

Annex 2

DRAFT PROGRAMME OF WORK

**IMPLEMENTING AGREEMENT FOR A CO-OPERATIVE
PROGRAMME ON EFFICIENT ELECTRICAL END-USE
EQUIPMENT
(4E)**

January 2008

1. INTRODUCTION

Following a definition workshop in March 2007 and a preliminary Executive Committee meeting in July 2007, the first Interim Executive Committee meeting of the proposed IEA Implementing Agreement for a Co-operative Programme on Efficient Electrical End-use Equipment (4E) was held 8-9 November 2007.

At this meeting a Strategic Plan and the legal text of the Implementing Agreement were agreed upon. In addition, draft descriptions of proposed Annexes to the Agreement were discussed and countries stepped forward to take the lead.

The present draft Programme of Work (PoW) concerns 4E activities planned for 2008-2012.

2. SCOPE AND OBJECTIVES

2.1 Scope

The 4E will specifically focus on electrical end-use equipment. Industrial and commercial equipment as well as equipment mainly used in households is included. The 4E will focus on equipment that contributes most to the total end-use electricity consumption, such as electric motors and lighting, and will include technologies with fast growing markets shares such as set-top boxes. Further the increasing stand-by consumption is a relevant topic for this Implementing Agreement. Electric or hybrid motor vehicles are outside the scope and would be best covered in initiatives dealing with transport.

Consistent with the IEA Framework, this initiative is open to IEA member and non-member countries, sponsors and international organisations.

2.2 Objective

The Programme to be carried out shall consist of international efforts to promote adoption of government policies to encourage the use of efficient electrical end-use equipment. The Programme will provide a forum for countries and other stakeholders to:

- Share expertise and develop greater understanding of end-use equipment and policies; and
- Facilitate coordination of international approaches in the area of efficient end-use equipment.

These objectives will be met by:

- i) Collecting and sharing of information on end-use equipment technologies and programmes; and
- ii) Pooling resources for agreed-upon projects and tasks.

3. ORGANISATION

The 4E is an Implementing Agreement within the IEA Framework for International Energy Technology Co-operation. The Executive Committee of 4E is responsible for:

- Managing and leading the work of the Implementing Agreement
- Organising meetings and workshops
- Participating in international cooperation concerning efficient electrical end-use equipment
- Collecting information on end-use equipment, technologies and programmes
- Disseminating information relating to *inter alia* best practice in the energy performance of end-use electric equipment, new efficient technologies in electrical end-use equipment, benchmarking results and innovative policies.

The ExCo will elect a chairperson and one or more vice chairpersons for a period of two years. The chairperson and vice chairpersons can be re-elected. Each contracting party appoints a representative and an alternate representative. An Operating Agent will be appointed for the ExCo as well as for each Annex.

In November 2007, the Interim Executive Committee agreed to establish four initial Annexes:

- Mapping and Benchmarking
- Standby Power
- Set-Top Boxes
- Motor Systems

Furthermore, the following Annexes have been proposed for consideration:

- Lighting
- Supply Chain Agreements
- Energy Efficient Product/Service Systems

4. TIMELINE

The table on the following page outlines the activities scheduled for 2008-2012 as foreseen on basis of the first Annexes. The time line is indicative as discussions among the interested member countries have not yet been finalised. More information and details about each annex are given in the annex descriptions (see Section 7).

4E	2008				2009				2010				2011				2012			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ExCo meetings		*		*		*		*		*		*		*		*		*		*
Appoint operating agents																				
Consider new annexes																				
Mapping and benchmarking																				
1.1. Information framework																				
1.2. Criteria																				
1.3. Monitoring/review process																				
1.4. Initial subtasks																				
2.1. Information tools (web etc)																				
2.2. Channels for co-operation																				
3.1. Est. Information ressource																				
3.2. Report on global standards																				
3.3. Agreements on inf. coop.																				
4.1. Extend scope																				
4.2. Refine information																				
4.3. Global standards sharing																				
4.4. Increase awareness																				
Standby power																				
1.1. Options report				r																
1.2. 3 regional workshops				*		*		*												
1.3. Final report								r												
2.1. Review standards																				
2.2. Iden./liaise w. stakeholders																				
2.3. Annual workshops/conf.				*				*		*				*						*
3.1. Methodology/core prod.list				r																
3.2. Training workshops			*			*				*				*				*		
3.3. Collate and publish data																				
4.1. Guidelines on methodologies																				
4.2. Collate and publish studies																				
Set-top boxes																				
1.1. Develop test procedure																				
1.2. Financial/regulatory approach.																				
1.3. Demonstrate new technologies																				
1.4. Biennial forum				*						*										
1.5. Technical specifications																				
1.6. Database on EE-STB																				
Electric motor systems																				
1.1. Workshops			*			*												*		
1.2. Motor database consolidated												p							p	
1.3. Technical guide												p								
1.4. Testing centers network											p									
1.5. Instrumens for motor policy																				p
1.6. Training/capacity build.																				
1.7. Tools and guides											p									p
1.8. Energy management - industry				r				r				r				r				r
1.9. New motor technologies																				p
2.0 Progress and final report												r								r

