



25/01/2018

**Ecodesign preparatory study for Building  
Automation and Control Systems (BACS)  
implementing the Ecodesign Working Plan 2016  
- 2019  
Stakeholders Meeting**

**Paul Van Tichelen, Paul Waide, Tatiana Pasquel Garcia**

**Brussels, VLEVA  
17th of January 2018**

## Agenda



- » 9h45: Registration desk opens
- » 9h45-10h00: Welcome coffee
- » 10h00-10h20: Presentation of the study team, EC and tour de table
- » 10h20-10h30 Summary of topics and approach for commenting
- » 10h30-12h30 Topics 1-5
- » 12h30-13h30 Break
- » 13h30-15h30 Topics 6-10
- » 15h30-16h AOB

**Note: there will be voice recording in the meeting to elaborate minutes afterwards,  
your name and organisation will be in the minutes of meeting**

## Study Team

- » Tatiana Pasquel Garcia (VITO), framework contract manager

<b>Technical Team Leader and Project manager</b>	Paul Van Tichelen	Technical Team leader and Project manager Expert in Ecodesign studies and BACS
<b>Quality Manager</b>	Paul Waide	Quality control and BACS expert
<b>Expert</b>	Dominic Ectors	Smart appliances and ICT
<b>Expert</b>	Koen Vanthournout	Smart appliances and smart grids
<b>Expert</b>	Stijn Verbeke	Building modelling and SRI/EPBD expert
<b>Expert</b>	Ma Yixiao*	Building TBS/HVAC expert

## EC policy officer & Study Team

- » EC policy officer: Veerle Belaerts
- » Study Team:
  - » Team leader: **Paul Van Tichelen (VITO)**
  - » **Paul Waide (Waide Strategic)**, Energy efficiency policies
  - » **Tatiana Pasquel Garcia (VITO)**, Framework Contract Manager
- » **Use of voice recording & present your name and organisation before speaking**
- » Table round

## Summary of topics to be addressed

- » Topic 1: Explanation of the general context of the study
- » Topic 2: Linkages with other policy instruments e.g. EPBD, SRI, Smart Appliances etc.
- » Topic 3: Challenges due to a heterogeneous product group and the applicability of the MEErP
- » Topic 4: The role of a functional unit in the MEErP and LCA
- » Topic 5: Clearly defining BACS
- » Topic 6: The role of screening for significance
- » Topic 7: The differentiation needed in the impact screening for later studies and policy options
- » Topic 8: Sources of data for the screening and later study(ies)
- » Topic 9: Policy options and the best ways to go ahead with a full study
- » Topic 10: Project planning

## Topic 1: explanation of the general context for the study

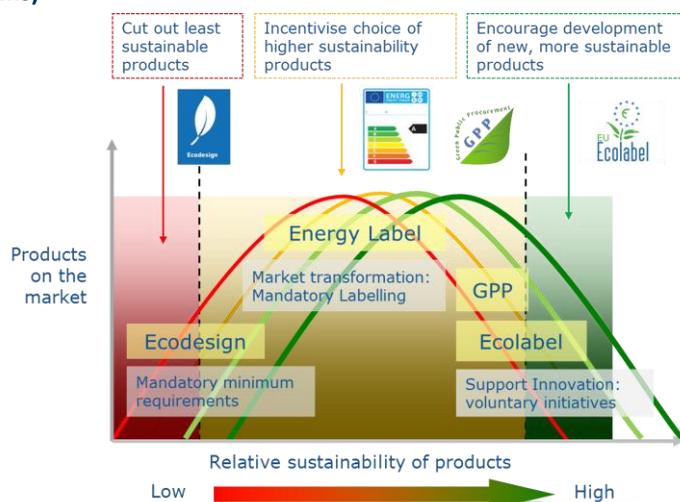
- » What is the policy context for BACS which we're working within?
- » What is the aim of this scoping study?

