

# Review Ecodesign / Energy labelling Cooking appliances

2<sup>nd</sup> Technical Working Group – interactive webinar

04<sup>th</sup> & 5<sup>th</sup> May 2021

# Agenda

Time	Topic
10:00 – 10:10	Introduction & Welcoming
10:10 – 10:50	Scope
10:50 – 12:00	Declaration of energy consumption
12:00 – 12:40	Ecodesign and Energy labelling
12:40 – 13:00	Horizontal Requirements - Material Efficiency

# Ovens - Scope

# Scope

## Topics

1. The inclusion of **solo-MW** ovens
2. The inclusion of **combi-MW** ovens
3. The inclusion of **small and portable** ovens
4. The inclusion of **solo-steam** ovens
5. The case of **combi-steam** ovens

	New regulation ≈ 2022		
	Ecodesign – Material Efficiency	Ecodesign – Minimum Energy Performance	Energy Labelling
Solo-MW			
Combi-MW			
Small/Portable			
Solo-Steam			
Combi-Steam			

“new regulation” ≈ 2022

“future regulation” ≈ 2030

# 1. The inclusion of solo-MW ovens in scope

## Background

- Currently excluded, they offer a MW function
- Penetration rate in EU: 75.3%
- Frequency of use: 842 times/year
- Annual energy consumption: 45 - 86 kWh/year
- Small differences between appliances
- Small improvement potential: “MWs are mature products from the energy efficiency perspective; efforts should focus on improving consumer behavior” (Gallego-Schmidt et al, 2018)

## Recommendations for new regulation

- Include solo-MW ovens in scope of Ecodesign for Material Efficiency
- Database of solo-MW ovens

## Recommendations for future regulation

- Include in future Ecodesign regulation for minimum energy performance

## 2. The inclusion of combi-MW ovens in scope

### Background

- Currently excluded, they offer a MW function
- 43% of ovens <5 years have combi-MW function
- Frequency of use: 19% use it very often/almost always
- Excluding combi-MW could be used as a loophole (minimum energy performance)
- Consumers are not aware of the potential for reduction of energy consumption: 10% according to manufacturers
- No standard method for energy consumption of the MW-combi function

### Recommendations for new regulation

- Include combi-MW ovens in scope of Ecodesign for Material Efficiency and minimum energy performance
- Start development of standard method for energy consumption of MW-combi function
- Database of combi-MW ovens

### Recommendations for future regulation

- Include in future energy labelling regulation

# 3. The inclusion of small and portable ovens in scope

## Background

- Currently excluded, if  $<18$  kg or  $<0.25 \times 0.12$  m
- Penetration rate in EU: 14%
- Frequency of use unknown
- Overall energy consumption unknown but potentially not negligible
- Brickmethod: applicable for ovens  $>10$  litres

## Recommendations for new regulation

- Stricter requirements in size to include every oven that can be tested with Brickmethod
- Include small and portable ovens in scope of Ecodesign for Material Efficiency only
- Start development of standard method for energy consumption of ovens  $<10$  litres
- Database of small and portable ovens

## Recommendations for future regulation

- Include in future Ecodesign regulation for minimum energy performance
- Include in future Energy labelling regulation

# 4. The inclusion of solo-steam ovens in scope

## Background

- Currently excluded, “Primary function” is steam
- Penetration rate in EU: 4.8%
- Frequency of use: 40% use it 1 / week
- Overall energy consumption: negligible when compared to other appliances
- No standard method for energy consumption

## Recommendations for new regulation

- Include solo-steam ovens in scope of Ecodesign for Material Efficiency only
- Start development of standard method for energy consumption of solo-steam function
- Database of solo-steam ovens

## Recommendations for future regulation

- Consider inclusion in future Ecodesign and Energy Labelling regulation depending on product penetration



# 5. The case of combi-steam ovens

## Background

- Currently included in scope, if “Primary function” is thermal heat
- Energy declaration of conventional heating is declared, but not combi-steam function
- Present in 51% of ovens <5 years
- 33% of consumers use it often / very often / always
- Combi-steam ovens get higher energy classes
- Combi-steam functions consume more energy
- No standard method available for combi-steam function

## Recommendations for new regulation

- Include combi-steam ovens in scope of Ecodesign for Material Efficiency, minimum energy performance and energy labelling (maintain current situation)
- Start development of standard method for energy consumption of combi-steam functions
- Database of combi-steam ovens

## Recommendations for future regulation

- Declare energy consumption of combi-steam ovens in manual

# Summary

## Ovens - Scope

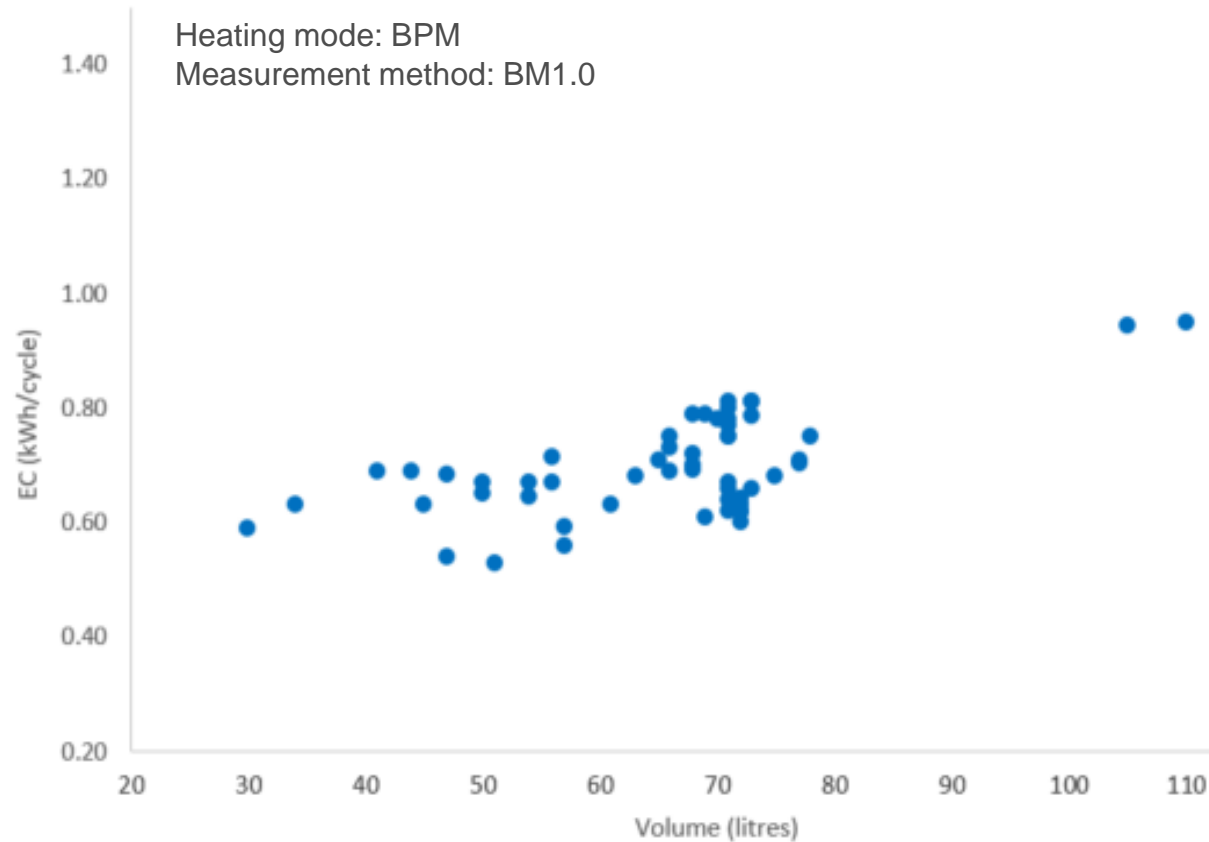
	New regulation ≈ 2022			Work needed →	Future regulation ≈ 2030		
	Ecodesign – Material Efficiency	Ecodesign – Minimum Energy Performance	Energy Labelling		Ecodesign – Material Efficiency	Ecodesign – Minimum Energy Performance	Energy Labelling
Solo-MW	Y	N	N		Y	Y	N
Combi-MW	Y	Y (thermal function)	N	Standard method for <b>combi-MW</b> function	Y	Y	Y
Small/Portable	Y	N	N	Standard method for <b>ovens &lt;10litre</b>	Y	Y*	Y*
Solo-Steam	Y	N	N	Standard method for <b>solo-steam</b> function	Y	Y*	Y*
Combi-Steam	Y	Y (thermal function)	Y (thermal function)	Standard method for <b>combi-steam</b> function	Y	Y	Y

