

Dealing with additionality in the context of Article 7 EED

Handling additionality in energy savings calculations

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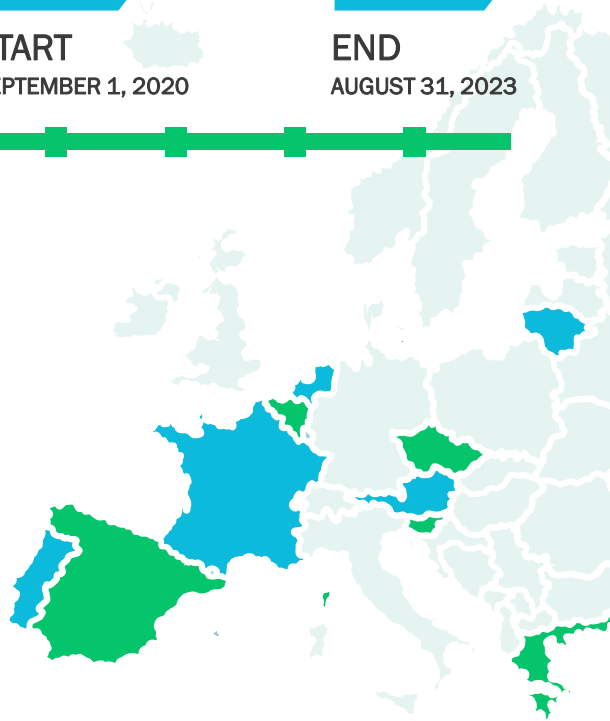
StreamSAVE Consortium

2020

START
SEPTEMBER 1, 2020

2023

END
AUGUST 31, 2023



COORDINATOR



12 PARTNERS
10 COUNTRIES

RESEARCH & POLICY INSTITUTIONS



ENERGY AGENCIES OR RELATED



AUSTRIAN ENERGY AGENCY

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StreamSAVE project

- Capacity building among public authorities on Article 3 & Article 7 of the Energy Efficiency Directive:
*streamSAVE will build capacity through the creation of an open **dialogue** that will focus on streamlining **calculation methodologies** to estimate bottom-up savings and cost effectiveness of technical energy savings actions. The project will target **priority actions** (new actions with high energy saving potential and considered as a priority issue by national public authorities)*
- Address additional efforts in EU Member States in realizing energy savings by 2030 under Article 3 & Article 7 of EED.



StreamSAVE project

- ❧ Streamlining **energy savings methodologies**, incl. indicative values, cost effectiveness and CO₂ savings
- ❧ Technical **priority actions**: high energy savings potential and considered as priority by national public authorities
- ❧ **Demand-driven**: being close to and supporting stakeholders' needs within EU Member States – example: [summary from first survey's results](#)
- ❧ Creating **lively community of experts** on priority actions
- ❧ Building **bridges towards existing initiatives** to learn and to valorize project's outcomes.



Handling additionality in energy savings calculations

- 🌿 Overview 5 Priority Actions
- 🌿 Types of approaches used to deal with additionality in the Methodologies
- 🌿 Additionality in Industrial and Commercial Refrigeration Systems



streamSAVE Priority Actions (1st Round)



Heat Recovery and district heating



Industrial and commercial refrigeration systems



Building Automation and control systems



Lighting systems including public lighting



Electric Vehicles



streamSAVE Priority Actions (1st Round) - Methodologies

Eight newly developed methodologies:

- Heat recovery for on-site use in industry - feedback of excess heat into a process
- Heat recovery for on-site use in industry - use of excess heat for on-site applications
- Heat recovery for feed-in to a district heating grid
- Building Automation and Control Systems in residential and non-residential buildings
- Energy efficient compression refrigeration units
- Fuel Switching to Electric Vehicles
- Energy efficient road lighting systems – engineering approach
- Energy efficient road lighting systems – simplified approach



streamSAVE Priority Actions (1st Round) - Methodologies

For each methodology:

- Calculation of total final energy savings (Article 7 EED)
 - including indicative calculation values based on statistical data
- Calculation of impact on energy consumption (Article 3 EED)
- Overview of costs related to the action:
 - Investment costs
 - Variable operational costs
 - Fixed operational costs
 - Revenues
- Calculation of greenhouse gas savings



Estimation of energy savings – streamSAVE project

Deemed Savings include savings formulas or calculation methodologies, together with indicative estimated values (based on evidence-based data sources and analytical methods).

The principles included in Annex V of the EED have been considered as a starting point to the calculation of additionality. This is a requirement to ensure that quality standards for energy efficiency measures are introduced and maintained and a methodology for the notification of energy efficiency measures to EC.

The energy savings should be additional to those that would have been achieved anyway including factors such as market effects and the impact of existing policies.