## Overview of the main policy context

- » **Ecodesign Directive (ED)** (Directive 2009/125/EC) = **Framework** to set mandatory minimum requirements on performance or information via **implementing measures** specified in EU Regulation
- » **Energy Labelling Regulation (ELR)** (Regulation (EU) 2017/1369): Energy labels help consumers choose energy efficient products
- » **Energy Efficiency Directive (EED)** (2012/27/EU)
  - » EU countries make energy efficient renovations to at least 3% of buildings owned and occupied by central government
  - » EU governments should only purchase buildings which are highly energy efficient
  - » EU countries must draw-up long-term national building renovation strategies which can be included in their National Energy Efficiency Action Plans
- » **Energy Performance of Buildings Directive (EPBD)** (2010/31/EU):
  - » energy performance certificates are to be included in all advertisements for the sale or rental of buildings
  - » EU countries must establish inspection schemes for heating and air conditioning systems or put in place measures with equivalent effect
  - » all new buildings must be nearly zero energy buildings by 31 December 2020 (public buildings by 31 December 2018)
  - » EU countries must set minimum energy performance requirements for new buildings, for the major renovation of buildings, and for the replacement or retrofit of building elements (heating and cooling systems, roofs, walls and so on)
  - » EU countries have to draw up lists of national financial measures to improve the energy efficiency of buildings

## Overlay of all EU product policy instruments

(source: EC JRC – note this excludes some instruments applying to installed systems)



## Scope of BACS to be included in this study

- » This study **builds on** the **Ecodesign working plan 2016-2019** which **identified building automation control systems (BACS)** in non-residential buildings but will also cover the residential buildings.
- » The working plan study already identified **the indirect energy savings that can be achieved with BACS** as an important potential impact of ED, was **based on** Study of 2014 (Paul Waide): **“The scope for energy and CO2 savings in the EU through the use of building automation technology”**
- » Aims to **complement** the development of a **smart readiness indicator** for buildings and **smart appliances**

## Scope of BACS to be included in this study

- » Key issues for this scoping study are:
  - » BACS cover a wide range of **heterogeneous products**
  - » it may be **difficult to clearly define product boundaries** and to apply the MEERp to the letter
  - » the **large number of possible applications and functionalities** of BACS creates additional complexity
- » **Primary aim** of this study is to **define** the product **scope**, to **identify** the **focus areas & approach** for the **subsequent full preparatory study**
- » **Secondary aim:** identify potential **policy options** that could be implemented **via and in conjunction with the Ecodesign Directive**

## Topic 2: linkages with other policy instruments

- » What policy measures and related work is ongoing?
- » How does the BACS Ecodesign study cross-link with EPBD, EED and SRI and Smart Appliances?
- » What is the general overview picture and where is the Central Energy Management function located?  
(note – this term pertains to Demand Response)

## Energy Performance of Buildings Directive (EPBD) (2010/31/EU)

- » Related to EPCs and minimum performance standards
  - » BACS can be taken into account by EN 15232 via a simplified method or a detailed method the referred individual standards per TBS
- » Smart Readiness Indicator is elaborated in a separate study:  
<https://smartreadinessindicator.eu/>
- » Article 8 on Technical building systems (2010/31/EU): §2: ‘.. encourage the introduction of intelligent metering systems whenever a building is constructed or undergoes major renovation, encourage, .., the installation of active control systems such as automation, control and monitoring systems that aim to save energy.’
- » Article 14 on Inspection of heating systems: §1. ‘..regular inspection..
- » Article 15 on of air-conditioning systems: §1: ‘..regular inspection

## EPBD proposed amendment (winter package 2016)

- » Article 8 amendment: ‘..definition of ‘smartness indicator’...
- » Article 10 on financial incentives and market barriers amendment: When Member States put in place a database for registering EPCs it shall allow tracking the actual energy consumption of the buildings covered, regardless of their size and category.
- » Article 14 new proposal for heating systems: §2: As an alternative to paragraph 1 Member States may set requirements to ensure that non-residential buildings with total primary energy use of over 250 MWh per year are equipped with building automation and control systems
- » .. To be concluded, process ongoing

## Some ED + ELR examples of BACS related products

- » Regulations (EU) No 811 & 812/2013 with regard to energy labelling of space heaters, combination heaters, packages of space heater, temperature control and solar device and packages of combination heater, temperature control and solar device, and of water heaters, hot water storage tanks and packages of water heater and solar device
- » Requires dealers to:
  - » Provide a package label when selling a space heater and combining it with a control
  - » Provide a package label when selling a water heater and combining it with a solar device
- » For example: defines correction factor for Class VI - Weather compensator and room sensor, for use with modulating heaters
- » Regulations (EU) No 813 & 814/2013 for space heaters and combination heaters, and for water heaters and hot water storage tanks

