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# Heating without the hot air: Principles for smart heat electrification

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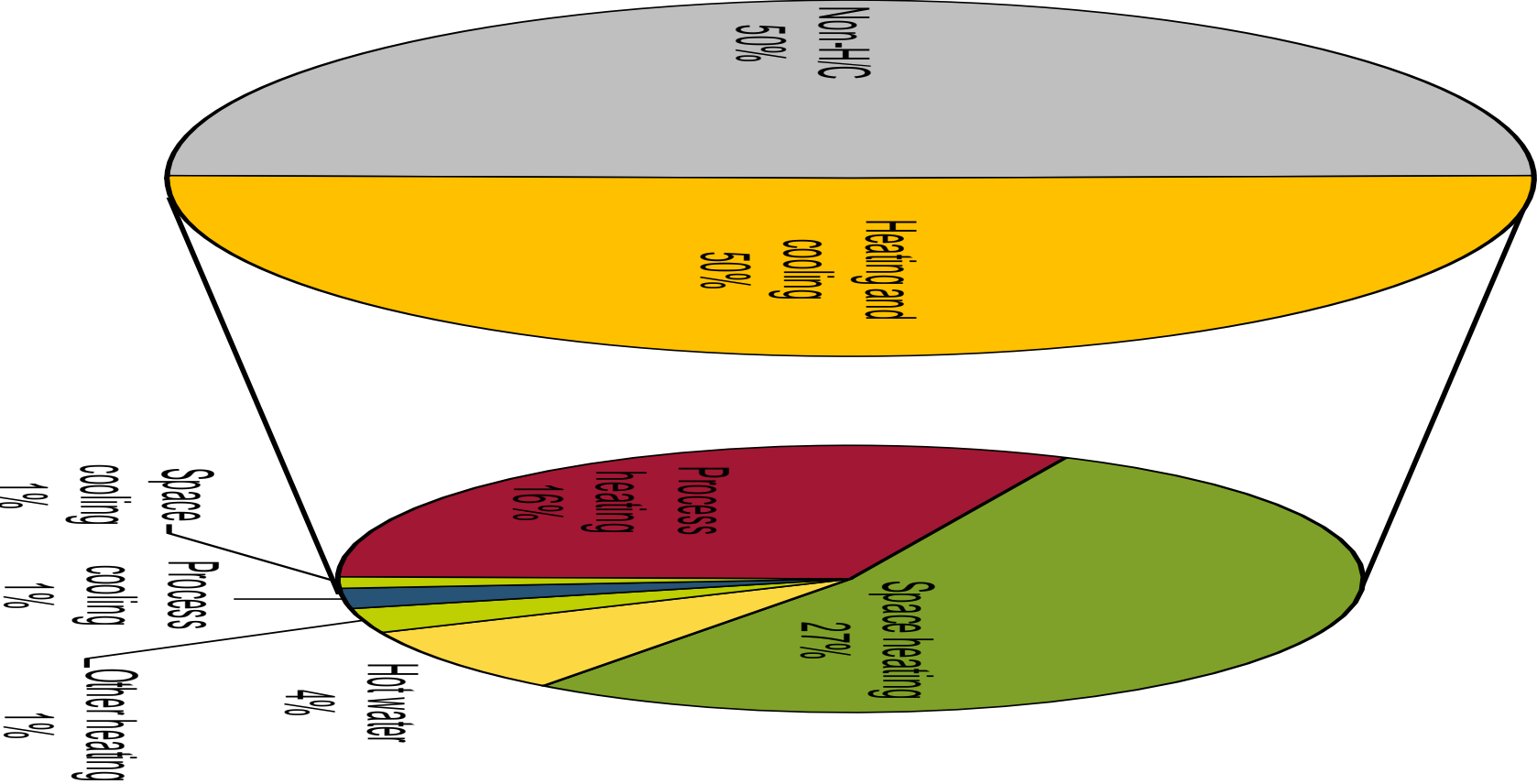