Estimation of energy savings (1)

Heat Recovery for on-site use in industry	Heat Recovery for feed-in to a DHG	BACS
<ul style="list-style-type: none">✓ Measured data has to be used✓ Without an incentive, the final energy consumption of the existing process (without heat recovery) is equal to the baseline for the evaluation of the action, so that the calculated savings will always be additional, provided that a valid incentive is indicated for the implementation of the action.	<ul style="list-style-type: none">✓ The efficiency of the pre-existing heating system of a building is compared to the efficiency of a district heating transformer station.✓ The indicative value prepared offers an average of heating systems currently used in the EU's building stock.	<ul style="list-style-type: none">✓ New provisions in Articles 14 and 15 (EPBD2018) lay out mandatory requirements for the installation and retrofit of BACS in non-residential buildings (existing and new) with effective rated output of over 290 kW.✓ Class B defined in EN 15232, which has possible ramifications for the baseline. Only savings that exceed those requirements, could be counted in frame of Article 7 EED.



Estimation of energy savings (2)

Electric Vehicle	Lighting systems
<p>The specific energy consumption of the reference vehicles was calculated based on the CO₂ emission performance standards defined by the EU regulation.</p>	<p>The requirements of the EU regulations are introduced into the specific final energy consumption of the reference lighting technologies to comply with the criterion of additionality.</p>
<p>The indicative values present an update of the reference values within the timeframe 2020-2030.</p>	<p>All the developed indicative values follow the requirements of the latest Eco-design standards.</p>
<p>The efficiency levels required by EU regulations are always taken as a reference and all savings are calculated in addition to the levels required by EU regulations.</p>	



Industrial and Commercial Refrigeration Systems

🌿 The savings calculation methodology targets:

- 🌿 New installations or the replacement of air-chilled or water-chilled central compression refrigeration units;
- 🌿 High temperature process chillers



Industrial and Commercial Refrigeration Systems

Approach to additionality:

The requirements of the EU regulations are introduced into the specific final energy consumption of the reference high temperature process chillers to fulfil the criterion of additionality. Therefore, the indicative values are in line with the latest Ecodesign Directive.



Industrial and Commercial Refrigeration Systems

How to set the baseline to ensure that the calculated savings can be considered additional?