## ED or ELR of Smart appliances

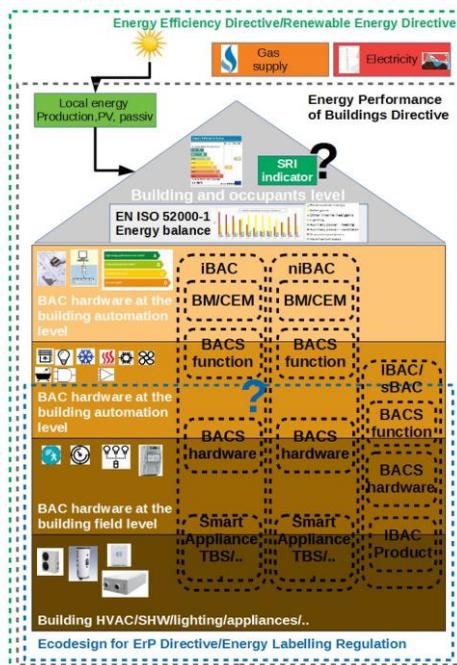
- » Study is ongoing: <http://www.eco-smartappliances.eu/>
- » Study is focused on Demand Response functions, hence facilitating more DER with PV/Wind and avoidance of storage in the future
- » Energy Labelling Regulation (2017/1369/EU) says:
  - » in (9) that 'This Regulation contributes to the development, recognition by customers and market uptake of energy smart products, which can be activated to interact with other appliances and systems, including the energy grid itself, in order to improve energy efficiency or the uptake of renewable energies, reduce energy consumption and foster innovation in Union industry.
  - » Article 16:
    - » The Commission is empowered to adopt delegated acts..
    - » ..where appropriate, the inclusion of a reference in the label allowing customers to identify products that are energy smart..

## What are typical energy related domains of BACS (see also SRI study)

- » heating control, e.g.: emission control, control of distribution pumps, generator control ..
- » domestic hot water (DHW) supply, e.g.: reduce stand by losses by forecasted demand..
- » For cooling, e.g.: emission control, interlock between heating and cooling, ..
- » For air supply or ventilation (if any): -demand driven, free air night time cooling, ..
- » Lighting controls: occupancy, daylight, ..
- » Blind control: prevent overheating and reduce glare,...
- » Technical Building Management (TBM) system, i.e.:
  - » set point management, e.g. night time set back temperature
  - » run time management, e.g. schedule
  - » manage local DER or CHP
  - » control of thermal storage (if any)
  - » Smart Grid integration / Central Energy Management (CEM)
  - » detect faults in the Technical Building System (TBS)
- » Reporting regarding energy consumption relative to indoor conditions

## The context of BACS - overview

- » .. Quite **complex**
- » **Building Automation and Control = BAC**
- » Different **building levels**:
  - » **Functions..**
  - » **Hardware..**
- » BACS = **integrated System**
- » niBACS = **non integrated**
- » sBAC = **stand alone?**
- » **Smart appliances?**
- » .. **Building types**
- » **Reasons to focus study?**



## The context of BACS

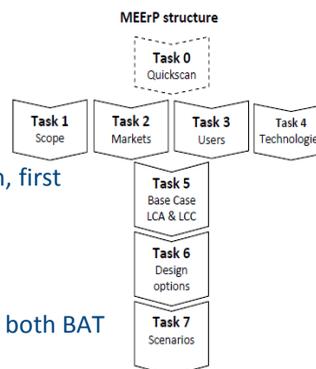
- » Stakeholders are invited to:
  - » **comment on the completeness of the overview picture?**
    - » (can be made available in LibreOffice DraW format)
  - » **supply relevant examples? How much examples are needed for a study (see later on Base Cases for MEErP)?**

## Topic 3: challenges due to a heterogeneous product group and the applicability of the MEErP

- » The **Methodology for Ecodesign of Energy-using products (MEErP)**
- » developed to allow **evaluation** of whether and to which extent various **energy-related products fulfil** certain criteria according to **Article 15 and Annex I and/or II** of the Ecodesign Directive that **make them eligible for implementing measures**
- » **Article 15 defines a criterion of “significant environmental improvement potential”**
- » It uses the **Ecoreport tool** (spreadsheet) to calculate environmental impact
- » Information available at:  
[http://ec.europa.eu/growth/industry/sustainability/ecodesign\\_n1](http://ec.europa.eu/growth/industry/sustainability/ecodesign_n1)

## MEErP in a nutshell

- » Tasks in MEErP:
- » Task 1 - Scope (definitions, standards and legislation, first screening);
- » Task 2 – Markets (volumes and prices);
- » Task 3 – Users (product demand side);
- » Task 4 - Technologies (product supply side, includes both BAT and BNAT);
- » Task 5 – Environment & Economics (Base case LCA & LCC);
- » Task 6 – Design options;
- » Task 7 – Scenarios (Policy, scenario, impact and sensitivity analysis).
- » Tasks 1 to 4 can be performed in parallel
- » Task 0 is a quick scan to better define the scope



