streamSAVE DIALOGUE GROUPS

BI-ANNUAL SUMMARY

JANUARY – JUNE 2021

This bi-annual summary provides an overview and the key information from the activities ran by the streamSAVE dialogue groups between January and June 2021. These dialogue groups discuss methodologies and issues related to the calculation of energy savings from five Priority Actions: BACS (Building Automation & Control Systems), Public Lighting, Electric Vehicles, Heat Recovery, and Refrigeration systems.

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Introducing the streamSAVE Dialogue Groups

streamSAVE is a 36-month Horizon 2020 project aiming to streamline energy savings calculations under Articles 3 and 7 of the Energy Efficiency Directive (EED). For more details, see: www.streamsave.eu

What are Priority Actions?

The project is working on calculation methods for a selection of Priority Actions. These are **technical energy saving solutions** with high energy savings potential and selected according to stakeholder needs. streamSAVE will target a total of **10 Priority Actions over two cycles** of experience sharing and capacity building.

What is a Dialogue Group?

A Dialogue Group gathers **experts and policy officers from various EU Member States** to **share experience and discuss** technical and economic issues related to the savings calculations for a given Priority Action. The streamSAVE team facilitates the exchanges by organising web-meetings, providing an online forum and summarizing the main lessons learnt from the discussions.

The 5 Priority Actions addressed in the first cycle of Dialogue Groups

HEAT RECOVERY · **BUILDING AUTOMATION & CONTROL SYSTEMS** · **REFRIGERATION SYSTEMS** · **ELECTRIC VEHICLES** · **LIGHTING SYSTEMS**

Duration of the first cycle: **March 2021 to July 2022**.

How can I join a Dialogue Group?

If you have not yet been invited by us, you can ask for being invited by sending an email to: < dialogues@streamsave.eu >

How can I access streamSAVE's online forum?

The online forum is part of the streamSAVE platform. You can register and create your own profile to get access to advanced functions, such as full access to the discussions and managing notifications.
If you have not yet received from us the invitation link to register to the platform, please contact us by sending an email to < dialogues@streamsave.eu >.

Overview of the activities of the semester

The table below provides the list of activities organised during the semester January – June 2021.

Note: the minutes of the online meetings are available on the streamSAVE platform for registered users only. If you do not have access, please contact us: dialogues@streamsave.eu

Table 1. List of activities of the semester.

Which Priority Actions	What	When
All Priority Actions	Kick-off meeting of the dialogue groups	5 March 2021
BACS	Online meeting 2	18 May 2021
Public Lighting	Online meeting 2	01 June 2021
Electric Vehicles	Online meeting 2	15 June 2021
Heat Recovery	Online meeting 2	22 June 2021
Refrigeration Systems	Online meeting 2	29 June 2021

The semester's figures

– 6 web-meetings

– 114 participants to the kick-off meeting of the dialogue groups

– 139 single participants (from 29 countries) for the activities of the semester

– 22 participants per meeting on average for each of the five meetings per Priority Action

– 92 single users registered to the streamSAVE platform

– 16 posts and 7 comments in the online forum

The semester's Take Away's

– Developing simplified calculation methodology first requires defining well its scope.

– Ecodesign regulations and EPBD provisions are important to take into account in the methodology, especially for defining the baseline.

– Availability of indicative values varies according to the action types.

– Reliable data on costs in addition to the baseline are difficult to identify or access.

– Collecting data specific to each savings projects increase the reliability of energy savings. But simplified methods with indicative values are useful to monitor schemes dealing with large number of projects/actions.

Summary about BACS (Building Automation & Control Systems)

BACS comprise of all products and engineering services for automatic controls, monitoring, optimization, for operation, human intervention and management to achieve energy-efficient, economical, and safe operation of building services: Heating ventilation and Air Conditioning (HVAC), Domestic hot water (DHW), Lighting, Metering, Technical building management, Access control, Security and Fire safety.

Figures about the Dialogue group on BACS

- 25 participants to the meeting 2 of the dialogue group
- 40 single users registered to this Dialogue Group
- 2 posts related to this PA in the online forum

Main issues discussed during this semester

Main issues raised by stakeholders in the **stakeholders' survey** (autumn 2020):

- Lifetime of savings (and especially providing evidence about savings lifetime);
- What data to collect (and data needed to calculate the baseline);
- How to manage double counting and additionality;
- Evaluation of multiple benefits from implementing BACS (going beyond energy savings, e.g., comfort, productivity, health)

Main issues raised during the **kick-off meeting** (5 March 2021):

- Connection with EPBD and its provisions about installing and valuating BACS;
- Issues with measurement and verification, including definition of baseline, data collection, behavioural influence on the savings, etc. (e.g., difficulty in defining the baseline of the building energy use because of lack of comprehensive normalisation procedure; difference between calculated and measured energy consumption; how to distinguish savings from BACS and savings from other effects)

Main issues discussed during the **second meeting** (18 May 2021):

- Diversity in Member States' practices as regards requirements for BACS and calculation approaches (cf. based on energy statistics or EPCs)
- Little information about BACS factors and existing BACS situation is available. Support and resources, especially about BACS factors and how to set a baseline to calculate energy savings from BACS, would be welcome by practitioners.
- Data may also be found from the reporting related to the inspection of heating and air conditioning systems (cf. Articles 14 and 15 EPBD) and monitoring of incentive schemes.