*: meeting
p: published report
r: report

5. RESULTS AND INFORMATION PROTECTION

The 4E will deliver the following:

- A forum for information exchange and coordination between participating governments and sponsor organisations
- Dissemination of results, e.g. best practices, databases, research
- Specific information on efficient electrical end-use equipment as provided by the Annexes
- Identify and promote opportunities for international action on the basis of results from the Annexes.

6. BUDGETARY PROVISIONS

Executive Committee

The budget for the ExCo mainly consists of costs for secretarial support, organising two annual ExCo meetings (two days each) and setting up and maintaining a web site.

The budget for these activities shall be decided by the ExCo¹.

Regarding the financing of the budget, the following principles are considered and will be further decided upon by the 4E ExCo at its first meeting:

- Common funds are created by contributions from designated ExCo members
- Costs related to preparation and participation in the meetings and travel costs are covered by each ExCo member.

Annexes

Each Annex sets up its own budget and arranges financing within the framework of the rules of the Implementing Agreement. Sponsors may participate in and contribute financially to Annexes. Preliminary budgets are outlined in the fact sheets of each of the annexes (see Section 7).

¹ With 10-15 signatories, the fee is estimated to be of the magnitude of 10-15,000 EUR annually per participating country.

7. ANNEXES

7.1 Mapping and Benchmarking

Scope

Practical tools and initiatives to share information on the development of metrics, market development targets, benchmark product performance standards and policy instruments

Activities

Task 1: Mapping and Benchmarking

This activity is fundamental to the Annex. We would propose to establish an initial information set, together with an open review and planning process that would operate from day one. The essential process would be to apply gap analysis and other defined criteria to assess progress and to identify the scope and priorities for action, including:

1. Establishing and populating practical information frameworks and formats e.g. one summary overview and planning document and more detailed information frameworks (e.g. Metrics, Performance Standards, Policies, Networks). This could use the ITFSP data set for energy using products as a starting point.
2. Agree an initial set of criteria which can be applied to this information to determine the Annex work plan e.g. which are the priority products, what are the policy development lead times and where is there a need for urgent action.
3. Establish a progress monitoring and review process to agree initial priorities
4. Propose and agree initial subtasks, leaders and participants

Task 2: Communication, Outreach and Policy Support

1. Develop a public access channel (e.g. web site) and other presentational material which can be used to promote the Annex, report progress and to provide access to information and tools for policy makers and for business, For example:
 - What standards are applied via current policy instruments and schemes, compared with market averages, benchmark product performance levels;
 - Analysis of development areas, signaling where product standards are next likely to be introduced, modified or uplifted.
 - Contact points for practitioners to find more detailed information and to engage with networks and practical co-operative projects to develop metrics, dynamic performance standards and coherent policy instruments
2. Establish channels of communication with non-participating governments, business organizations and other networks with an interest in efficiency standards for energy using products.

Deliverables

Year 1

1. Establish public domain information resource covering at least [10] major product sectors
2. Produce and promulgate to relevant government and non-government organizations a report on the immediate, and longer term opportunities and mechanisms for the development and adoption of global benchmark standards
3. Agreements on information sharing protocols and other practical interfaces with existing, ongoing product policy and standards information bases such as ITFSP, APEC ESIS, GEA, Energy Star, CLASP, SEEEM (motors), IEA (information on appliance standards),

etc

Year 2 and thereafter

- Extend scope
- Refine information
- Increase rationalization and integration of global standards information sharing mechanisms
- Increase awareness and ownership by governments and by business

Participants

It is planned that all signatories will participate in this annex.