Selection of Indicators

Availability of data

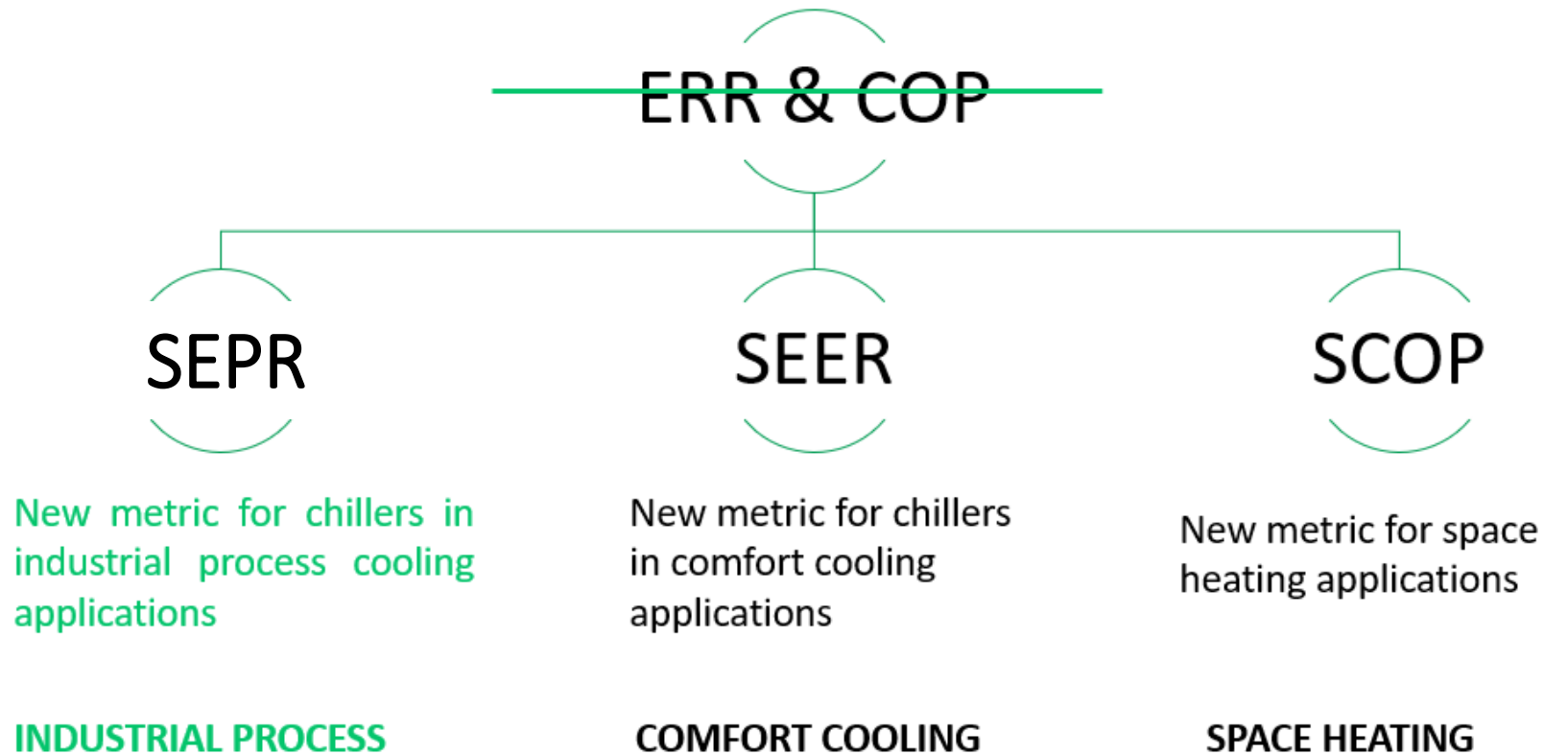
Ecodesign vs Market



Industrial and Commercial Refrigeration Systems

SEPR - Seasonal Energy Performance Ratio

SEPR measures the seasonal energy efficiency of process chillers by calculating the ratio between annual cooling demand and annual energy input.





Industrial and Commercial Refrigeration Systems

SEPR - Seasonal Energy Performance Ratio

Ecodesign regulation 2016/2281

$$400 \text{ kW} \leq P_A \leq 1500 \text{ kW}$$

Eurovent

$$600 \text{ kW} \leq P_A \leq 1500 \text{ kW}$$



Industrial and Commercial Refrigeration Systems

SEPR - Seasonal Energy Performance Ratio

	ECODESIGN REGULATION		MARKET ANALYSIS
	1st January 2018	1st January 2021	SEPR _{ref}
Air-chilled	5	5,5	5,62
Water-chilled	7,5	8	8,76



Industrial and Commercial Refrigeration Systems

Calculation of TFES (Art. 7)

$$TFES \text{ or } EFE = n \times Pc \times h_{FL} \times \left(\frac{1}{SEPR_{Ref}} - \frac{1}{SEPR_{Eff}} \right)$$

Baseline system data

For air-chilled coolers	[-]
<u>SEPR_{Ref}</u>	5.62
<u>SEPR_{Eff}</u>	6
For water-chilled coolers	[-]
<u>SEPR_{Ref}</u>	8.76
<u>SEPR_{Eff}</u>	11.41
Lifetime of savings	[a]
Lifetime of savings	8

Database of Eurovent certified air-chilled and water-chilled refrigeration units under the LCP-HP (Liquid Chilling Packages and Heat Pumps)⁴:

- SEPR_{Ref}: average of all units in the market.
- SEPR_{Eff}: average of units exceeding reference value.

→ Data obtained from Eurovent website

→ Commission Recommendation about transposing the energy savings obligations (Indicative lifetime for commercial refrigeration)⁵

⁴ <https://www.eurovent-certification.com/en/third-party-certification/certification-programmes/lcp-hp>

⁵ Commission Recommendation (EU) 2019/1658 on transposing the energy savings obligations under the Energy Efficiency Directive



Industrial and Commercial Refrigeration Systems

Calculation of TFES (Art. 7)

$$TFES \text{ or } EFE = n \times P_c \times h_{FL} \times \left(\frac{1}{SEPR_{Ref}} - \frac{1}{SEPR_{Eff}} \right)$$

Baseline system data

For air-chilled coolers	[P_c]
Cooling power	≤ 600 kW
For water-chilled coolers	[P_c]
Cooling power	≤ 1.500 kW
Full-load hours	[h_{FL}]
Full-load hours	Project specific
Number of cooling systems	[n]
Number of cooling systems	Project specific

LCP-HP (Liquid Chilling Packages and Heat Pumps) Programme by Eurovent:

→ Capacity limits of certified units: air- and water-chilled, cooling mode

→ Full-load hours are project specific.

→ Number of units for specified cooling power (P_c). Project specific.



Industrial and Commercial Refrigeration Systems

Calculation of TFES (Art. 7)

Considerations

Industrial refrigeration systems are usually built for long periods, so there are many pre-Ecodesign regulation refrigeration systems with values below this minimum SEPR value.

The Ecodesign regulation 2016/2281 sets two minimum SEPR values: the first level valid from 1/1/2018 and the second level valid from 1/1/2021. See Annex II – Figure 5 and 6.

The standard EN14825:2018 may include complementary indicative values that could be relevant for the streamSAVE methodology.



Visit the [streamSAVE platform](#) to access more resources

See for example:

- 🌿 The [standardized savings calculation methodologies](#) (energy, CO2 savings and costs)
- 🌿 The [summary of the dialogue activities of July-December 2021](#)

Registered users can also access the online [Training Module](#) including calculation spreadsheets that can be used either online or offline.

If you're not registered and would be interested, contact:
dialogues@streamsave.eu

Thank you

Get in touch for more information!



Project coordinator - Nele Renders, VITO



All project reports will be available for download on the streamSAVE website www.streamsave.eu



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