\*Depending on product penetration

# Ovens – Declaration of energy consumption

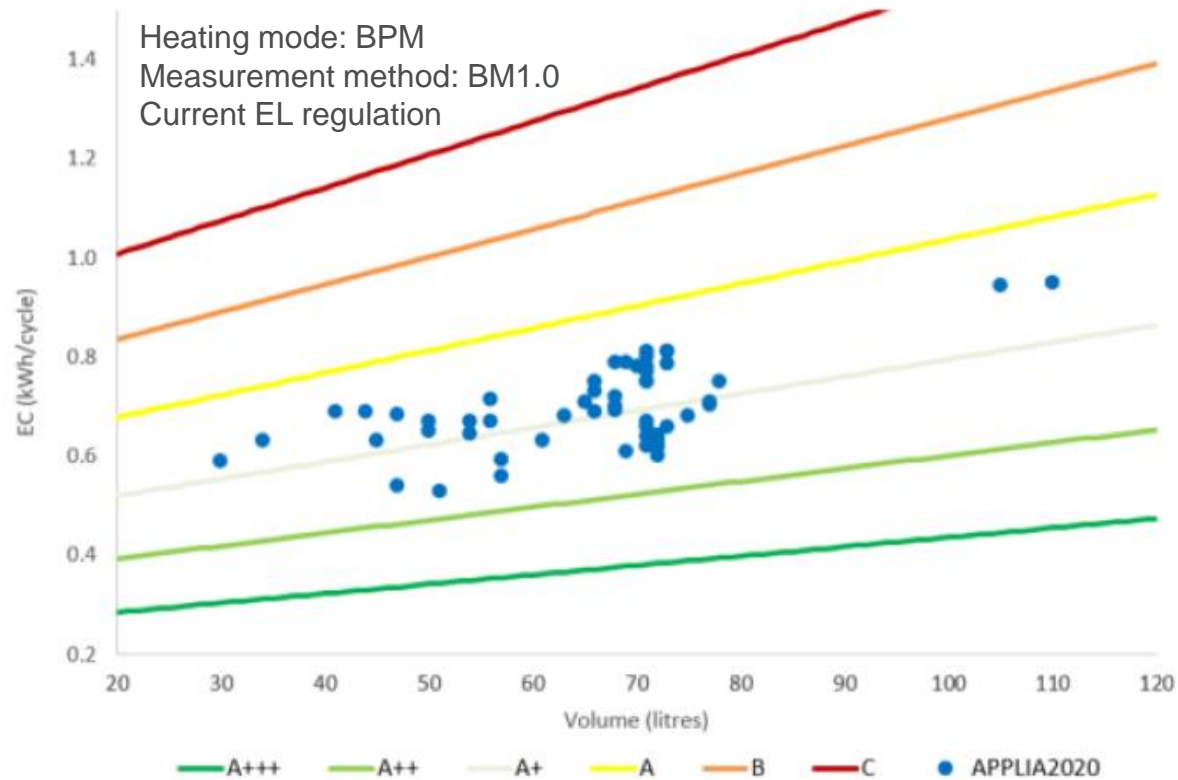
# Energy consumption declaration

## A new database of electric ovens: APPLIA2020



# Energy consumption declaration

## A new database of electric ovens: APPLIA2020



# Energy consumption declaration

## Topics

5. The adoption of a new measurement method (BM2.0)
6. Heating mode to declare energy consumption and get energy class
7. Definition of Standard Energy Consumption (SEC)
8. Cooking food for the measurement of energy consumption
9. Energy declaration of other relevant heating modes and functions (combi-MW and automatic modes)
10. Measurement of cavity volume
11. Inclusion of self-cleaning in product information
12. Inclusion of pre-heating in product information

# 5. The adoption of BM2.0

## TC59X / WG17

### Background

- Simplifies procedure → Unifying temperature settings for all heating modes
- Reduces risk of oven detecting it is under testing conditions → Separation in Phase 1 and Phase 2
- Ensures that thermal behavior of oven in Phase 1 and Phase 2 is similar → c-factor
- Establishes criteria to differentiate “heating function” from “eco function” → s-factor, additional c-factor requirement on last 10 min of cycle
- Limits the excessive use of residual heat → Requirements on  $T_{\text{RISE}}$  measurement (*for how long the  $T$  must be measured?*)

### Open issues

- Validity of c-factor to ensure unchanged behavior of oven between phases
- Acceptance thresholds for c-factor and s-factor
- Acceptance thresholds for  $T_{\text{RISE}}$  (*for how long the  $T$  must be measured?*)

### Recommendation

- Adopt BM2.0 as a reference measurement method for energy consumption of electric ovens

# 6. Heating mode to declare Energy consumption and get energy class

## Background

- REG 65/2014: *“energy consumption shall be measured for one standardized cycle, in a conventional and in a fan-forced mode (...) The energy consumption corresponding to the **best performing mode** shall be used in the calculations”*
- Manufacturers are free to use any heating mode that falls within the definitions of conventional or fan-forced mode → Including energy saving modes
  - Energy saving modes can produce unsatisfactory cooking results
  - Energy saving modes are not the most frequently used
- Should energy saving modes be allowed for energy declaration and energy classification?