– Databases of Energy Performance Certificates (EPCs) can also be useful sources about unitary energy consumption of buildings (but data to consider with caution, as EPCs might sometimes overestimate energy consumption).

Main messages from the discussions

– Importance of the new provisions on BACS included in the Articles 14 and 15 of the EPBD, especially for non-residential buildings from 2025.

– Importance of ensuring a proper commissioning and maintenance of BACS.

– BACS might develop the availability of measured/metered data at project/building level. However, it remains difficult to collect measured/metered data for the monitoring of a policy or programme with a large number of actions. Therefore, simplified approaches can be useful at programme/policy level.

Feedback from the participants about the dialogue activities

Overall positive feedback about the organisation and length of the meeting. For the next meeting, interest in examples of methods used by Member States, data (indicative values, costs) and discussing further the methodology.

Interesting sources to look further

Table 2. Sources to look further about energy savings from BACS.

Name of the source	Why it is relevant / interesting
Siemens (2018). Building Automation – Impact on energy efficiency (Application of EN 15232-1:2017).	Report providing data about the impacts of BACS
Standard EN 15232 : Energy Performance of Buildings - Energy performance of buildings - Part 1: Impact of Building Automation, Controls and Building Management	The streamSAVE methodology is based on the use of BACS factors, which requires referring to benchmarks as set in the BACS efficiency class as specified in this standard
Commission Recommendation (EU) 2019/1019 of 7 June 2019 on building modernisation	guidance note published by the European Commission (DG ENER) about the revised EPBD
https://epb.center/epb-standards/energy-performance-buildings-directive-epbd/	Source where the standards related to the EPBD can be found

Next steps for the Dialogue Group on BACS

– Presentation of the Excel tool

– Presentation from an external expert, showing the application of the method in a Member State

– Presentation from a technical expert, zooming in on the different BACS categories.

This project has received funding from the Horizon 2020 programme under grant agreement n°890147.

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Summary about Public Lighting

Figures about the Dialogue group on Public lighting

- 28 participants to the meeting 2 of the dialogue group
- 45 single users registered to this Dialogue Group
- 5 posts related to this PA in the online forum

Main issues discussed during this semester

Main issues raised by the stakeholders during the **kick-off meeting**:

- How to calculate energy savings through lighting controls?
- Additionality: how to consider Ecodesign standards in the evaluation of savings?
- M&V issues: Baseline definition and data scarcity; Disaggregation of energy savings when no individual load monitoring; How to consider patterns of behaviour, safety standards, lighting levels and quality of service

Main issues discussed in the **second meeting**:

- The methodology is simplified compared to detailed related technical standards. However, it remains in line with these standards.
- The two approaches (project-based and simplified) included in the methodology are meant to give comparable results. The calculation principle (physics) remains the same. The difference lies in the type and number of data specific to the actions implemented that are needed as inputs.
- While detailed data might be available at local level, there seems to be a lack of national databases that would facilitate detailed calculations when monitoring a national scheme. Which supports the choice of developed a simplified approach.

Main messages from the discussions

- Considering the difficulties to gather local detailed data at national level, the objective is to provide approaches that can be used with data commonly available and easy to be acquired.
- Providing indicative values is welcome, especially in terms of energy savings per lighting source and about dimming effects.

Feedback from the participants about the dialogue activities

The feedback was overall positive about the methodology presented: 93% of the participants found the methodology feasible and easy to use. In the meantime, the result of the pools pointed a lack of access to databases that are important for national evaluation. This supports the choice of developing a simplified approach with indicative values to be used by all Member States.

Overall, very positive feedback about the organisation and length of the meeting.

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For the next meeting, higher interest was shown about data (indicative values, costs) and discussing further the methodology.

Interesting sources to look further

Table 3. Sources to look further about Road Lighting systems.

Name of the source	Why it is relevant / interesting
Standard EN 13201-5 (Road lighting - Part 5: Energy performance indicators)	Standard taken into account when developing the methodology. It goes into more details, while the objective of streamSAVE is to develop simpler calculation methods, also taking into account the current practices of Member States.

Next steps for the Dialogue Group on Public Lighting

– Briefly presenting the final version of the methodology, Excel tool and online platform;

– Presentation of the application of similar methodologies: Austria (engineering approach), Slovenia (simplified approach) or France (simplified approach).