Timeline

The initial outline work programme for this Annex is expected to require activities over a period between 18-24 months.

Budget

Assuming 5-10 participants, we would propose an initial subscription of [20K EUR] for each participant in this Annex. This will cover the basic costs of the operating agent, secretariat, web site (assuming this is developed from an existing platform, for example, the ITFSP information base), essential QA (information verification processes) and internal communication with participants and reporting to the ExCo, including up to [4] review and progress meetings for each of the two sub-tasks.

Additional research, development, communication and ad hoc outreach activities will be funded in kind and by additional subscription if necessary, depending on the number of permanent signatories and partners (and, hence, the funds available). Where appropriate, this Annex will seek funding via programmes, for example, Energy Intelligent Europe. Communication activities might include, for example, presentations to governments, industry bodies, conferences and workshops; negotiation of information sharing protocols and agreements and technical development of the data-bases and web site.

7.2 Standby Power

Scope

Undertake coordinated activities in support of policies which target the reduction of standby power.

Activities

Activities to span both policy and technical aspects, divided into two work streams:

1. Support for policies to tackle standby power
2. Information collection and dissemination.

Work stream 1: Support for policies to tackle standby power

Task 1

Draw on existing policy development work undertaken by groups like the Asia Pacific Economic Community, the Asia Pacific Partnership in Clean Development and Climate and the European EcoDesign Directive to assess practical options for developing policy to address standby power.

- 1.1. Examine horizontal approaches to policy setting including options by modes, groups of appliances, functions or clusters of functions
- 1.2. Identify interim horizontal measures which may be implemented in advance of a functional horizontal approach, for example: allowances for groups of appliances, or for lowest standby power modes;
- 1.3. Identify key generic functions for electrical/electronic appliances that could be used to define a horizontal approach;
- 1.4. Monitor the development of new functions and their relevance for low power modes;
- 1.5. Identify a range of acceptable power consumption levels for each function (and any variation in modes);
- 1.6. Explain the practical application of these allowances for a range of appliances, particularly in relation to vertical specifications, and identify any exceptions which may apply;
- 1.7. Communicate findings to policy-makers;
- 1.8. Contribute to further development of relevant measurement methods.

Deliverables

- Initial reports on options adopted or advocated in countries;
- Three regional workshops (EU, USA, ASIA) to discuss the options of adopting a common policy framework across IEA member countries;
- A final report, including lists of exceptions; providing the elements of this common framework
- A process to review exceptions to the framework.

Task 2

- 1.9. Promote innovative power management and auto power down solutions for individual devices, with reference to product-specific Annexes where appropriate;
- 1.10. Monitor and promote solutions for power management within networked electronic devices, with reference to product-specific Annexes where appropriate.
- 1.11. Compare and contrast national policies especially looking at nations with policies like Japan that are successfully lowering standby power.

Deliverables

- Review international and industry standards and protocols for networked products and networks;
- Identify and liaise with major industry stakeholders (Cisco, Microsoft) and IEC;
- Organise annual workshop/Conference.

Work stream 2: Information collection and dissemination

Task 3

Encourage countries to collect data for an agreed core group of globally traded products, in order that valid international comparisons can be made of progress and so the rate of improvement or deterioration can be quantified within and between countries against the backdrop of the policy settings used in that country.

- 1.12. Hold regional workshops as required, to promote the collection of data and train those involved in measurements.
- 1.13. Collate and publish national, regional and global information, including analysis of trends, about standby power.

Deliverables

- Publish agreed methodology and agree the core list of products to be measured;
- Hold training workshops in countries or in regions to undertake measuring standby power in simple in-store surveys;
- Collate analyse and publish national, regional and global data.

Task 4

This Annex would assist the development standby power policies by maintaining information on national assessment studies, and providing guidance on how such studies should be undertaken. The relevant tasks would be:

- 1.14. Disseminate the results of national standby power studies via an open access website, workshops, etc;
- 1.15. Research and publish guidelines on methodologies for assessment of standby power consumption.

