Discussion paper: Should the consumer be able to compare the energy efficiencies of local space heaters ≤ 50 kW and air-to-air heat pumps ≤ 12 kW by means of the energy label?

Today, the requirements on space heaters that heat air by means of combustion of solid, liquid or solid fuel, by means of the Joule effect or by the capturing heat from ambient air by means of a vapour compression cycle or sorption cycle are scattered over different Ecodesign and Energy Labelling Regulations. Ecodesign Regulations typically cover products ranging from residential to commercial or even industrial, Energy Labelling Regulations typically only cover residential products.

	Ecodesign Regulations	Energy labelling Regulations
Air-to-air heat pumps ≤ 12 kW	(EU) No 206/2012[1]	(EU) No 626/2011[2]
Air-to-air heat pumps > 12 kW	(EU) 2016/2281[3]	N.A.
Warm air heaters	(EU) 2016/2281[4]	N.A.
Local space heaters ≤ 50 kW	(EU) 2015/1185[5]	(EU) 2015/1186[6]
	(EU) 2015/1188[7]	
Local space heaters ≤ 120 kW	(EU) 2015/1185[8]	N.A.
	(EU) 2015/1188[9]	

The products in the scope of these regulations have different technologies serving the same purpose. Therefore, the question arises whether or not consumers should be able to compare the energy efficiencies of those products by means of a single energy label, i.e. by introducing the same energy efficiency classes for all products on a 'combined' energy label (air-to-air heat pumps ≤ 12 kW and local space heaters ≤ 50 kW.

[1] Commission Regulation (EU) No 206/2012 of 6 March 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for air conditioners and comfort fans (*OJ L 72, 10.3.2012, p. 7).*

[2] Commission Delegated Regulation (EU) No 626/2011 of 4 May 2011 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of air conditioners (*OJ L 178, 6.7.2011, p. 1).*

[3] Commission Regulation (EU) 2016/2281 of 30 November 2016 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for air heating products, cooling products, high temperature process chillers and fan coil units (OJ L 346, 20.1.2016, p. 1).

[4] Commission Regulation (EU) 2016/2281 of 30 November 2016 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for air heating products, cooling products, high temperature process chillers and fan coil units (OJ L 346, 20.1.2016, p. 1).

[5] Commission Regulation (EU) 2015/1185 of 28 April 2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for solid fuel local space heaters (*OJ L 193, 21.7.2015, p. 76).*

[6] Commission Delegated Regulation (EU) 2015/1186 of 24 April 2015 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to the energy labelling of local space heaters (*OJ L 193, 21.7.2015, p. 20).*

[7] Commission Regulation (EU) 2015/1185 of 24 April 2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for solid fuel local space heaters (*OJ L 193, 21.7.2015, p. 1*).

[8] Commission Regulation (EU) 2015/1185 of 28 April 2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for solid fuel local space heaters (*OJ L 193, 21.7.2015, p. 76).*

[9] Commission Regulation (EU) 2015/1185 of 24 April 2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for solid fuel local space heaters (*OJ L 193, 21.7.2015, p. 1*).

This approach would be in line with the approach taken for the space heaters (heat pump space heaters, boilers and cogeneration space heaters) in the scope of Regulation (EU) 811/2013[10] and Regulation (EU) 2015/1187[11]. These are also different technologies serving the same purpose, i.e. central space heating by means of hot water circulation. All technologies in the scope of these Regulations need to bear an energy label, which is based on the same energy efficiency classes for all technologies in the scope.

It is clear that choosing an approach that will facilitate the comparison between local space heaters and air-to-air heat pumps will have advantages and disadvantages. An initial consultation, with a preliminary proposal for energy efficiency classes, was undertaken in of the context of the review studies for Regulations (EU) No 206/2012 and 626/2011 and for Regulation (EU) 2015/1188. The proposed energy efficiency classes and the products that would fall in their scope, including information used for rescaling and the use of the conversion factor, are given in the Annex I.