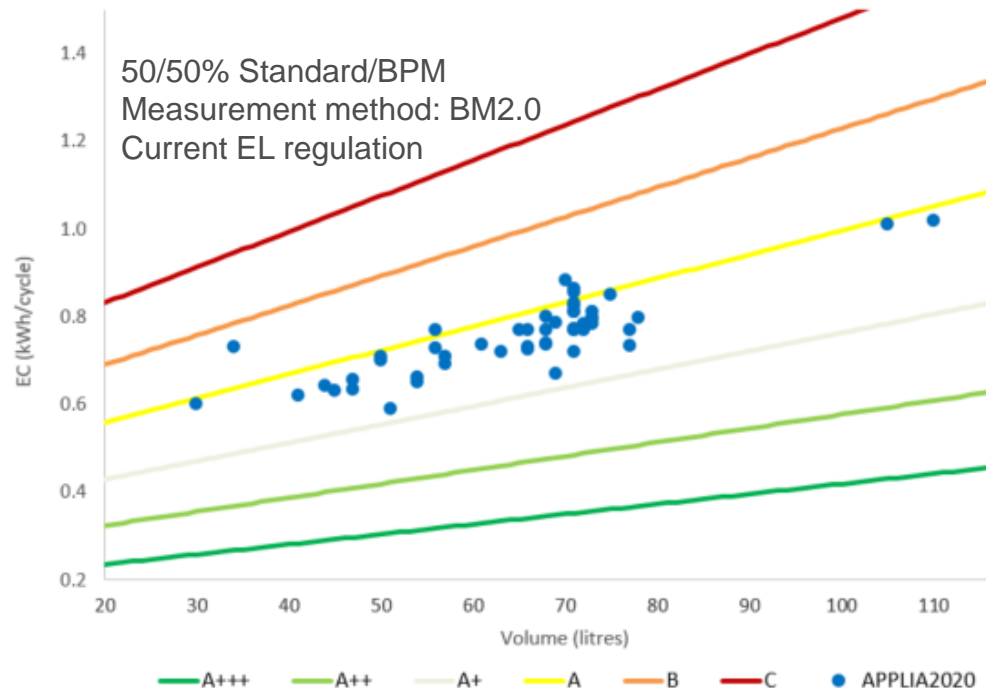
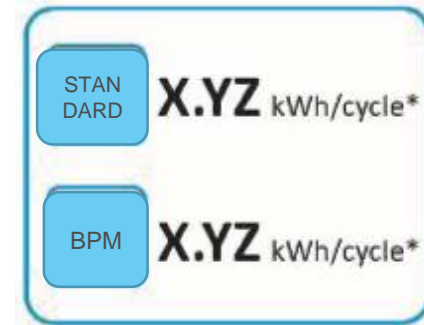
Benefits	Risks
<ul style="list-style-type: none"><li>- Incentive for innovation</li><li>- Potential for overall energy savings</li></ul>	<ul style="list-style-type: none"><li>- Ovens in market with unsatisfactory cooking results</li><li>- Real energy consumption not coherent with label energy consumption</li></ul>



# 6. Heating mode to declare Energy consumption and get energy class

## Recommendation

- In label, declare energy consumption of “standard” heating mode (conventional or fan-forced) and best performing mode (BPM). Indicate, in user manual, dishes that can be cooked with BPM.
- For energy classification, a 50/50% weighted sum between “standard” heating mode and BPM



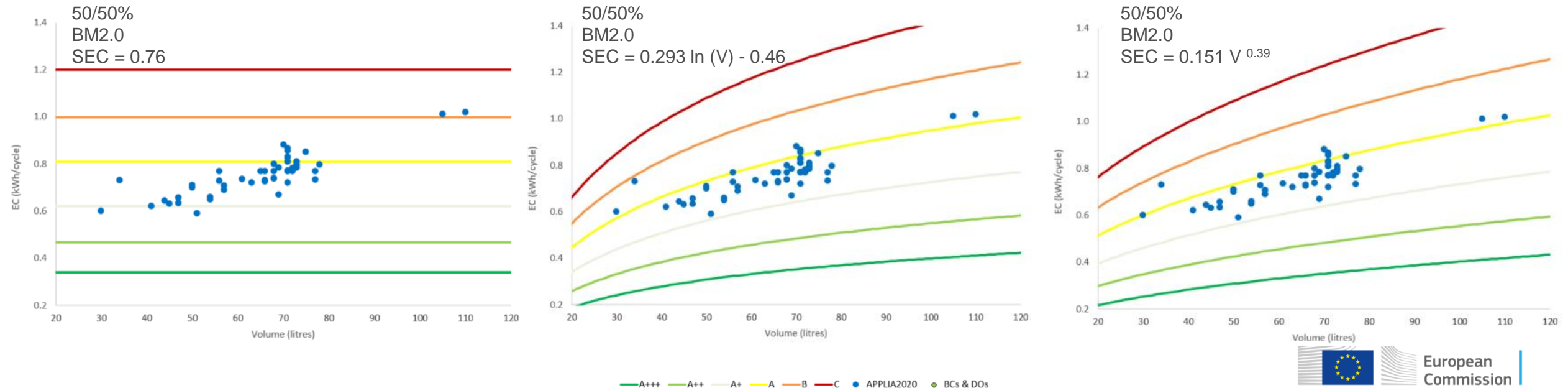
- Requires clear criteria to differentiate between “standard” and energy saving modes (covered in BM2.0)