Summary about Electric Vehicles

Figures about the Dialogue group on Electric Vehicles

- 25 participants to the meeting 2 of the dialogue group
- 44 single users registered to this Dialogue Group
- 2 posts and 7 comments related to this PA in the online forum

Main issues discussed during this semester

Main issues discussed at the **kick-off meeting**:

- Need for a uniform methodology to calculate the savings with electric vehicles (fuel switching)
- How to avoid double counting between EVs and charging infrastructures
- How to take into account in the baseline the EU emission standards for new vehicles, and possible waterbed effects (higher efficiency in one country compensated by lower efficiency in another)
- How to calculate energy savings from hybrid vehicles

Main issues discussed in the **online forum**:

- Discussions about whether energy savings can be attributed to charging infrastructures, and decision to exclude infrastructures from the streamSAVE methodology, due to the new Alternative Fuels Infrastructure Directive that will likely make that energy savings from infrastructures could not be additional (and thereby eligible) according to the article 7 (and Annex V) of the EED.
- Large potential for well-to-wheel energy savings from electric vehicles replacing gasoline vehicles.

Main issues discussed in the **second meeting**:

- Key parameters include the specific energy consumption of the vehicles (both the reference/baseline vehicle and the "efficient" one/EVs) and the average distance travelled.
- The key parameters for the indicative values were calculated based on public literature and regulations (e.g. emissions standards and emissions monitoring). However, using national, or even more specific, values is recommended whenever possible to increase the reliability of the calculations.
- Further analyses would be needed to consider the possibility to define indicative values for behavioural effect, for instance, whether the use of EVs would be related to smaller distances travelled compared to the average for the whole stock of vehicles.
- The values from the European standards on CO2 emissions from vehicles can provide a basis for a harmonised baseline in the context of Article 7 EED.
- Cost data to compare reference and efficient vehicles should be based on TCO (Total Cost of Ownership), considering the different taxes applying to vehicles, insurance, maintenance, fuel/electricity prices per km, etc. Which prevent defining indicative European average values due to the strong differences among countries

Main messages from the discussions

– Collecting national data improves the reliability of the calculations. National databases already in place for other purposes and the monitoring databases of the policies can be useful data sources.

– The use of indicative values to set the baseline would help for harmonized calculations, as the European standards on CO2 emissions can provide a common basis, and also ensure compliance with the additionality requirement (for Article 7 EED).

Feedback from the participants about the dialogue activities

The feedback was overall positive about the methodology presented: 92% found the methodology feasible and easy to use (13 answers). 62% found that the indicative values presented are enough, and 77% considered the data sources used as reliable.

Very positive feedback about the organisation of the meeting that met participants' objectives.

For the next meeting, three topics get a high interest: indicative values, examples of methods used by Member States and discussing further the methodology.

Interesting sources to look further

Table 4. Sources to look further about Electric Vehicles.

Name of the source	Why it is relevant / interesting
European regulation for CO$_2$ emission performance standards for cars and vans	Key reference considered for the streamSAVE methodology. These standards are however set in terms of specific CO$_2$ emissions (gCO$_2$/km): the values from the standards thus need to be converted into specific energy consumption (e.g., kWh/km) by applying the emission factor according to the type of fuel considered for the reference vehicle.
study in Germany from ADAC (German Automobile Club)	Interesting about cost data. It covers more than 100 models often showing total costs accumulated over the first 5 years in use for one similar model with fuel vs respective PHEV (Plug-in Hybrid Electric Vehicle) and BEV (Battery Electric Vehicle).

Next steps for the Dialogue Group on EVs

– Presentation of the final methodology and Excel tool.

– Discussions focused on costs and behavioural effects associated with EVs.

– Presentation from an external expert.

Summary about Heat Recovery

Figures about the Dialogue group on Heat Recovery

– 20 participants to the meeting 2 of the dialogue group

– 40 single users registered to this Dialogue Group

– 3 posts related to this PA in the online forum

Main issues discussed during this semester

Key issues raised in the **stakeholders' survey** and **kick-off meeting**:

– Need for a clear definition of the terms and boundaries when considering heat recovery

– How to define the savings lifetime

– How to set a baseline due to the diversity of industrial processes and technological options

– How to handle changes in production volumes

Key issues discussed during the **second meeting**:

– In the case of heat recovered for another end-use onsite, the difference in the ancillary electricity consumption (e.g., circulation pumps) between the baseline and "heat recovery" cases are assumed to be negligible, allowing a simplified calculation.

– Whereas in the case of heat recovered directly fed back to the same process, the ancillary consumption of the heat recovery system is additional (compared to the baseline case), and should therefore be deducted from the gains of the heat recovered.

