmonisation of test methods. It was also agreed that new products without established test methods (e.g., standby power, set-top boxes for TVs) provide a particularly good opportunity for harmonisation.

Meeting Notes

- US companies moving product manufacture to China – international methods more import as a larger proportion of production is traded.
- Shane Holt (Australia) outlined the findings of a recent international benchmarking comparison of air conditioner MEPS (du Pont paper).
- There was some discussion on harmonisation of test methods for ballasts and the fact that there is no IEC standard published at this stage.
- In a general sense, industry want harmonised test methods as it makes their job easier.
- Battery charges and power supplies – these new products provide opportunities for early harmonisation of test methods and possibly MEPS levels.
- There is a need for government commitment to adopt international test methods when these are suitable.
- Would it be helpful to engage manufacturer associations to assist in international harmonisation of test methods?
- Maybe some possibility of engaging multi-national companies as they have an interest in harmonisation. However, not all companies have a global view.
- There is an issue of international test procedures becoming out of date very quickly where there is rapid technology change.

[1] Australia, Canada, China, Germany, Netherlands, Norway, and United States

[2] The first workshop was held in Melbourne, Australia in March 2003; the second in Turin, Italy in October 2003; and the third in Kaohsiung, Chinese Taipei in November 2004.

- There is an option for simulation for air conditioner performance which is a mixture of physical testing and simulation for different conditions.
- Water heater simulation is also an option (mixture of testing under limited conditions and simulation of actual use). In Europe there has been discussion on energy labelling for water heaters but there is resistance to a simulation approach to determine energy consumption under actual use conditions.
- How will the international alignment process begin? What is the trigger?
- Governments will continue to make decisions on standards and labelling test methods, but more information on harmonisation options will help them to move towards international methods.
- Mike McNeil (USA) said there should be checklist of acceptable test methods which are suitable for widespread adoption.
- Develop a check list of products and test methods which are suitable for standards and labelling programs.
- Identify separate types of test methods in the international arena: international methods are OK, international products where there is no test method, international test methods need work to make them globally acceptable – get coordination international inputs.
- Need criteria to develop priority products and criteria for harmonisation and development of standards and labelling programs.
- Anita Eide (Norway) wondered how such an international development program could be funded? It is unclear at this stage.
- Manufacturers often have a vested interest in not changing test procedures as it may protect their current designs or even benefit patents in some cases.
- Agreed that we should encourage MEPS levels and their rapid development internationally.
- It was noted that the interests of all stakeholders are not aligned so not everyone will necessarily have a natural vested interest in harmonisation.
- Need agreement on overarching principles and products that could be used as examples.
- Shane Holt (Australia) provided a recent example of the national energy labelling program in Australia.
- It was agreed that new products without established test methods provide a good opportunity for harmonisation.
- It is important to have test methods that characterise the product performance over a range of likely uses.
- Need to concentrate on development of test methods and standards and labelling program for products that are internationally traded.

Notetaker: Lloyd Harrington, Australia

Workshop Participants

Bryan Berringer, USA
Peter Biermayer, USA
Stephanie Campbell, USA
Robin Clark, USA
Andrea Denver, USA
Anita Eide, Norway

Christine Egan, USA
Andrew Fanara, USA
Lloyd Harrington, Australia
Shane Holt, Australia
Phil Degens, USA
David Calabrese, USA
Hans Hertle, Germany
Michael McNeil, USA
Michael Messenger, USA
Tienan LI, China
Jim Mapp, USA
Steve Nadel, USA
Hans-Paul Siderius, Netherlands
John Stoops, USA
Christine Tam, USA
James Termin, USA
Steve Wiel, USA
Linda Wigington, USA
Anne Wilkins, Canada
Ruiying Zhang, China

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