# 7. Standard Energy Consumption (SEC)

$$EEI = \frac{EC}{SEC}$$

## Background

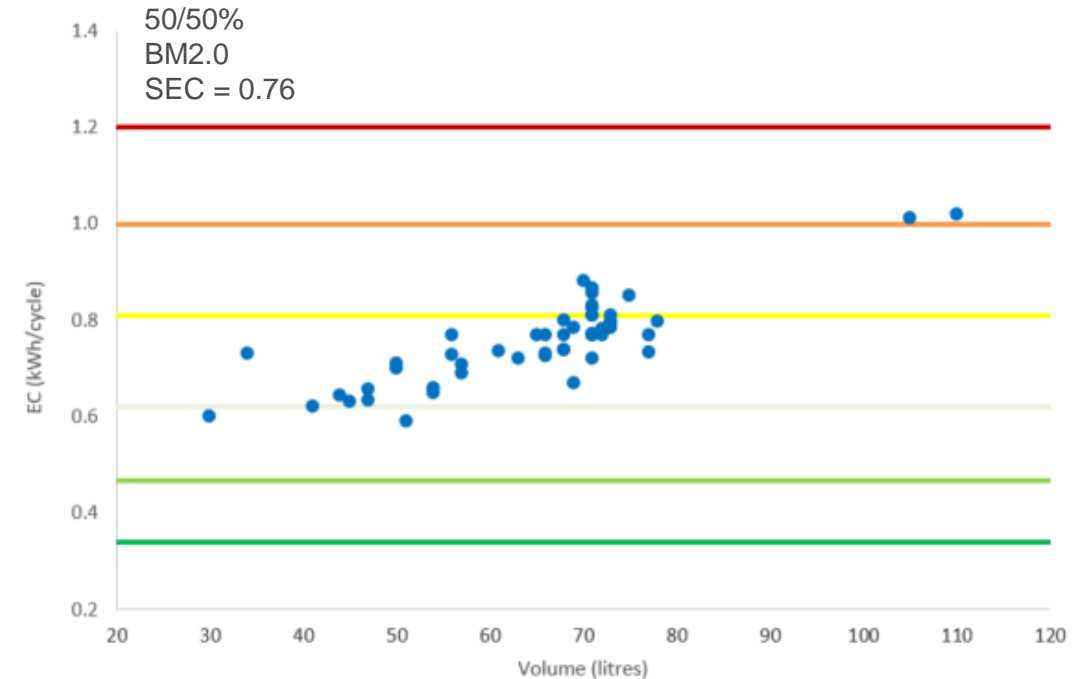
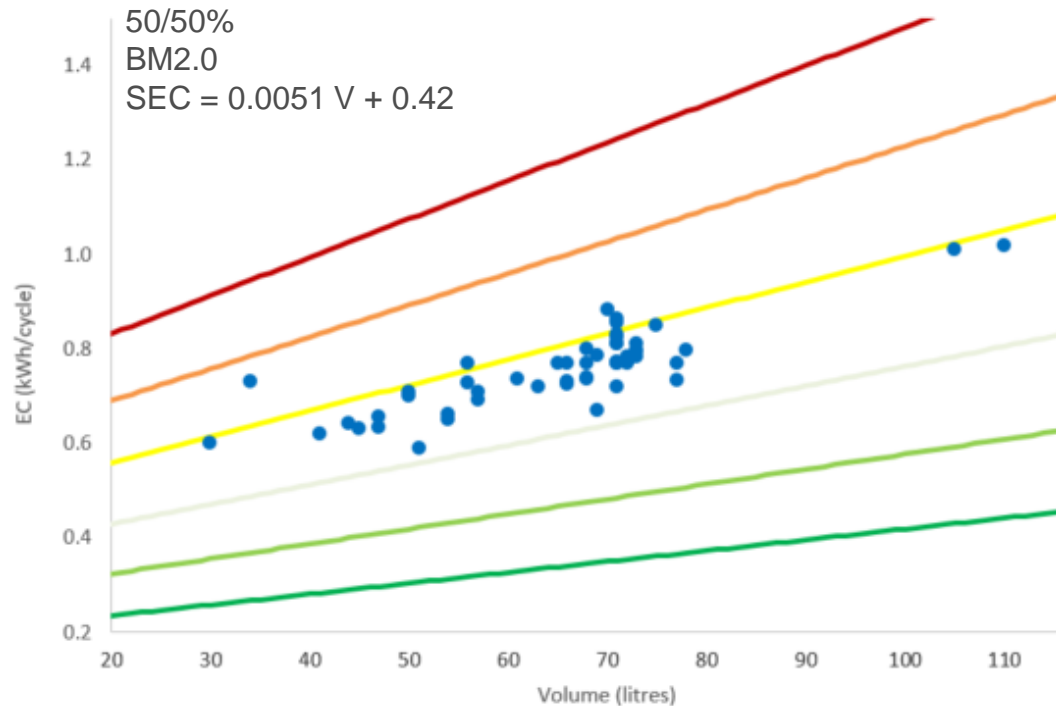
- REG 65/2014:  $SEC = 0.0042V + 0.55$
- SEC with linear approach requires update based on market average today:  $SEC = 0.0051V + 0.42$
- Non-linear approach for SEC could be used to promote small cavity ovens



# 7. Standard Energy Consumption (SEC)

## Recommendation

- a) Linear approach, updated SEC based on 50/50%, BM2.0
- b) Flat approach, if there is a clear aim to promote smaller cavity ovens



# 8. Cooking food for the measurement of energy consumption

## Background

- EN 60350-1: includes methods to evaluate heat distribution and heat supply (not linked with energy consumption)
- BM2.0 is a stricter version: a more controlled use of residual heat
- REG 65/2014: does not require to test with food to ensure good performance of heating modes used for energy declaration
- TC59X WG17: standard method under development (Energy Cake test), with open issues

## Recommendation

- To include a requirement in new regulation indicating the need to use real food in the measurement of energy consumption, that ensures good cooking performance of ovens

# 8. Cooking food for the measurement of energy consumption

## Additional difficulties

- Energy cake test is not completed
- Regulation needs to rely on robust, agreed standard methods

## Recommendations to incentivize completion of Energy cake test

- Energy class thresholds conditional to the use of real food in testing
  - EEI (A) = 85 (without Energy cake test)
  - EEI (A) = 90 (with Energy cake test)
- Weighted sum conditional to the use of real food in testing
  - 80% Standard / 20% BPM (without Energy cake test)
  - 50% Standard / 50% BPM (with Energy cake test)

# 9. Energy declaration of other heating modes and functions: MW-combi

## Background

- MW-combi ovens are out of scope of regulation, energy consumption of MW-combi functions is not declared
- MW-combi functions present in 43% of ovens <5 years
- MW-combi functions: potential to reduce energy consumption per cycle 10%
- No standard method available
- Energy savings not visible for consumer

## Recommendation for new regulation

- To start the development of a standard method to measure energy consumption of MW-combi heating modes
- To inform in the manual of the energy savings that can be achieved with a MW-combi mode
- To give a 10% saving in energy consumption of MW-combi modes to determine energy class

## Recommendation for future regulation

- To declare energy consumption of MW-combi modes, either in label or in manual (or both)

# 9. Energy declaration of other heating modes and functions: automatic functions

## Background

- Automatic functions: potential to reduce energy consumption per cycle 15% (for specific recipes)
- No standard method available
- Energy savings not visible for consumer

## Recommendation for new regulation

- To start the development of a standard method to measure energy consumption of automatic heating modes
- To inform in the manual of the energy savings that can be achieved with an automatic function
- To give a 15% saving in energy consumption of automatic functions to determine energy class

## Recommendation for future regulation

- To declare energy consumption of automatic functions, either in label or in manual (or both)

# 10. Measurement of cavity volume

## Background

- EN 60350-1: *“Removable items specified in the user instruction to be not essential for the operation of the appliance in the manner for which is intended shall be removed before measurement is carried out”*
- What is a “not essential” item? Debate around side racks
- ANTICSS<sup>(1)</sup>: *“the use of an oven without the side racks seems to be an exceptional use and not the operation of the appliance in the manner for which it is usually intended”*
- TC59X WG17: *“the energy consumption test with the side racks adds reproducibility issues, that could be eliminated by just conducting the test without them”*

## Recommendation

- To conduct the energy consumption test either with or without the side racks, as long as it is done in the same way for every oven
  - It requires agreement on the use of side racks
  - It requires clearer specification in EN 60350-1 of what is an essential item

(1) Martin et al (2020). Anti circumvention of standards for better market surveillance. Test reports. Part 8: domestic ovens.