Deliverables

- Production of guidance information;
- Collate and publish summaries of national regional and global studies

Participants

Lead: Australia (with support from US).

Denmark, UK, Korea, France, Netherlands, and Switzerland also expressed interest.

Timeline					
Tasks	Year 1	Year 2	Year 3	Year 4	Year 5
Task 1					
▪ Options Report					
▪ Regional workshops (EU, USA, ASIA)					
▪ Final Report					
▪ Review process					
Task 2					
▪ Review standards					
▪ Identify stakeholders					
▪ Organise annual workshop or Conference					
Task 3					
▪ Publish methodology, etc					
▪ 1 training workshop per annum					
▪ Collate national data and publish					
Task 4					
▪ Production of guidance info					
▪ Collate & publish					

Budget						
<i>Thousand EUR</i>						
	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Conference	40		40		40	
Workshop support	20	20	10	20	10	100
Support for data collection and training	85	80	70	70	70	375
Developing country advocates who collect data	50	50	50	50	50	250
Publications	25	30	40	40	40	175
Total	220	180	210	180	210	1000

7.3 Set-Top Boxes

Scope

Currently just focused on Set Top Boxes (STB), but recommend that 4E consider expanding the area to include set top boxes and other products networked to the set top box.

Activities

Development of a Test Procedure

Recognizing the global nature of consumer electronic products, this Annex proposes the international harmonization of STBs. More specifically, this annex seeks to work towards common methods of testing and gauging energy performance in an effort to reduce the burden on manufacturers of multiple tests and encourage the growth of international markets for more energy efficient set top boxes. This activity includes the evaluation of existing test procedures, and working within the international standards development body to revise existing or to develop new test procedures such that the final product is useful to Member Countries. Final deliverable is an internationally vetted test procedure for STBs.

Financial and Regulatory Approaches to Reducing Energy Use

The goal of this activity is to develop generic approaches to overcoming market barriers which can be adapted to local conditions in Member Countries. A variety of activities will be raised during the discussion. Based on meeting participant feedback, activities within this area can be prioritized. Deliverables can include developing templates/case studies for member countries to share and act on.

Demonstrate New, Energy-Saving Technologies

The goal of this activity is to develop an energy efficient prototype STB which could inform program administrators in Member Countries.

IEA sponsor biennial forum on Energy-Efficient Set-Top Boxes and Networks

The recent IEA workshop in July demonstrated wide spread interest in reducing the energy consumption of STBs. Suggests include having a biennial forum as an opportunity to continue the dialogue with a broad range of stakeholders.

Establish Technical Specifications for Energy-Efficient Set-top Boxes

There is significant similarity when it comes to functionality and features offered in STBs in all countries. Once a test procedure is agreed to by Member Countries, data could then be gathered and it is possible to establish globally-applicable performance specifications. Specification could be used for both voluntary or regulatory programs to include procurement, deployment, and endorsement programs.

Develop a Database of Efficient Set-Top Boxes and Components

To reduce the level of duplication of effort with many countries independently surveying technologies, components, and performing field measurements, the goal of this activity is to assume responsibility for this activity. The database would need to lists of efficient STBs models and components, as well as their associated energy use.

Participants

Lead: United States

Member Countries (to be settled)

Technical consultants to member countries

STB industry representatives

Timeline

To be determined – based on feedback from member countries and proposed tasks prioritized.
Suggested timeline includes:

Development of a Test Procedure

Year 1 and Year 2

Financial and Regulatory Approaches to Reducing Energy Use

Initiate in Year 1

Demonstrate New, Energy-Saving Technologies

Year 1 through Year 3

IEA sponsor biennial forum on Energy-Efficient Set-Top Boxes and Networks

Year 1 and Year 3

Establish Technical Specifications for Energy-Efficient Set-top Boxes

Year 1 through Year 3

Develop a Database of Efficient Set-Top Boxes and Components

Initiate Year 1

Budget

To be determined – based on feedback from member countries and proposed tasks prioritized.
Estimated budget implications includes:

Development of a Test Procedure

Country represent participation in IEC process, about 100hrs/year per representative

Financial and Regulatory Approaches to Reducing Energy Use

Case Study development – approximately 300 – 500 hours

Demonstrate New, Energy-Saving Technologies

Estimated cost to develop a prototype - 250,000 USD

IEA sponsor biennial forum on Energy-Efficient Set-Top Boxes and Networks

Estimated planning and implementation cost – 350 hours

Establish Technical Specifications for Energy-Efficient Set-top Boxes

Work completed by core group then vetted by Member Country reps - 400-1000 hours

Develop a Database of Efficient Set-Top Boxes and Components

Estimated cost to develop the database - 400 hours, plus in kind support from Member Countries for populating and updating the database

7.4 Motor Systems

An elaborate annex description has been available since December 2007.