– In the case of heat recovered to supply district heating, final energy savings may occur when the supply with heat recovery enables to connect new end-users/buildings, by comparing with the efficiency of the replaced/baseline heating system that would have been used in the absence of connection to district heating.

Main messages from the discussions

– The amending Energy Efficiency Directive (EED) adopted in 2018 makes that only small final energy savings from district heating can be reported to EED Article 7. However, the use of heat recovery for district heating still provides large primary energy savings in the context of EED Article 3 (and reductions in GHG emissions).

– The scope of final energy consumption to consider in the savings calculations depend on the case of application: heat recovered directly fed back in the same process; heat recovered used on-site but for another end-use; heat recovered used to supply other sites via district heating.

Feedback from the participants about the dialogue activities

Most participants found it useful to have a guidance on how to correctly calculate savings from heat recovery.

Overall positive feedback about the organisation of the meeting that met participants' objectives.

For the next meeting, the participants showed the highest interest in discussing further the methodology. Second topics selected are about indicative values, examples from Member States and calculating CO_2 savings.

Next steps for the Dialogue Group on Heat Recovery

- Presentation of the Excel tool/streamSAVE platform (in accordance with Refrigeration – one example will be shown)

- Presentation by streamSAVE partners (AEA) on how to define the system boundaries for heat recovery measures. The aim is that stakeholders will feel more competent in deciding what energy flows are relevant in what case of heat recovery, how to determine the relevance, how to set up a measuring protocol, etc. The presentation will be done using visualisation and exemplary calculation values when necessary.

- External presentation about a method currently used by a Member State

Summary about Refrigeration systems

Figures about the Dialogue group on Refrigeration systems

– 14 participants to the meeting 2 of the dialogue group

– 34 single users registered to this Dialogue Group

– 3 posts related to this PA in the online forum

Main issues discussed during this semester

Main issues raised in the **stakeholders' survey** and during the **kick-off meeting**:

– Calculation of cooling efficiency and on-site data collection are complicated. Therefore, simplified calculation methods and indicative values would be welcome.

– Difficulty to set a baseline that complies with additionality requirements.

– Highest interest (in terms of scope) in central compression refrigeration units, replacement of electric compression refrigeration units with direct or indirect absorption cooling units

– How to account for different needs of different refrigerated products / Standard approach for comparison of different systems with different refrigerants

Main issues raised during the **second meeting**:

– The discussions confirmed that it is relevant to use SEPR (Seasonal Energy Performance Ratio) instead of ESEER (European Seasonal Energy Efficiency Ratio) in this calculation methodology.

– ESEER is indeed not used any more: due to the change in the regulation, certification of equipment does no longer include ESEER values. From 2016, the European regulation makes that the certification of equipment includes SEER or SEPR values (according to the type of equipment).

– The standard EN14825:2018 (Air conditioners, liquid chilling packages and heat pumps, with electrically driven compressors, for space heating and cooling - Testing and rating at part load conditions and calculation of seasonal performance) may include complementary indicative values that could be relevant for the streamSAVE methodology.

Main messages from the discussions

– The scope of the methodology: focus on new installations or the replacement of air-chilled or water-chilled central compression refrigeration units, and high temperature process chillers.

– The ecodesign regulation for air heating and cooling products (EU) 2016/2281, makes that the calculation methodology previously using ESEER (European Seasonal Energy Efficiency Ratio) as efficiency parameter should be updated to use the new efficiency parameters set in the current regulation: SEER (Seasonal Energy Efficiency Ratio) or SEPR (Seasonal Energy Performance Ratio) (according to the type of equipment)

Feedback from the participants about the dialogue activities

Very positive feedback about the meetings that met participants' objectives.

Most participants found the methodology feasible and easy to use. Lack of knowledge about possible sources of complementary indicative values or alternative methods.

About the next meeting, participants showed the highest interest in discussing further the methodology, then about indicative values. Cost data, calculating CO_2 savings and getting examples from Member States were also selected by some participants.

Interesting sources to look further

Table 5. Sources to look further about refrigeration systems.

Name of the source	Why it is relevant / interesting
EU ecodesign regulation for air heating and cooling products (EU) 2016/2281	Key source used to develop the streamSAVE methodology (see also the related guidelines published by the European Commission)
Database of Eurovent certified air-chilled and water-chilled refrigeration units under the LCP-HP (Liquid Chilling Packages and Heat Pumps)	Source of indicative values for SEPR (Seasonal Energy Performance Ratio)
standard EN14825:2018 (Air conditioners, liquid chilling packages and heat pumps, with electrically driven compressors, for space heating and cooling - Testing and rating at part load conditions and calculation of seasonal performance)	May include complementary indicative values that could be relevant for the streamSAVE methodology

Next steps for the Dialogue Group on Refrigeration systems

– Presentation of the final methodology and Excel tool.

– Discussions focused on costs associated to commercial and industrial refrigeration systems.

– Presentation from an external expert.