The respondents included individual companies, industry associations, NGOs and Member States. In general, companies and associations representing the local space heater manufacturers were against the proposal, the heat pumps manufacturers were mostly in favour or neutral, NGOs were mostly in favour and Member States' opinions were diverse. A selection of pros and cons is listed here:

Pros	Cons
The products in the scope of Regulations (EU) 2015/1186 and (EU) No 626/2011 have the same functionality, i.e. space heating by means of air heating of one or more rooms in residential and commercial buildings	Consumers interested in buying a local space heater are not interested in buying a heat pump for reasons of price, appearance, fuel choice, ease of installation, etc.
Most of the products in the scope of Regulations (EU) No 626/2011 and (EU) 2015/1186 are used as auxiliary heaters.	Products in the scope of Regulation (EU) No 626/2011 are limited to a rated capacity of ≤ 12 kW, while the products in the scope of Regulation (EU) 2015/1186 have a rated heat output of ≤ 50 kW.
Member States will only be able to give incentives for the products in the top 2 significantly populated energy efficiency classes of the energy label[12], this will speed up decarbonisation.	Manufacturers of local space heaters will never be able to reach the highest energy efficiency classes, no matter how much they invest in product improvements. This situation can lead to adverse effects, as the energy label no longer incentivises manufacturers to invest in energy efficiency.
Consumers will be able to choose the most	Reducing the active classes to two for each sub-

[10] Commission Delegated Regulation (EU) No 811/2013 of 18 February 2013 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to the 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 (*OJ L 239, 6.9.2013, p. 1).*

[11] Commission Delegated Regulation (EU) 2015/1187 of 27 April 2015 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of solid fuel boilers and packages of a solid fuel boiler, supplementary heaters, temperature controls and solar devices (*OJ L 193, 21.7.2015, p. 43).*

[12] Article 7(2) of Regulation (EU) 2017/1369

efficient technologies to heat their home by ensuring comparability of different solutions.	types of product (e.g. instead of currently 4 active classes for air conditioners and 7 active classes for local space heaters) would reduce the granularity of information for consumers.
The energy label of space heaters (Regulation (EU) No 811/2013) demonstrates that it was possible to combine different technologies on the same energy label.	With less differentiation in the label for heat pumps, manufacturers of reversible air-to-air air conditioners will improve the efficiency in the cooling mode to the detriment of the efficiency in the heating mode.

Some additional considerations raised by stakeholders:

1) Include electric local space heaters in the scope of the energy labelling regulation, since energy efficiencies of portable air-to-air heat pumps and electric local space heaters are very similar.
2) Inverse efficiency figures ($1/\eta_{s,h}$), to avoid that the $\eta_{s,h}$ of heat pumps head to infinity with decreasing conversion factors.
3) Add the energy efficiency number to the energy label in proximity to the arrow to allow more differentiation between products of the same category.

Based on these suggestions, some additional proposals were made for the energy efficiency classes of a potentially 'combined' label in Annex II.

We welcome any feedback on:

1) whether or not the members of the Consultation Forum are in favour of introducing an energy label for air-to-air heat pumps ≤ 12 kW and local space heaters ≤ 50 kW that is based on the same energy efficiency classes,
2) the inclusion of electric local space heaters in the scope of this label,
3) the inversion of the energy efficiency figures,
4) the addition of the energy efficiency number on the label, and
5) the proposals in Annex II.

Annex I

Information used for rescaling

The review study for Ecodesign Regulation (EU) No 206/2012 and Energy Labelling regulation (EU) No 626/2011 and the review study for Ecodesign Regulation (EU) 2015/1188 contain the energy efficiency information needed to make a proposal for a revised energy label. For solid fuel local space heaters, which were not subject of the review studies above, we can assume that the market has not evolved significantly in terms of energy efficiency since the entry into force of the Regulation in 2015[13], as this is also the case for the local space heaters that were subject to the study.

