

ALDREN

**Alliance for Deep RENovation
in buildings.**

**ALDREN Final Conference
"Every ending is a new
beginning"**

ALDREN Alliance
for Deep RENovation
in buildings



29 September 2020

verco





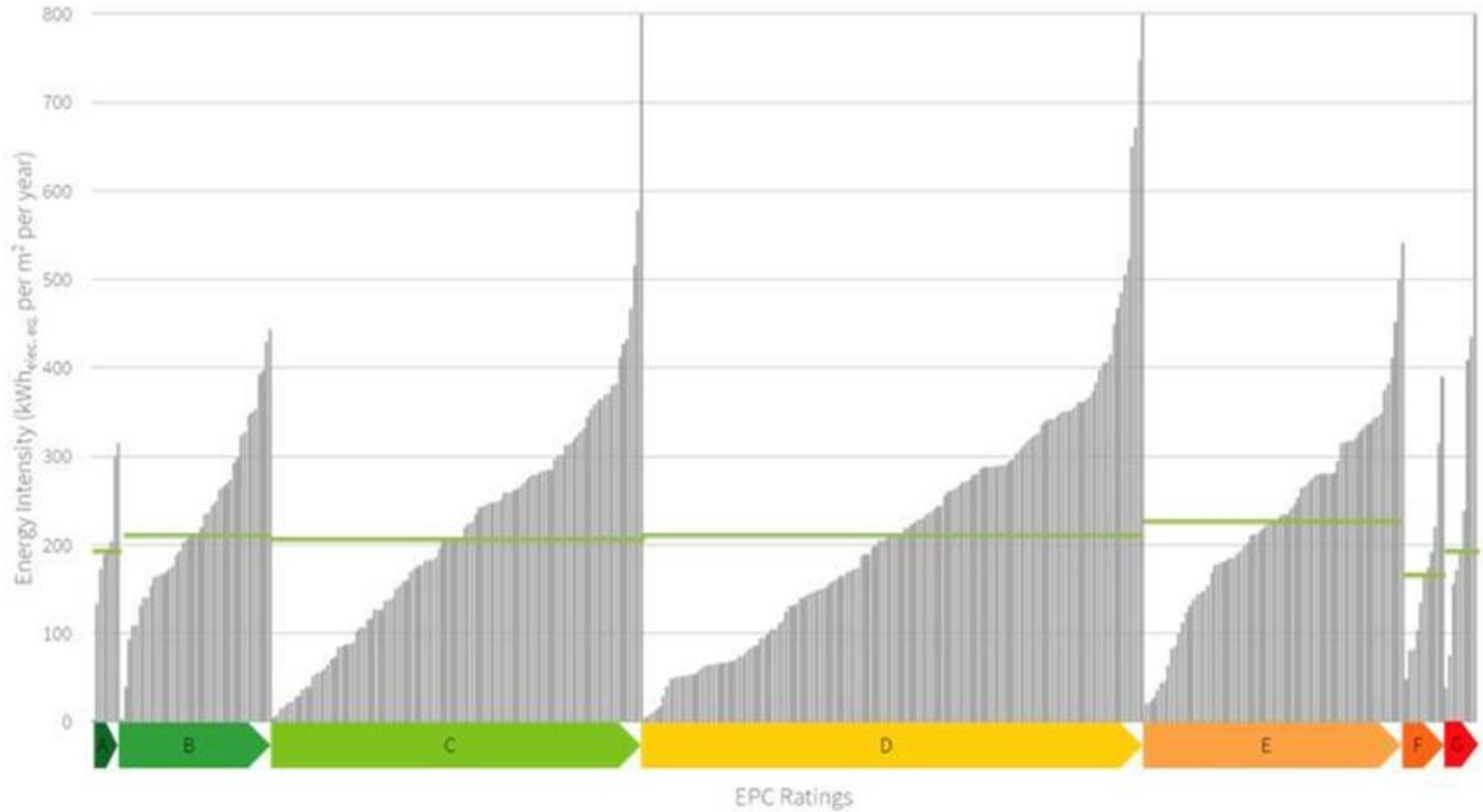
Verification of performance

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ALDREN Consortium Meeting – Brussels

Context: today the EPC does not reflect reality



Objective: an EVC verified by measurements

Like-for-like comparison

EVC End uses: HVAC

- Heating
- Cooling
- Ventilation
- Pumps
- DHW

Lighting

Excluded end uses: For offices

- IT equipment
- Servers
- Other ‘small power’