## Topic 4: MEErP and LCA work around a functional unit and use an Eco report tool to model impacts

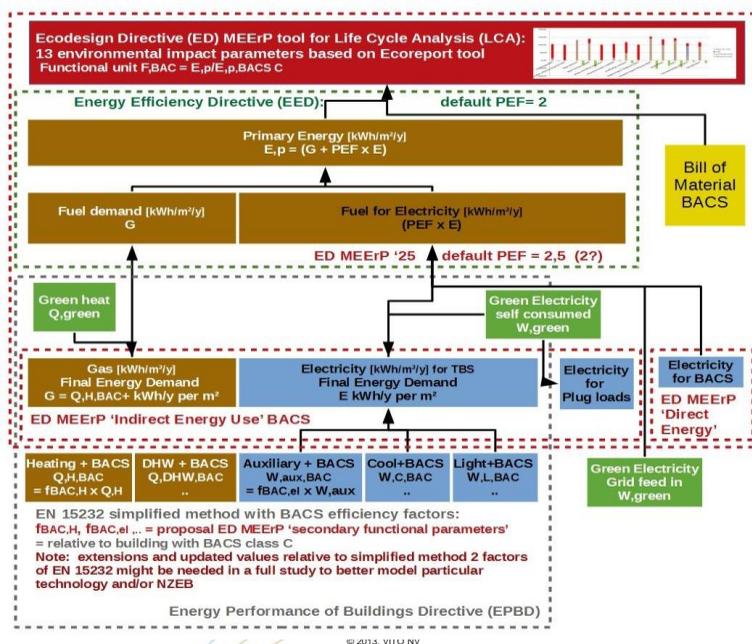
- » **LCA = Life Cycle Analysis** = tool for assessing the environmental impacts of a product from its origin through to disposal across its entire lifecycle
- » **Primary Functional Unit** in LCA = “the quantified performance of a product system for use as a reference unit in life cycle assessment study” .. in order to compare different BACS options in MEErP Task 4 and 6
- » Functional Unit proposal:
  - » Similar to EN 15232 (but **broader**): “**The BAC factor (fbAC)** measured annual energy expressed in primary **energy (Ep)** as supplied to the technical building systems and plug loads to satisfy the uses **relative to a reference BACS class C** in EN 15232-1:2017 (Eref,c)” (Ep= fbAC x Eref,c) (**‘satisfies uses’ =minimum EN ISO 17772-1:2017 quality**)
  - » **+ a whole set of secondary parameters**, a.o. to calculate the primary.
- » ED LCA according to MEErP are **done with** a standardised spreadsheet tool called **Eco report tool** (calculates 13 environmental parameters relative to production, use and EoL)



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## Concept of the Potential BACS MEErP model



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## Topic 4: within MEErP the role of a functional unit in MEErP and LCA

- » The previous approach can clearly cover **Energy Efficiency (EE)** via its **indirect energy impact** (Task 3) where savings on in kWh/m<sup>2</sup>/y final energy demand of buildings and via the **direct energy** (Task 3) which is the self consumption of BACS but:
  - » Which other energy performance aspects should be considered to address DER (DR, self consumption, ..)?
  - » What about non-energy related functions?
  - » **The role of the PEF and should it be adapted for DR or self consumption of local DER (e.g. PV)?**



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## MEErP: what can be concluded

- » It is **not evident that the MEErP can be applied on a heterogeneous product group with multiple functions** .. This is a challenge for a full study
- » It can take a serious amount of time
- » Could result in delay
- » **Splitting the study into different parts could result in speeding up short term Tier 1 implementing measures** and keeping long term Tier 2 implementing measures for later, for example:
  - » **focus on more simple BACS retrofitted in the average building stock versus the new/renovated NZEB/LEB buildings with added complexity, therefore postpone the complexity of DER with DR/self consumption?**
  - » Postpone the added complexity of airtight buildings and their ventilation?
  - » **To model in MEErP we need a representative set of Base Cases .. How many are needed will also depend on the scope?**



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## Topic 5: how to clearly define BACS (Task 1) for scoping and future policy measures?