# 11. Energy consumption of self-cleaning systems

## Background

- 15% of consumers use pyrolytic function very often
- Pyrolytic self-cleaning could represent up to 25% of lifetime energy consumption
- REG 66/2014: does not require to declare energy consumption of pyrolytic cleaning

## Recommendation 1

- To declare in the user manual the energy consumption of average pyrolytic cleaning cycle
  - Difficult to compare effectiveness of cleaning operation

## Recommendation 2

- To inform in the user manual of recommended frequencies of use
  - To avoid consumers using pyrolysis more often than required

# 12. Energy consumption of pre-heating

## Background

- Pre-heating is an energy inefficient cooking habit
- 28% of consumers pre-heat the oven
- BM1.0 & BM2.0: energy consumption of pre-heating is not measured
- Should energy consumption of pre-heating be included in the standard method?

## Recommendation

- Not to include the energy consumption of pre-heating in the user manual
- To inform in the user manual of the exceptional occasions in which pre-heating is recommended

# Summary

## Ovens – Declaration of energy consumption

- BM2.0
- 50/50 Standard/BPM
- Updated SEC: linear or flat
- No test with real food
- No side racks when measuring volume

# Summary

## Ovens – Declaration of energy consumption (in manual)

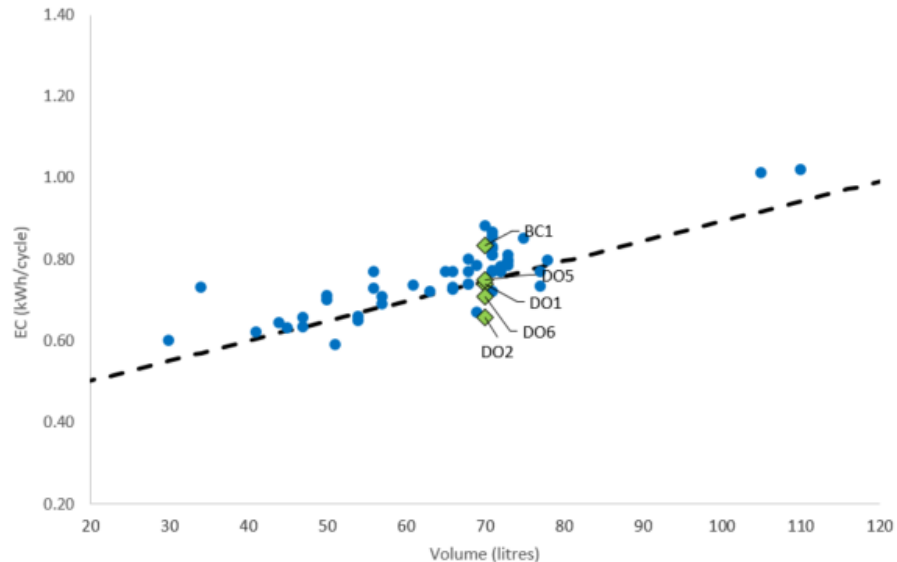
	New regulation ≈ 2022			Work needed →	Future regulation ≈ 2030		
	Standard	Best Performing Mode	Other functions		Standard	Best Performing Mode	Other functions
Conventional	Y (thermal function)	Y (thermal function)	N		Y (thermal function)	Y (thermal function)	N
Conventional with auto function	Y (thermal function)	Y (thermal function)	N	Standard method for <b>auto-</b> function	Y (thermal function)	Y (thermal function)	Y (auto function)
Solo-MW	Y (MW function)	N	N	Standard method for <b>solo-MW</b> function	Y (MW function)	N	N
Combi-MW	Y (thermal function)	Y (thermal function)	N	Standard method for <b>combi-MW</b> function	Y (thermal function)	Y (thermal function)	Y (combi MW function)
Small/Portable	N	N	N	Standard method for <b>ovens &lt;10litre</b>	Y	Y	Y
Solo-Steam	N	N	N	Standard method for <b>solo-steam</b> function	N	N	Y (steam function)
Combi-Steam	Y (thermal function)	Y (thermal function)	N	Standard method for <b>combi-steam</b> function	Y (thermal function)	Y (thermal function)	Y (combi steam function)

# Ovens – Ecodesign minimum energy performance

# Ecodesign minimum energy performance

## Background

- REG 66/2014:  $EEL < 96$
- DIR 2009/2015: *“the level of energy efficiency must be set aiming at the life cycle cost minimum to end-users”*
- 50/50% approach, BM2.0: least life cycle cost is at  $EEL = 96$



## Recommendation

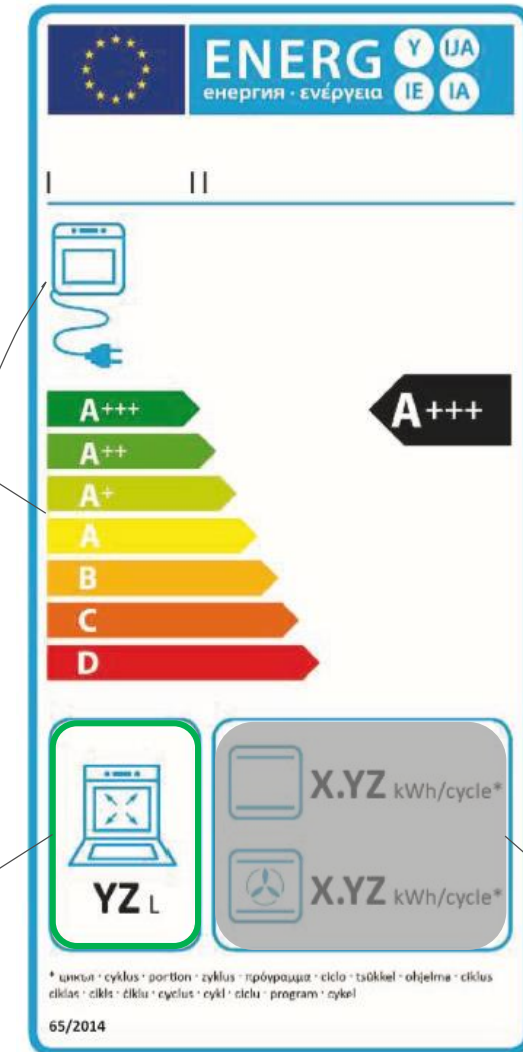
2025	2027	2030
$EEL < 96$	$EEL < 91$	$EEL < 86$
→ 5%		→ 5%

# Ovens – Energy label

# Energy label

## Topics

- 12. Direct rescaling of energy classes
- 13. Rescaling energy classes to promote differentiation
- 14. Rescaling energy classes to promote innovation
- 15. A combined label for electric and gas ovens?