For hotels

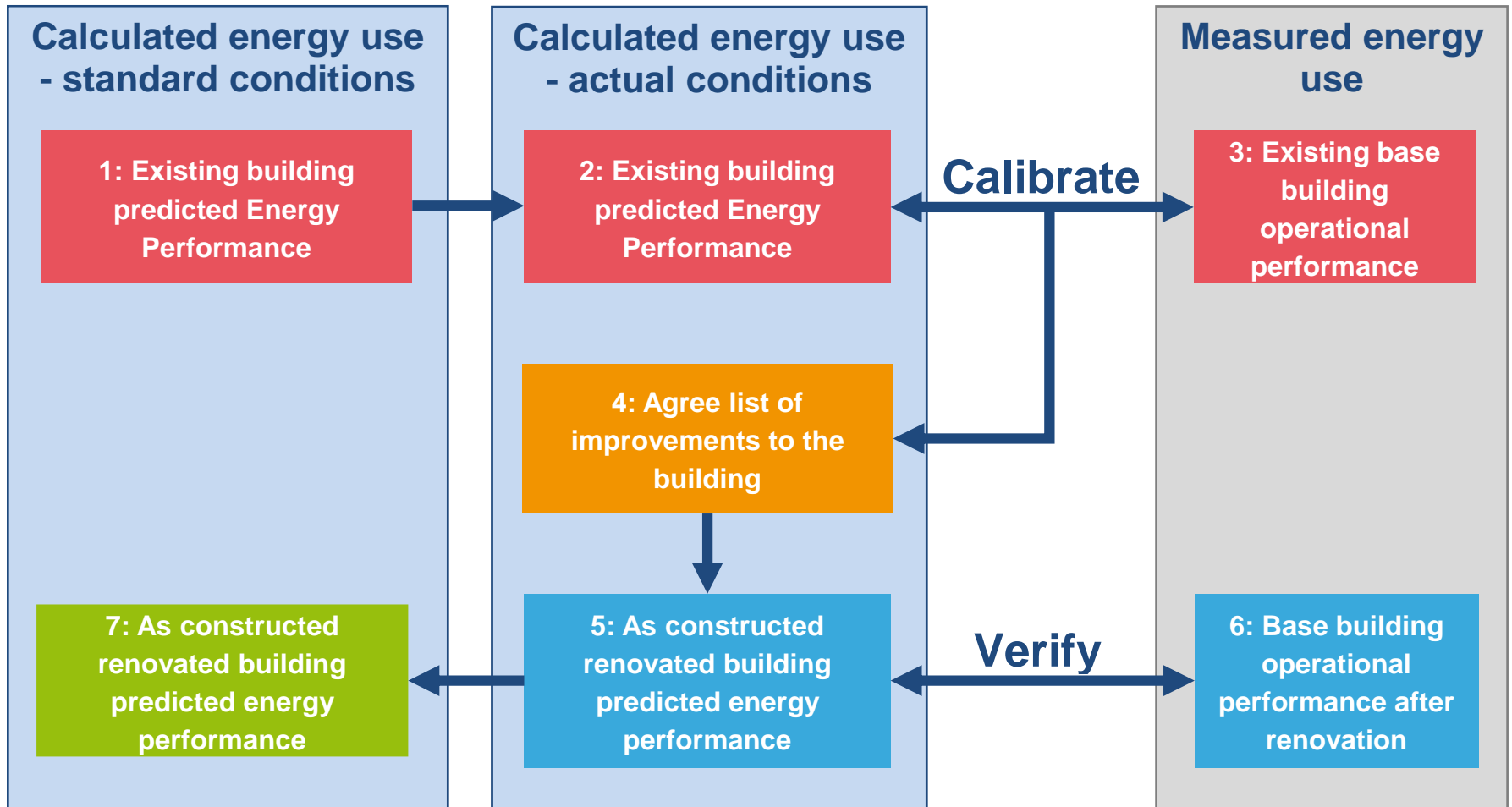
- Cooking
- Laundry
- Swimming pools

Modelled and measured energy use same boundary conditions over the year of comparison:

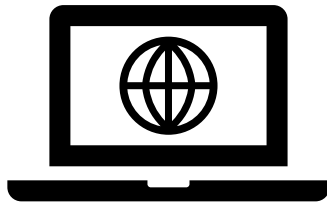
- * Occupant numbers
- * Hours of use
- * Power loads (W/m²)
- * Climate



