A smart EPBD for people, business and the environment
“Clean energy for all Europeans” needs:

• A smart energy transition in buildings

• Concrete actions towards decarbonized buildings 2050

• Optimized performance of technical building systems across the stock

• Improvements in all 3 dimensions of building energy performance
A smart EPBD: what does it mean?

i) Leverage large accumulated CO2 and energy cost reductions by 2030
ii) Enable cost-effective decarbonization of the building stock by 2050
iii) Put people in control

Make buildings smart
- Make energy use data transparent to user
- Optimize energy use in real time
- Maintain optimized performance at least cost
- Ensure healthy indoor air quality

Match expected and actual energy use
- Better envelopes make heating, cooling, ventilation demands more dynamic
- Systems optimized for part load conditions are decisive for optimized energy use under real-life conditions

Get control basics right
- Capital-light, fast-payback, no-regret
- Empower occupants to take control of expenses
- 2012 EED: “Measuring individual consumption of heating only makes sense with thermostatic radiator valves”
4 Key legal elements tackling market failures

- **Requirements for BACS in large non-residential buildings**
  - Annual energy savings up to 20.3% of all EU service sector building energy cons. (49.7 Mtoe)
  - Low-capital investment (30 €/m2), payback 2-3 y, returns 9 times higher than investments

- **Cost-effective upgrade to individual room temperature control function**
  - Annual energy savings up to 160 TWh, 29 Mt CO2
  - Low-capital investments (1.5 €/m2), payback < 2 y, returns 7 times higher than investments

- **Control function alternative to inspections in large residential buildings**
  - Annual energy savings up to 23.4% EU residential building energy consumption (98.1 Mtoe)
  - Low-capital investment (12 €/m2), payback 2-3 y, returns 9 times higher than investments

- **Focus on part load for actual building use**
  - Most of the time TBS need to run only with a fraction of their full capacity
  - Real life energy use is governed by performance under part load conditions
Adequate advice alternative for inspections?

• Objective of inspection, Recital 26 of 2010 EPBD

“Regular maintenance and inspection of heating and air-conditioning systems by qualified personnel **contributes to maintaining their correct adjustment** in accordance with the product specification and in that way ensures optimal performance from an environmental, safety and energy point of view. [...]”

• “Adequate advice alternative” in Council GA/2010 EPBD is different:

“As an alternative to paragraph 1, Member States may opt to take measures to ensure that adequate advice is given to users **concerning the replacement of heat generators**, other modifications to the heating system and alternative solutions to assess the efficiency and appropriate size of the heating generator.”

• Without maintenance: increase of energy consumption expected
  - Fedene/Cardonnel, France, 2014: +10% in 5 years, +18% in 7 years, +35% in 10 years

• Proposed new Art. 14/15 already include cost-efficient alternative

• Scope for heating systems already decreased: threshold 20 kW → 70 kW (?)
Effects on employment: ECI

**Growth in jobs** under incentivizing policy framework for **EU-wide BACS deployment**

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<th>After 10 y</th>
<th>After 20 y</th>
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<tr>
<td><strong>Direct jobs created</strong> (BACS value chain)</td>
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<td><strong>Direct jobs lost</strong> (mainly gas &amp; electricity)</td>
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<td><strong>Indirect jobs created</strong> (general economy)</td>
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<td><strong>Net jobs created</strong></td>
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1.3 to 2.1 million additional jobs

Conclusion

The new EPBD should support optimal technical building system performance 24/7/365

- Optimizing energy flows by building automation and controls is key for 2030/2050 policy:
  - Reduce energy bills of citizens and enterprises
  - Maintain building energy performance over time
  - Optimize actual energy use and increase comfort
- Benefits for Energy Union are large, investments are no-regret, payback is short
- 2010 EPBD was a first step
- But progress is too slow and a large improvement potential remains
- A meaningful upgrade of EPBD Articles 8 and 15 on technical building systems and inspections is needed