Still relevant  
information for  
consumers

Covered in  
previous  
sections



# Direct rescaling of energy classes

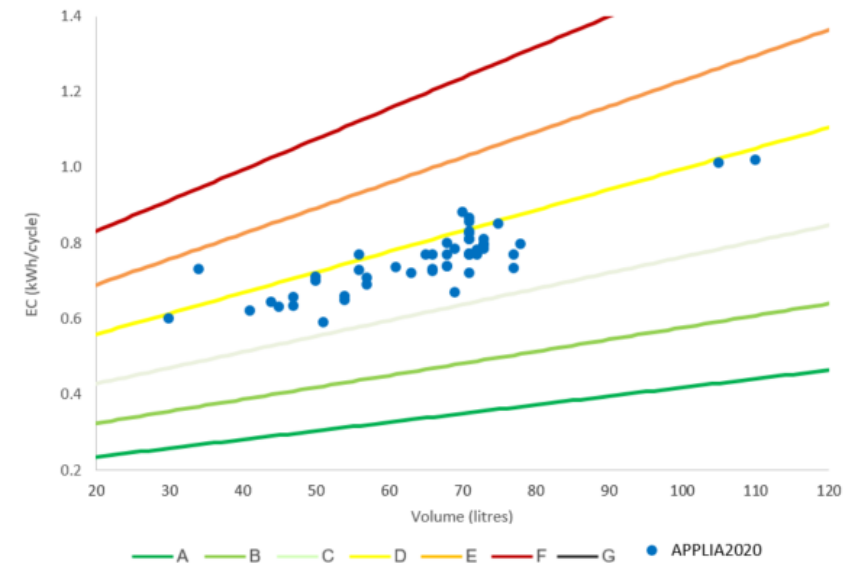
## REG 65/2014

Energy class	EEI
A+++	$EEI < 45$
A++	$45 \leq EEI < 62$
A+	$62 \leq EEI < 82$
A	$82 \leq EEI < 107$
B	$107 \leq EEI < 132$
C	$132 \leq EEI < 159$
D	$EEI > 159$

- DIR 2010/30: “to avoid confusion, it is appropriate to carry out an initial rescaling of existing labels, in order to ensure a homogeneous A to G scale”

## Direct rescaling

Energy class	EEI
A	$EEI < 45$
B	$45 \leq EEI < 62$
C	$62 \leq EEI < 82$
D	$82 \leq EEI < 107$
E	$107 \leq EEI < 132$
F	$132 \leq EEI < 159$
G	$EEI > 159$



# Rescaling energy classes to promote differentiation

## REG 65/2014

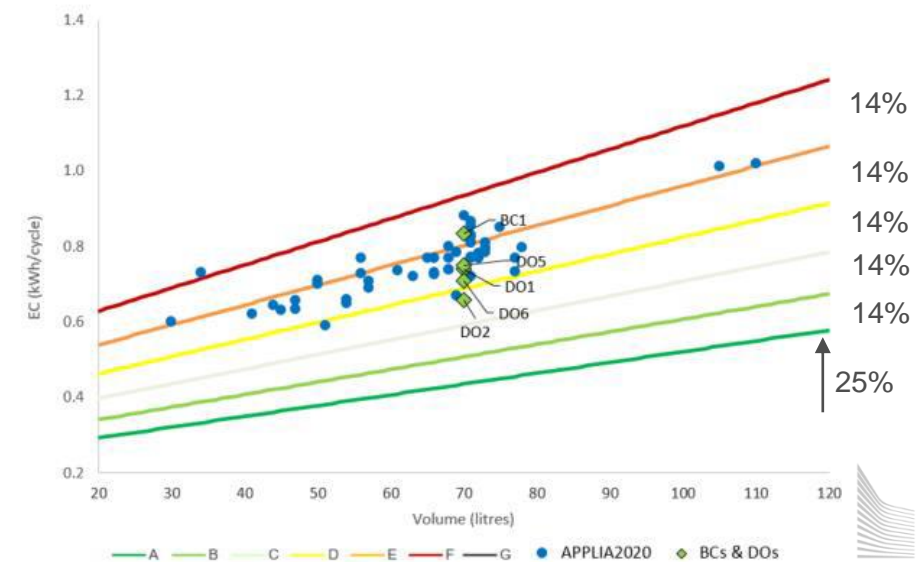
Energy class	EEI
A+++	$EEI < 45$
A++	$45 \leq EEI < 62$
A+	$62 \leq EEI < 82$
A	$82 \leq EEI < 107$
B	$107 \leq EEI < 132$
C	$132 \leq EEI < 159$
D	$EEI > 159$

- Aim: to have ovens in as many energy classes as possible (4)



## Rescaling to promote differentiation

Energy class	EEI
A	$EEI < 56$
B	$56 \leq EEI < 65$
C	$65 \leq EEI < 76$
D	$76 \leq EEI < 89$
E	$89 \leq EEI < 103$
F	$103 \leq EEI < 120$
G	$EEI > 120$



# Rescaling energy classes to promote innovation

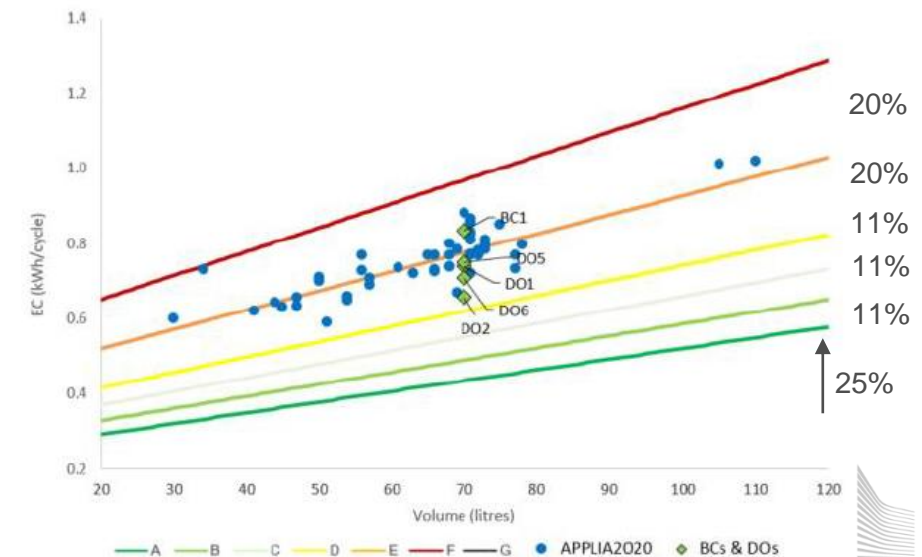
## REG 65/2014

Energy class	EEI
A+++	$EEI < 45$
A++	$45 \leq EEI < 62$
A+	$62 \leq EEI < 82$
A	$82 \leq EEI < 107$
B	$107 \leq EEI < 132$
C	$132 \leq EEI < 159$
D	$EEI > 159$

- Aim: to make it easier to jump between top energy classes to encourage the introduction of innovative technologies

## Rescaling to promote innovation

Energy class	EEI
A	$EEI < 56$
B	$56 \leq EEI < 63$
C	$63 \leq EEI < 71$
D	$71 \leq EEI < 80$
E	$80 \leq EEI < 100$
F	$100 \leq EEI < 125$
G	$EEI > 125$