- » **Why is it important?**
  - » a broad product group **might conflict with a consistent study**
  - » It is an **essential** requirement (e.g. smart appliances) that products can be clearly defined in **any future Regulation** without creating confusion or loopholes in the market
- » Due to the broad scope an evaluation should be conducted of how far we have to go into the details in which stage of the study, because **analysing in too much detail could result in serious delay**
- » **Different approaches exist:**
  - » **Based on technical definitions** from standards (= requirements for products according to functional definitions)
  - » **Specifications by end application** (= requirements for products declared suitable for .. applications)

## BACS technical definitions

BACS as defined in European Standard EN ISO 16484-2 and EN 15232-1:

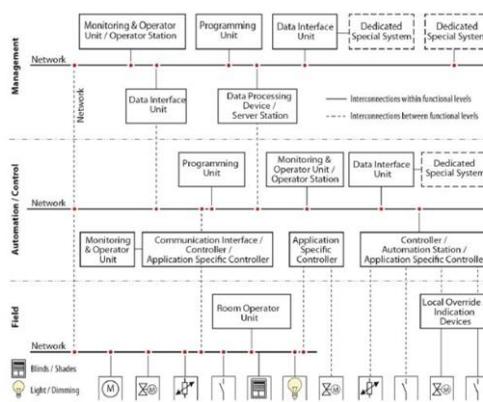
- » **BACS:** ‘BACS comprising all products and engineering services for automatic controls (including interlocks), monitoring, optimization, for operation, human intervention and management to achieve energy – efficient, economical and safe operation of building services. Controls herein do also refer to processing of data and information’.
- » **BAC:** ‘products, software, and engineering services for automatic controls, monitoring and optimization, human intervention, and management to achieve energy-efficient, economical, and safe operation of building services equipment’
- » **Integrated BACS (iBAC):** ‘BACS designed to be interoperable and with the ability to be connected to one or more specified 3rd party building automation and control devices/systems through open data communication network or interfaces performed by standardized methods, special services and permitted responsibilities for system integration.
- » The opposite of iBACS could be defined as **non integrated BACS (niBACS)**

## BACS technical definitions

- » Not in the standard but one can define complementary:
  - » **non integrated BACS (niBACS)** as BACS which are not iBACS
  - » The draft ED standby regulation also defines **local building controls (IBAC)** as *'products that move or rotate access elements and/or climatic control elements used in buildings. The products incorporate electric motors or actuators and the control unit as one entity and are operated by the end user through wired and/or wireless controls or via a network, or controlled automatically with the use of sensors.'* (current status?)

## BACS technical definitions

- » BACS generic hardware and levels EN 12464-2: building management, automation/control, field level



## BACS technical definitions

- » **For this range of hardware: What are the prodcom codes for BACS = generic data Eurostat, stakeholders please provide input? Is this useful or too diverse?**
- » **BAC functions (as defined in EN 15232):**
- » **Integrated BAC function (iBAC function) (EN15232):** is the BAC effect of programs and parameters. BAC functions are referred to as control functions, I/O (input/output), processing, optimization, management and operator functions. They are listed in the BAC FL (function list) for a specification of work
- » **An integrated BAC function (EN 15232-1:2017)** refers to the effect of programs, shared data points and parameters for multi-disciplinary interrelationships between various building services and technologies

## BACS technical definitions

**BAC functions** (EN 15232, it is an EPBD standard addressing the energy used by TBS):

- » for heating control, e.g.: emission control, pump control, sequencing of heat generators, ..
- » for Domestic Hot Water (DHW), e.g.: reduction of standby losses with demand forecasting, pump control, etc.
- » For cooling control, e.g.: emission control, interlock between cool/heat, ..
- » For air supply & ventilation, e.g.: demand driven ventilation, free air night time cooling, humidity control, ..
- » Lighting controls (see Lot 37)
- » Blind/Shading controls, e.g.: to prevent overheating, glare

## BACS technical definitions

- » **Technical Building Management (TBM)** (see EN 16947 for more details):
  - » Set point management
  - » Run time management, e.g. predefined schedule
  - » Manage local renewable sources or CHP and self consumption
  - » Control of Thermal Energy Storage (if available)
  - » Smart Grid integration
  - » Detect faults in the Technical Building System (TBS), e.g. read out alarms, verify COP, verify maximum power output, check power consumption (e.g. clogged filter), ..
  - » Reporting regarding energy consumption relative to indoor conditions, e.g. show actual and logged trends, calculate EPBD performance parameters (e.g. EN ISO 52003-1 & -2), ..