Scope

Promotion of energy efficiency of poly-phase electric AC motors and motor systems between 0.5 kW and 500 kW, 2-, 4- and 6 poles, 200 to 700 V in relevant applications as pumps, fans, compressors and mechanical drives that are generally used in industry, infrastructure and large buildings. This work can also include new technologies such as frequency inverters (adjustable speed drive) and permanent magnet motors.

Activities

	Sub-Task / Purpose	Content	Deliverables	Co-operation
A	Implementation Support	Build up global Motor Network	Stakeholder Workshops 2008/2009/2010	B to H Worldwide Experts EuP, UNDP, CLASP, SEEEM
B	Consolidated Motor database	Market and Energy Data on motors and motors systems	Annual progress report and data synopsis	CLASP
C	Technical guide for motor systems	Reference guide for manufacturers, users and planning engineers	Guide	D, F, G, H IEC, NEMA
D	Testing Centres	Qualification of sufficient number of motor testing facilities	Testing Centre Network	B, F, G, H IEC, NVLAP
E	Instruments for coherent motor policy	Policy guidance for national legislation, road map for implementation of MEPS	Annual progress report and data synopsis	A, B, H ITFSP
F	Training & capacity building	BAT, LCC, system integration and preventive maintenance training	Educational program for different target groups	C, D, E, G, H LCC-Tools
G	Tools & guides	Synopsis of existing electronic tools and printed guides	Selective list of tools and guides	B, C, D, H EuroDEEM, MotorMaster+, OPAL
H	Energy Management in industry	Enhance global reach of energy management programs	Annual progress report	B, C, D, E, F, G LBNL
I	New Motor Technologies	Overview of technical possibilities and cost-effective applications	Market development study for new motor technology	IEC

Participants

Participants: Australia Austria
 Denmark Korea
 Switzerland USA
 Operating Agent: Switzerland (A+B International Xx)

Timeline

	Motor Systems Annex: Sub-Tasks	2008/09	2009/10	2010/11	2011/12	2012/13	
A	Implementation support	Workshop 1	Workshop 2			Workshop 3	annual reports
B	Consolidated motor database			Publication		Publication	
C	Technical guide for motor systems			Publication			
D	Testing centers			Publication			
E	Instruments for coherent motor policy					Publication	
F	Training & capacity building						
G	Tools & guides			Publication		Publication	
H	Energy management in industry						
I	New motor technologies					Publication	
				Progress report		Final report	

Budget

	Motor Systems Annex: Sub-Tasks	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	Total k €
A	Implementation support	100	100	100	100	100	500
B	Consolidated motor database	40	40	30		40	150
C	Technical guide for motor systems	30	30	30			90
D	Testing centers		40	40	40		120
E	Instruments for coherent motor policy			40	40	40	120
F	Training & capacity building						0
G	Tools & guides		40	40		40	120
H	Energy management in industry						0
I	New motor technologies			20	20	20	60
	Operating Agent (basis project management, coordination, travel)	80	80	80	80	80	400
	Technical Advisory Board	20	20	20	20	20	100
	Total k €	270	350	400	300	340	1'660

(1 € = 1.48 US \$)

7.5 Annexes under Consideration

Lighting: This annex intends to assist policy makers in designing comprehensive lighting energy efficiency portfolios to address all important savings opportunities. The proceeding work with the lighting annex awaits results from Annex 45 in the ECBCS Implementing Agreement.

Supply Chain Agreements: intends to map and support the uptake of initiatives to engage the supply chain, especially retailers, in raising the market share of the most efficient equipment. This annex may be integrated into the Mapping and Benchmarking Annex.

Energy Efficient Product/Service Systems: intends to analyse the opportunities to optimise the design of energy service systems, including aspects of product as well as service design, and considering behavioural aspects.