# A combined label for electric and gas ovens?

## Background

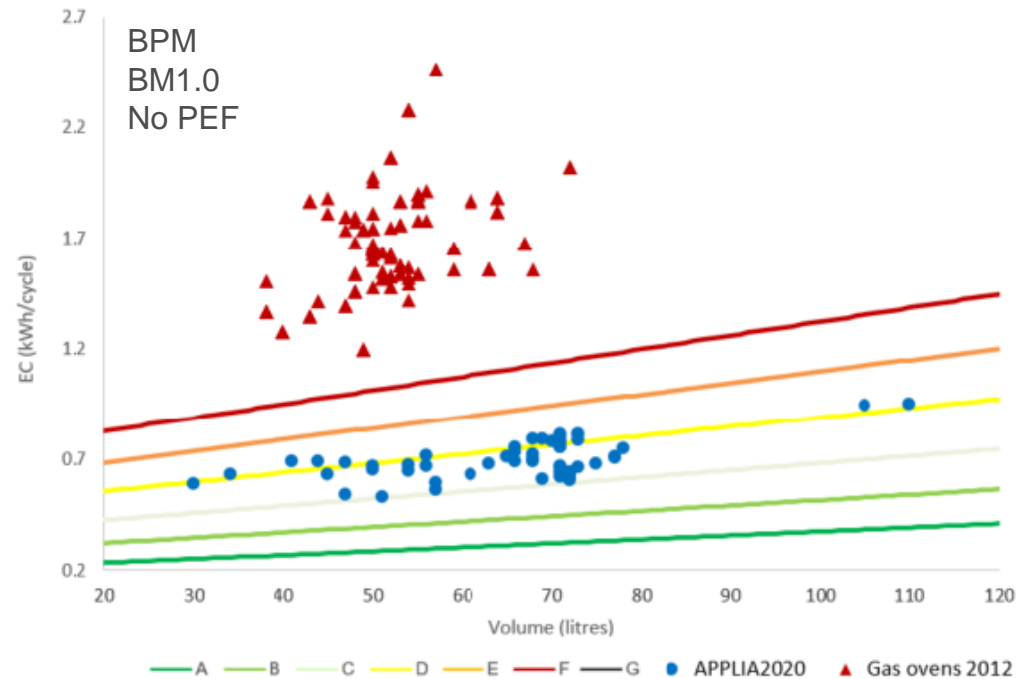
- REG 65/2014: electric and gas ovens are under different labels. It assumes that electric and gas ovens are different appliances
- Electric and gas ovens can't be compared directly in terms of energy class
  - Are consumers comparing directly electric and gas ovens based on their energy class?
  - Can electric and gas ovens be compared, considering functionality and price?
- If electric and gas ovens were put under the same label:
  - Should they be compared in terms of Final Energy or Primary Energy?

## Options

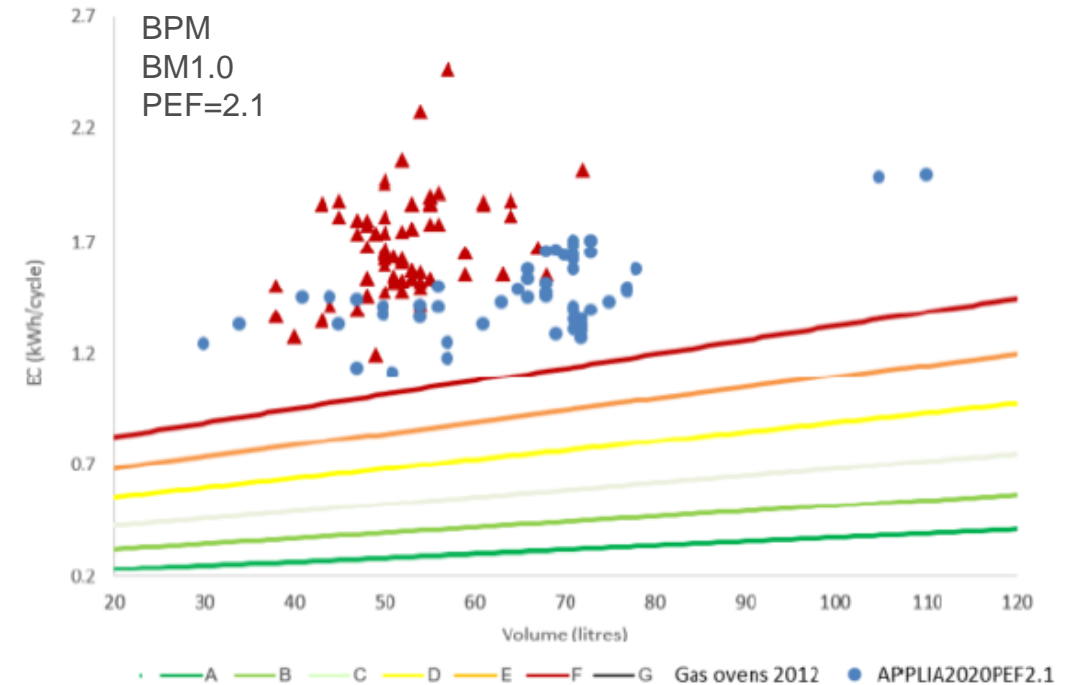
- a) Different label (current status)
- b) Same label, with Final Energy
- c) Same label, with Primary Energy

# A combined label for electric and gas ovens?

## b) Same label, with Final Energy



## c) Same label, with Primary Energy



PEF: Primary Energy Factor

# A combined label for electric and gas ovens?

## Stakeholders supporting combined label

- *“The main objective of ecodesign and energy labelling is to reduce overall energy consumption, so every decision should be taken assessing how much primary energy is consumed or saved”*
- *“Consumers might be making their choice of energy source by comparing electric ovens with gas ovens in terms of energy class”*

## Issues related to a combined label

- Fairness of comparison
- Most of gas ovens in low energy classes
- Different standard methods for energy consumption

## Recommendation

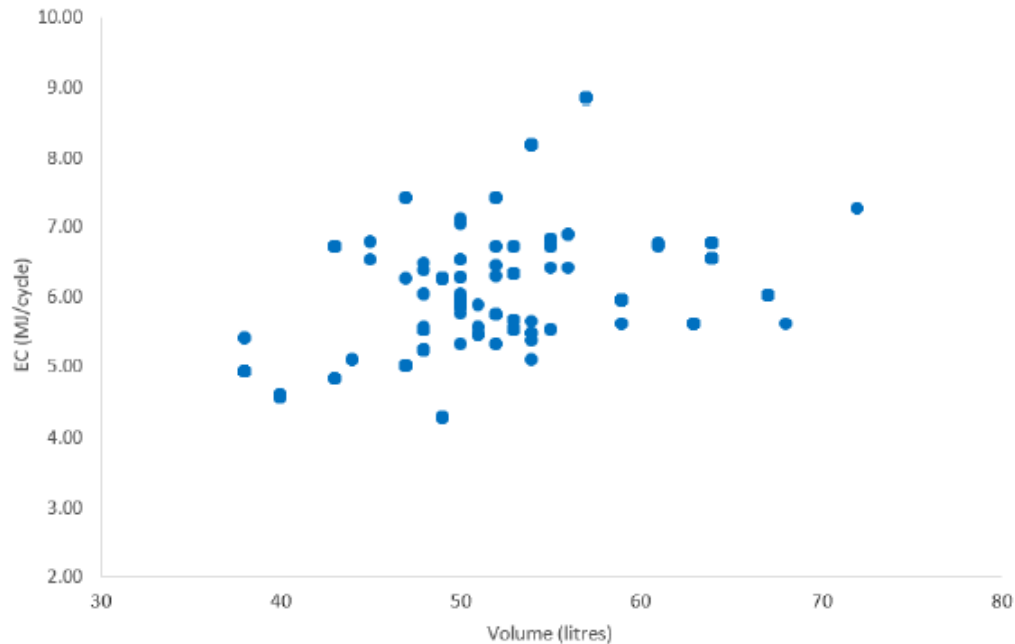
- Carry on with different label for electric and gas ovens
- Open to changing the approach if clear benefits of a combined label can be foreseen