## BACS technical definitions

BACS TBM can act as the **Central Energy Management** in the context of **Smart Grids**. For appliances or plug loads an Ecodesign preparatory study on smart appliances is already ongoing, however, this does not include the building and TBSs as a whole. Within this:

- » **Implicit Demand Response (iDR BACS)** refers to BACS services to participate in the wholesale energy market - it is mostly price driven with variable tariffs or peak load tariffs
- » **Explicit Demand Response (eDR BACS)** refers to BACS services to support the grid operators for balancing or congestion management. It can be, for example, curtailment based on the line voltage or grid frequency
- » In practice this is **still BNAT (Best Not yet Available Technology)**, thus it might be premature to attempt to apply it within policy measures

## BACS technical definitions

BACS could also be classified according to their impact

e.g. the SRI study defined the impact categories: Energy savings on site, Flexibility for the grid and storage, Self-generation, **Comfort, Convenience, Health, Maintenance & fault prediction, Information to occupants**

Apart from these multiple other BACS functions can be found:

- » **To detect fire according to EN 54 standard family.**
- » **Intruder alarm according to EN50131.**
- » **Support video access control**
- » **Support multi-room audio**
- » ..

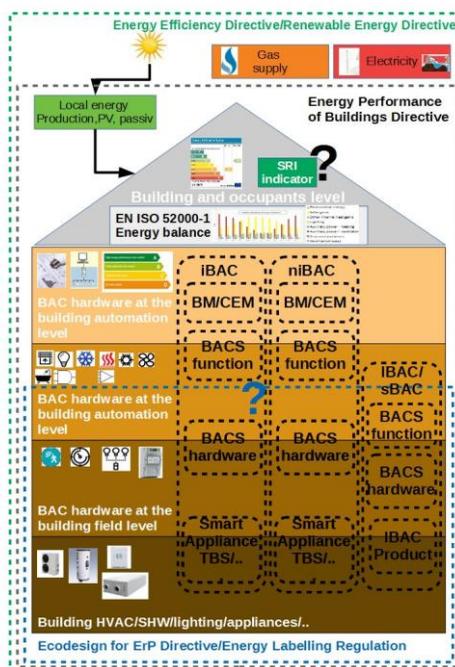
## BACS technical definitions

Other non-energy and non-EN 15232 technical definitions related to **Life time and interoperability (as might be relevant for LCA) are:**

- » **interoperability** (ISO ISO/IEC 2382-01): "The capability to communicate, execute programs, or transfer data among various functional units in a manner that requires the user to have little or no knowledge of the unique characteristics of those units"
- » **Reparability**, this means that spare parts are available also in the event of a manufacturer bankruptcy? **(definition needed)**
- » **Upgradability**, this means that the installed system can be adapted to future services from the manufacturer or third party solutions? **(definition needed)**
- » BACS single source provider versus BACS multiple source providers
- » Public standard I/F BACS (e.g. DALI ), for which a public interface standard is available (e.g. KNX), versus closed I/F BACS (e.g. Opentherm)

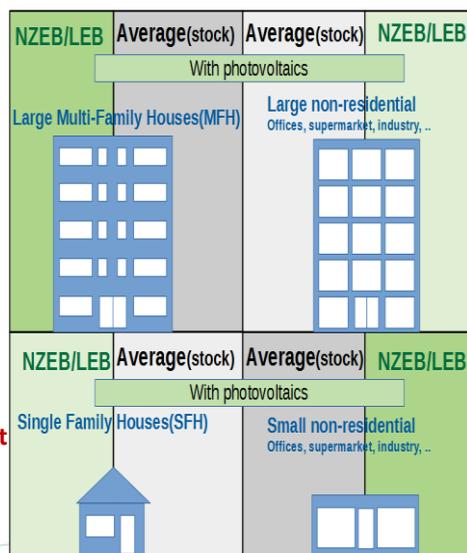
## BACS technical definitions – summary

- » **Should we include functions that have no indirect impact on building energy? (this was not in the ED working plan)**
- » **Keep the lifetime related technical definitions and aim for a full MEErP LCA (includes BOM data)? If so, can we have typical BOM data?**
- » **Is this complete? Any opinions for adding definitions?**

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## Specification of end application

- » According to building type:
  - » **NZEB (net zero energy) or LEB (low energy) vs average stock**
  - » **Residential vs non residential**
  - » **Large versus small (e.g. EPBD)**
- » Potential rationales for considering such a segmentation are:
  - » Differences in market and uptake
  - » Differences in user, e.g. large vs small (DIY)
  - » Differences in expected impact
  - » Timing and scope of policy measures
- » **Keep the focus on non-residential? Which types (offices..)? Residential is different market? Separate NZEB/LEB due to complexity/impact/urgency? Any opinions? Multiple MEErP BCs?**