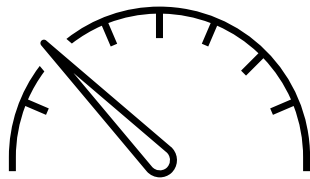
Main principles for the methodology



Key ingredients for success



Better simulation models and tuning building to model



Better metering, monitoring & verification



Better control of HVAC and lighting to match design intent

Format for the result

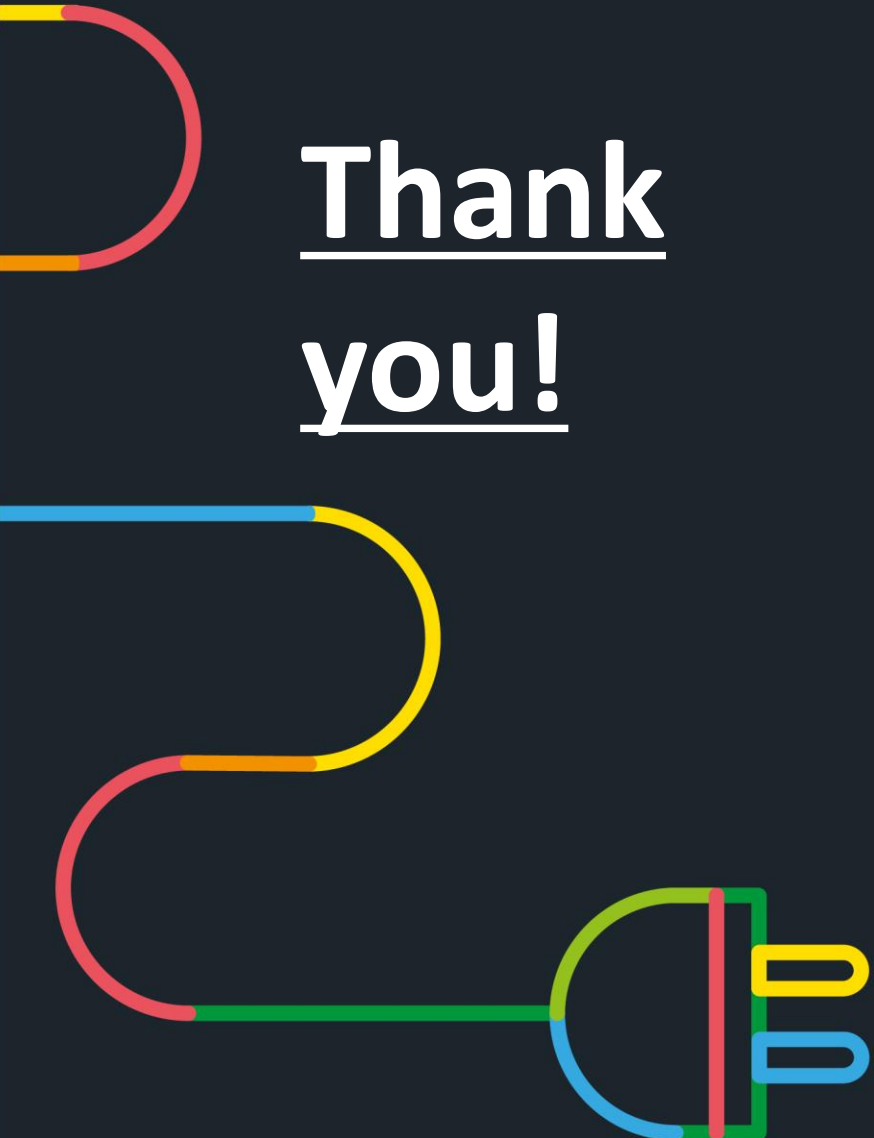
GREEN	All values for this end use meet 25% variance criterion
AMBER	End use meets 25% variance criterion, but this end use & fuel combination exceeds 25% variance
RED	End use exceeds 25% variance criterion due to high variance in this end use & fuel combination
	Significant end use

Table 31: EVC Verification

Energy	Scope	End Use	EVC under actual conditions	Measured	Variance measured vs. EVC under actual conditions	Variance measured vs. EVC under actual conditions
			kWh/m ²	kWh/m ²	kWh/m ²	%
Electricity	Base building	Space Heating	0.0	0.0	0.0	0%
Electricity	Base building	Hot water	0.0	0.0	0.0	0%
Electricity	Base building	Cooling	0.0	0.0	0.0	0%
Electricity	Base building	Fans	26.7	31.3	4.6	17%
Electricity	Base building	Pumps	2.3	11.6	9.3	412%
Electricity	Base building	Controls	0.0	3.5	3.5	0%
Electricity	Base building	Humidification	0.0	0.0	0.0	0%
Electricity	Base building	Lighting (common parts)	4.0	6.6	2.6	65%
Electricity	Tenancy spaces	Lighting	16.0	24.7	8.6	54%
Fossil fuel	Base building	Space Heating	1.6	0.0	-1.6	-100%
Fossil fuel	Base building	Hot water	0.0	0.0	0.0	0%
Heat	Base building	Space Heating	67.9	101.3	33.4	49%
Coolth	Base building	Cooling	88.7	68.4	-20.3	-23%
Heat	Base building	Hot water	1.6	0.1	-1.5	-93%
All		EVC uses	209	247		

EVC verified?	No
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Thank
you!

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 754159.

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