# Gas ovens

# Gas ovens

## Background

- Stock 2020: 15% of total, with decreasing tendency
- Data available: only 2012 ovens



## Recommendations: mirror electric ovens

- Update SEC
  - Linear:  $SEC = 0.034 V + 4.05$
  - Flat:  $SEC = 5.9$
- Measurement method: EN 15181 (BM1.0)
- Heating mode: 50/50% Standard/BPM
- Ecodesign:

2025	2027	2030
EEI < 91	EEI < 86	EEI < 82
→ 5%		→ 5%

- Energy class rescaling: same approach as electric ovens



# Summary

## Ovens – Ecodesign

2025	2027	2030
EEI < 96	EEI < 91	EEI < 86
→ 5%		→ 5%

## Ovens – Energy Class

Energy class	Current	Promote differentiation	Promote innovation
A	EEI < 45	EEI < 56	EEI < 56
B	45 ≤ EEI < 62	56 ≤ EEI < 65	56 ≤ EEI < 63
C	62 ≤ EEI < 82	65 ≤ EEI < 76	63 ≤ EEI < 71
D	82 ≤ EEI < 107	76 ≤ EEI < 89	71 ≤ EEI < 80
E	107 ≤ EEI < 132	89 ≤ EEI < 103	80 ≤ EEI < 100
F	132 ≤ EEI < 159	103 ≤ EEI < 120	100 ≤ EEI < 125
G	EEI > 159	EEI > 120	EEI > 125

# Horizontal Policy options on Material Efficiency

# Material efficiency

## Background

- EU Green Deal

*“...circular design of all products based on a common methodology and principles. It will prioritise reducing and reusing materials before recycling them. It will foster new business models and set minimum requirements to prevent environmentally harmful products from being placed on the EU market. Extended producer responsibility will also be strengthened”*

- EU Circular Economy Action Plan

*“Improving product **durability, reusability, upgradability and reparability**, addressing the presence of **hazardous chemicals** in products.*

*Increasing **recycled content in products**.*

*Enabling **remanufacturing** and **high-quality recycling**.*

*Restricting **single-use** and countering **premature obsolescence**”*

## Main issues in Cooking Appliances

- Ovens:

- Fan, Thermostat, Light, Controls, Door, Glass, Handles, Noise

- Hobs:

- Different issues depending on energy source and technology

- Cooking fume extractors:

- Electric motor, Noise, Evacuation

# Material efficiency

## Policies already implemented in other product groups

Product Group	Spare parts		Design for Disassembly	Repair Info	Guarantee Info
	Which parts?	For how long?			
Refrigerators (EU)2019/2019	thermostats; temperature sensors; printed circuit boards; light sources,	min 7 years (professional repairers)	X	X	X
	door handles, door hinges, trays and baskets, door gaskets	min 7 years (10 for gaskets) (professional repairers and users)			
Refrigeration commercial (EU)2019/2024	thermostats; starting relays; no-frost heating resistors; temperature sensors; software and firmware incl. reset software; printed circuit boards; and light sources	min 8 years (professional repairers)	X	X	X
	door handles and door hinges; knobs, dials and buttons; door gaskets; and peripheral trays, baskets and racks for storage;	min 8 years (professional repairers and users)			

# Material efficiency

## Policies already implemented in other product groups

Product Group	Spare parts		Design for Disassembly	Repair Info	Guarantee Info
	Which parts?	For how long?			
Dishwashers (EU)2019/2022	motor; circulation and drain pump; heaters and heating elements incl. heat pumps; piping and related equipment incl. all hoses, valves, filters and aquastops; structural and interior parts related to door assemblies; printed circuit boards; electronic displays; pressure switches; thermostats and sensors; software and firmware incl. reset software;	min 7 years (professional repairers)	X	X	
	door hinge and seals, other seals, spray arms, drain filters, interior racks and plastic peripherals such as baskets and lids	min 10 years (professional repairers and users)			
Washing Machines (EU)2019/2023	motor and motor brushes; transmission between motor and drum; pumps; shock absorbers and springs; washing drum, drum spider and related ball bearings; heaters and heating elements, incl. heat pumps; piping and related equipment incl. all hoses, valves, filters and aquastops; printed circuit boards; electronic displays; pressure switches; thermostats and sensors; software and firmware including reset software;	min 10 years (professional repairers)	X	X	
	door, door hinge and seals, other seals, door locking assembly and plastic peripherals such as detergent dispensers,	min 10 years (professional repairers and users)			

# Material efficiency

## Issues and Policy options

Issue	Policy option	
1. Unsatisfactory Durability of Components or Appliance	1.1 Performing durability tests of <b>specific components</b>	1.4 Performing durability tests of <b>whole appliance</b>
	1.2 Minimum operational lifetime of <b>specific components</b>	1.5 Minimum operational lifetime of <b>whole appliance</b>
	1.3 Consumer information on operational lifetime of <b>specific components</b>	1.6 Consumer information on operational lifetime of <b>whole appliance</b>
2. Wrong user behaviour leading to defects of appliances	2.1 Consumer information about correct use and maintenance of appliances	
	2.2 Compulsory direct feedback on necessary maintenance intervals via display	
3. Early replacement of appliances due to changes in consumer preferences	3.1 Consumer information about environmental benefits of prolonged use	

# Material efficiency

## Issues and Policy options

4. Early discard instead of repair	4.1 Components prone to early failure designed to be easily accessible and exchangeable with standard tools
	4.2 Appliance internal failure diagnosis systems to report messages to user
	4.3 Information requirements on repairability: indicate which components are/are not repairable
	4.4 Information about access to professional repairers
	4.5 Information about availability and price of spare parts
	4.6 Guarantee of availability of spare parts for a certain period following the end of production
	4.7 Clear disassembly and repair instructions
	4.8 Commercial guarantee providing a minimum 3 years effective from the purchase
	4.9 Information about commercial guarantees

# Material efficiency

## Issues and Policy options

5. Improve recyclability at End of Life	5.1 Design to allow easy access and separation to key WEEE components or components with valuable resources
	5.2 Marking of plastics with Hazardous Substances
	5.3 End of Life report for recyclers
	5.4 Recyclability index



# Review Ecodesign / Energy labelling Cooking appliances

2<sup>nd</sup> Technical Working Group – interactive webinar

04<sup>th</sup> & 5<sup>th</sup> May 2021