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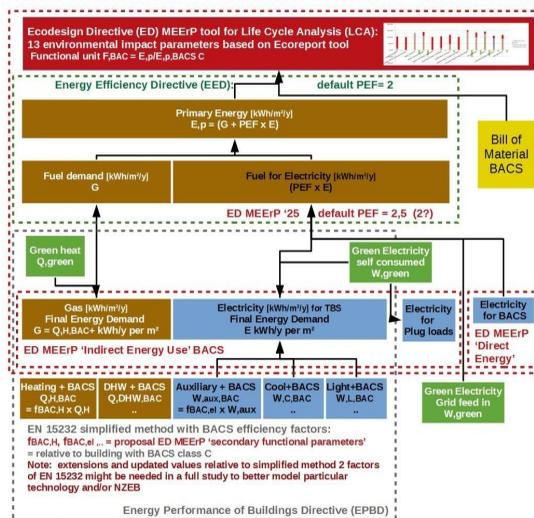
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## Topic 6: the role of screening for significance (Task 0)?

- » According to the MEerP: “Task 0 is an optional task for the case of large or inhomogeneous product groups, where it is recommended to carry out a first product screening, considering the environmental impact and potential for improvement of the products as referred to in Article 15 of the Ecodesign Directive. **The objective is to re-group or narrow the product scope, as appropriate from an ecodesign point of view, for the subsequent analysis in Tasks 1-7.**”
- » Note that the Article significance is already proven in the ED working plan thus, **the issue is rather to consider an optimal focus without losing significance and/or to split the study into two or more parts**

## Topic 6: The screening model could be the MEerP tool..

- » **Complex** to run in the short term and not necessary already the aim of Task 0
- » **Other options are assessments in the literature, simple estimates, and...?**
- » **Relevant suggestions are highly welcome**



## Topic 7: what differentiation is needed in the screening process?

The potential scoping options identified so far are BACS for:

- » 'NZEB/LEB + BACS' vs 'the existing stock + BACS'
- » Residential (which?) vs non residential
- » Small versus large buildings (see EPBD, 1000 m<sup>2</sup>)?

*And that include:*

- » direct energy consumption (self consumption) as well as indirect energy consumption (energy used by TBSs)?
- » or neglect product life time and the Bill-of-Materials?
- » Non-energy related impacts?
- » How to deal with BNAT for iDR/eDR BACS functions or self consumption? Is this typically related to NZEB/LEB?

## Topic 7a: impact screening of iDR/eDR BACS and the role of NZEB/LEB in Smart Grid DR

- » **Difficult to model in MEERP** because the BACS solution is still uncertain and depends on: (requires using) **electricity as the heat source (existing stock?), high share of PV & Wind, low share of biofuels, smart meters roll out, competitiveness with DR in industry, curtailment cost of PV&Wind and any storage solution (hydro-stations, batteries, power to gas, etc.)**
- » **Using electricity as the heat source is potentially an uncommon practice in the older building stock and therefore iDR and eDR BACS is not relevant to them?**
- » **However NZEB/LEB most often use heat pumps .. but it is low energy for iDR or eDR? .. It is an issue for the long term but might be relevant over the long life time of these buildings?**
- » **Hence it is more likely to be an issue for new buildings (LEB/NZEB) with heat pumps? Also it's impact is over the long term? .. Any more data for reference NZEB/LEB? Could be part of a separate study or part of SRI**

## Topic 7b: impact screening EE in NZEB/LEB

- » **EN 15232-1:2017** contains a simple method with factors (see functional unit). In our opinion this **can** simply be **applied to the average building stock**. The data **did not** discriminate or model **new NZEB or LEB buildings**. The **savings that can be achieved with BACS on electrical energy for cooling, ventilation and lighting are potentially underestimated** in the opinion of the study team. .. Hence this would minimize the impact of **BACS on the relative low energy of NZEB/LEB and lead to inappropriate conclusions**. Do we have more data on this? Can we rely on performance gap data for this type of buildings in a screening exercise? Any more opinion on NZEB in homes versus the non-residential building stock
- » **Split the study into two parts? Due to the complexity the part on NZEB/LEB could require longer timing?**

