

Standardisation of Energy Savings Calculations

Many countries have set policy targets for reducing emissions and identified energy efficiency as a key measure. To achieve these energy efficiency targets, countries have introduced various policies and programmes that target different sectors, such as household appliances, buildings and industries, and a wide range of instruments, such as regulatory directives, voluntary agreements, incentives of subsidies, financing options, and education and outreach. These policies and programmes have evolved over time to meet specific needs, and as a result tend to have their own objectives and implementation mechanisms.

While a number of these programmes have been successful, in the absence of a unified approach their full potential is often not realised and it is difficult to quantify the total energy efficiency savings, which is crucial from a government perspective. The challenge is to be as practical as possible – striving not for a universal harmonised protocol, but for sound procedures to help countries increase the efficiency of their energy savings calculations and evaluations and to create a solid base that standardisation organisations can use to take the next step.

Within the context of the IEA DSM ETI, this Task researched during the period 2009-2013 options for harmonising energy savings calculations, contributed to easier comparisons of international energy savings and researched next steps to further harmonise energy savings calculations.

Main Activities

The overall aim of DSM Task 21 was to identify basic concepts, calculation rules and systems for Energy Savings Calculations (ESC) standards. Both energy savings and emissions avoidance calculation methods and standards were evaluated for efficiency activities. Additionally a methodology was developed to nominate and describe the Demand Response

products¹. The Task also explored how and by what type of organisations these draft standards could be used (and improved) to increase international comparison evaluation of policies and measures. The Task focused on harmonisation and on preparation work to ease the work of standardization bodies like CEN and ISO.

The three primary objectives of the Task were: Summarise and compare the current methods and standards used for determining energy use, energy demand and energy and emissions savings from energy efficiency actions and policies. Identify the organisations that are and could be responsible for use and maintenance of such methods and standards.

Recommend how existing methods, standards and resources could be expanded and/or used for comparing different national and international efficiency policies and actions.

Task Work

The actual research was carried out by the country experts, the Operating Agent, inputs from (experts involved in) standardisation bodies and reports from other relevant IEA DSM Tasks. In general, the experts were responsible for identifying and obtaining information on ESC standards in their countries. The Operating Agent was responsible for mobilising inputs and comments from standardisation bodies, from other IEA DSM Tasks, and for analysing and drawing conclusions from the information provided by the experts.

Two regional (Europe and Asia) workshops were organised. In addition to mobilising input for standardisation bodies the developed work was presented in a format to be used for training purposes.

¹ Demand response programs are designed to reduce short-term capacity needs and/or transmission constraints and can include permanent peak reduction efforts. DSM Task 13: Demand Response Resources, prepared a range of DR products.

Results

The following reports can be downloaded from www.ieadsm.org

Energy Savings Calculations for Selected End Use Technologies and Existing Evaluation Practices in France

Energy Savings Calculations for Selected End Use Technologies and Existing Evaluation Practices in the Republic of Korea

Energy Savings Calculations for Selected End Use Technologies and Existing Evaluation Practices in Norway

Energy Savings Calculations for Selected End Use Technologies and Existing Evaluation Practices in The Netherlands

Energy Savings Calculations for Selected End Use Technologies and Existing Evaluation Practices in Spain

Energy Savings Calculations for Selected End Use Technologies and Existing Evaluation Practices in the USA

The country reports listed above, *Energy Savings Calculations for Selected End Use Technologies and Existing Evaluation Practices in [country]*, hold case applications for energy savings and greenhouse gas reductions dealing with: lighting in households and commercial buildings; wall and window insulation; air condition systems; high efficient electric motors and variable speed drives; heat pumps in households. In addition the following DR programmes are included: France: Tempo Tariff, Critical Peak Pricing; Italy: Interruptible and load shedding programmes; Norway: Remote Load Control; Spain: Interruptible service; USA: Statewide Pricing Pilot Program in California.

Guidelines for Harmonised Energy Savings Calculations

This reports presents an overview of existing knowledge on energy savings calculation and evaluation on policies and measures for energy savings as well as ongoing improvements in the participating countries and worldwide. It presents the information on approaches and terminology for key elements in energy savings calculations in three topic areas for both national and international developments 1) evaluation guidance, guidelines and standards; 2) evaluation reports on policies and measures; 3) policy instruments.

Harmonised Energy Savings Calculations for Selected End-use Technologies, Key Elements and Practical Formulas

For the selected technologies – variable speed drive and high efficient motors, heat pumps, heating systems in commercial buildings, air conditioning, residential insulation and lighting – key elements are presented for each of the country's case application. These key elements include the formula and its parameters in the baseline issues, applications of normalisation and/or corrections and life time savings. In addition, the report presents the conclusions on harmonised formulas, greenhouse gas reductions and demand response savings, as well as recommendations for further improvements.

Roadmaps for Improved Harmonised Energy Savings Calculations

This report contains an overview on the developments in recent years related to harmonisation of energy savings calculations in Europe, the USA and worldwide.

Template to Document Energy Savings Calculations and Related GHG Emissions Reductions

Template can be used to document energy savings calculations and related GHG emission reductions, as well as the relation to the demand response impact.

Task Duration

April 2009 – April 2014

Participating Countries

France	Spain
Netherlands	Switzerland
Norway	United States
South Korea	

Task Publications

All official publications can be found on the DSM website, www.ieadsm.org

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