Conversion to primary energy efficiency

To be able to compare the different efficiency values, the SCOP values of the heat pumps are converted to primary energy as follows:

$$\eta_{s,h} = \frac{SCOP}{CC} - \text{F(1)}$$

With CC, the conversion coefficient equal to 2,1, in line with the amendment to Annex IV, footnote 3 of the Energy Efficiency Directive[14]; F(1), the contribution accounting for temperature control equal to 3%.

The biomass label factor (BLF) would be applied, which is 1,45 for biomass local space heaters and 1 for fossil fuel local space heaters.

[13] https://eco-localspaceheaters.eu/the-study

[14] Directive (EU) 2018/2002 of the European Parliament and of the Council of 11 December 2018 amending Directive 2012/27/EU on energy efficiency, OJ L 328, 21.12.2018, p. 210–230

Energy efficiency classes – proposal used during the initial consultation

Energy efficiency class	Corresponding efficiency numbers	Comments	Product types in each energy efficiency class	
			At entry into force	After entry into force
A	$\eta_{s,h} \geq 292\%$	The upper A class needs to be empty at the time of entry into force of the Regulation, therefore, 292% corresponds to the BNAT of heat pumps and corresponds with an SCOP value of 6.2 as determined in the review study[15] for the regulation for the air conditioners	None	Heat pumps
B	$292\% > \eta_{s,h} \geq 230\%$	230% is the BAT level for heat pumps > 6 kW, this would give incentive for those appliances to move beyond the BAT	Heat pumps	
C	$230\% > \eta_{s,h} \geq 136\%$	136% is the BAT for solid fuel local space heaters, this would give incentive for those appliances to move beyond the BAT	Heat pumps	Solid fuel local space heaters
D	$136\% > \eta_{s,h} \geq 88\%$	88% is the BAT for a gas and oil fuel local space heaters, this would give incentive for those appliances to move beyond the BAT	Solid fuel local space heaters	Gas and oil local space heaters
E	$88\% > \eta_{s,h} \geq 76\%$	76% is more or less the average between the E and the G class	Gas, oil and solid fuel local space heaters	
F	$76\% > \eta_{s,h} \geq 65\%$	65% is the BAT for open fronted gas and oil technologies, this would give incentive for those appliances to move beyond the BAT	Gas, oil and solid fuel local space heaters, tube local space heaters	Open fronted gas and oil technologies
G	$65\% > \eta_{s,h}$		Open fronted technologies	

[15] http://www.eco-airconditioners.eu

Annex II

Updated options after the initial consultation

Energy efficiency class	Without electric local space heaters	With electric local space heaters	With $1/\eta_{s,h}$ instead of $\eta_{s,h}$
A	$\eta_{s,h} \geq 292\%$	$\eta_{s,h} \geq 292\%$	$0{,}34 \leq 1/\eta_{s,h}$
B	$292\% > \eta_{s,h} \geq 230\%$	$292\% > \eta_{s,h} \geq 230\%$	$0{,}43 \leq 1/\eta_{s,h} < 0{,}34$
C	$230\% > \eta_{s,h} \geq 136\%$	$230\% > \eta_{s,h} \geq 136\%$	$0{,}74 \leq 1/\eta_{s,h} < 0{,}43$
D	$136\% > \eta_{s,h} \geq 110\%$	$136\% > \eta_{s,h} \geq 88\%$	$1{,}14 \leq 1/\eta_{s,h} < 0{,}74$
E	$110\% > \eta_{s,h} \geq 88\%$	$88\% > \eta_{s,h} \geq 65\%$	$1{,}54 \leq 1/\eta_{s,h} < 1{,}14$
F	$90\% > \eta_{s,h} \geq 65\%$	$65\% > \eta_{s,h} \geq 46\%$	$2{,}17 \leq 1/\eta_{s,h} < 1{,}54$
G	$65\% > \eta_{s,h}$	$46\% > \eta_{s,h}$	2,17
Comments	110% differentiates between solid fuel local space heaters 88% is the BAT for a gas and oil fuel local space heaters and tube local space heaters, this would give incentive for those appliances to move beyond the BAT	46% is BAT electrical heater	