## Topic 7c: impact screening residential vs non residential applications

- » In the **non-residential sector** the **users are also professionals** and therefore anything that can be automated offers a **faster pay back on labour cost**. In the residential sector some BACS installations can be done by the occupants themselves (DIY) which will offer them cost savings
- » Many **non-residential buildings** (offices, schools, supermarkets, hospitals, ..) can be characterised by much **higher internal heat gains per m<sup>2</sup>** resulting from metabolism and other activities. This will influence the building energy balance e.g. heat replacement effect. Also **due to this cooling and mechanical ventilation are often required** in these buildings. In **some sectors** (supermarkets, office buildings, industry, ..) the **renovation rate** is linked to their continuous business transformation process and is **faster** compared to the residential sector. **Therefore > expect a larger share of advanced TBS in the non-residential building sector & possibly also NZEB?**
- » **A detailed assessment of BACS impacts will need to encompass sufficient differentiation for the distinct types of non-residential buildings? .. Different study?**

## Topic 7d: impact screening Large vs Small buildings

How these BACS are brought to the market:

- » **Large** non-residential and/or large residential BACS are **assembled on site often with standardized components**.
- » **Small** residential BACS come often **pre-assembled and sometimes form part of the TBS** (boiler, ventilation unit). They are easy to install but often lack some features such as interoperability between different TBS (e.g. cooling and ventilation). The **installation cost is a relatively more important factor**.
- » Also **larger** buildings with **multiple occupants are more complex to operate** and automation can therefore render useful service, e.g. set point management.
- » **Split the study? Which data is available?**



## Topic 8: additional data needed for screening

- » **Note: Direct Energy or self consumption – can be easily done? Is it relevant? The same for impact of non energy or resources – will need a typical Bill of Material and MEErP tool to be completed?**
- » EN 15232-1:2017 can be used but **more data is especially needed for NZEB/LEB and large versus small building applications**
- » **Note, for a full study: all data & real life evidence of impact from BACS on indirect energy consumption of buildings is highly welcome! This can also support the elaboration of a set of representative Base Cases for the MEErP modelling process!**



## Topic 9: policy options and the best ways to go ahead with a full study

- » BACS are not yet subject to **ED or ELR** requirements hence the study will **focus on these**
- » **Also combinations of policy options** will be considered, for example recognising that Ecodesign Requirements for BACS products or combinations thereof can complement EPBD-related policy instruments such as minimum TBS requirements (e.g. as specified within Article 8) or the proposed building Smart Readiness Indicator (SRI)

## Topic 9: policy options and the best ways to go ahead with a full study

Policy measures in ED or ELR:

- » Product level measures, such as: minimum eco-design performance limits (e.g. control accuracy), minimum ecodesign compatibility requirements, information requirements or product labelling
- » System level measures, such as: a system labelling similar to an installer label and compatibility requirements for products installed within TBS systems

Policy measures in EPBD:

- » Recommendations for any future EPBD review, or implementation into local regulations or decrees, such as the mandatory use of Ecodesign compliant or labelled BACS
- » Potential input for a new and common approach for evidence based energy performance certificates (EPC) under Article 11 and potentially closing a performance gap between measured data and the EPC

## Topic 9: policy options and the best ways to go ahead with a full study

In relation to the EED:

- » Potential linkages to energy efficiency obligation schemes (EEOs) and related incentives;
- » Linkages with training, certification and accreditation articles.
- » **Relationship with between study scope and potential policy timing:**
  - » More complex BCs and analysis can require a larger and more detailed study .. This could delay short term policy measures which aim short term impact (e.g. simple retrofits on existing buildings). **Split the study?**

## Topic 10: project planning chart

		project months from start assumption: 1 Sep 2017										
		Oct	Nov	Nov	Dec	Dec	Dec	Jan	Jan	Feb	Feb	Mar
		16-30	1-15	16-30	1-15	16-22	25-31	2-15	16-30	1-15	15-28	1-21
	Task Definition											
	Task Screening&MEErP recommendations											
	Task Policy											
	Deliverables	D1				D2		D3				D4
	Meeting	M1				M2		M2		M3		
Deliverable	D1	Minutes of kick off meeting/inception report										
Deliverable	D2	Minutes of the stakeholder meeting										
Deliverable	D3	Draft final report										
Deliverable	D4	Final report										
Meeting	1	Kick-off meeting										
Meeting	2	Stakeholder meeting										
Meeting	3	Interim meeting EC to discuss final update										

## Questions & Conclusion

- » **Proposed timing:**
  - » **Minutes of Meetings will be sent for review (<16/2)**
  - » **Position papers on the scope, splitting into parts (<16/2)**
  - » **Other input and evidence for a full study**
    - » **<16/3 help us to plan a full study**
    - » **.. Always welcome**
- » **Scope: any comments? Provision of data? AOB?**
  
- » **Thank you for coming!**



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