# 1 Why heating?



# Almost half of energy use in EU



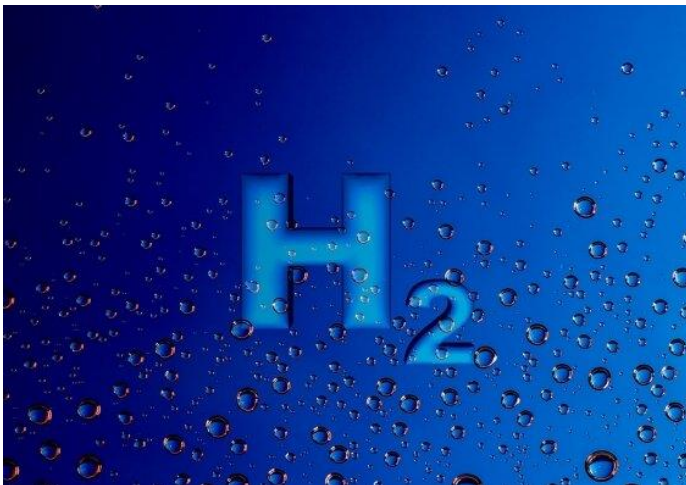
Source: Heat Roadmap Europe (2017)

# 2 Decarbonisation options and context

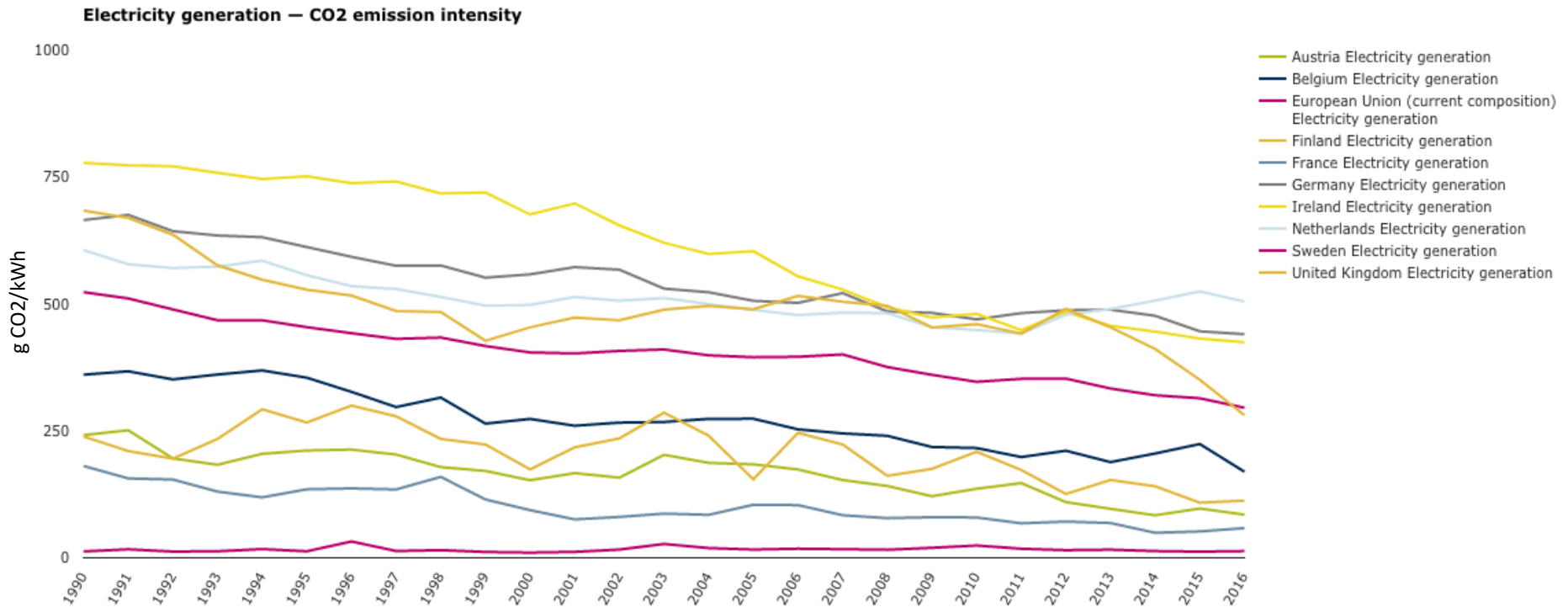


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# Limited options for decarbonisation



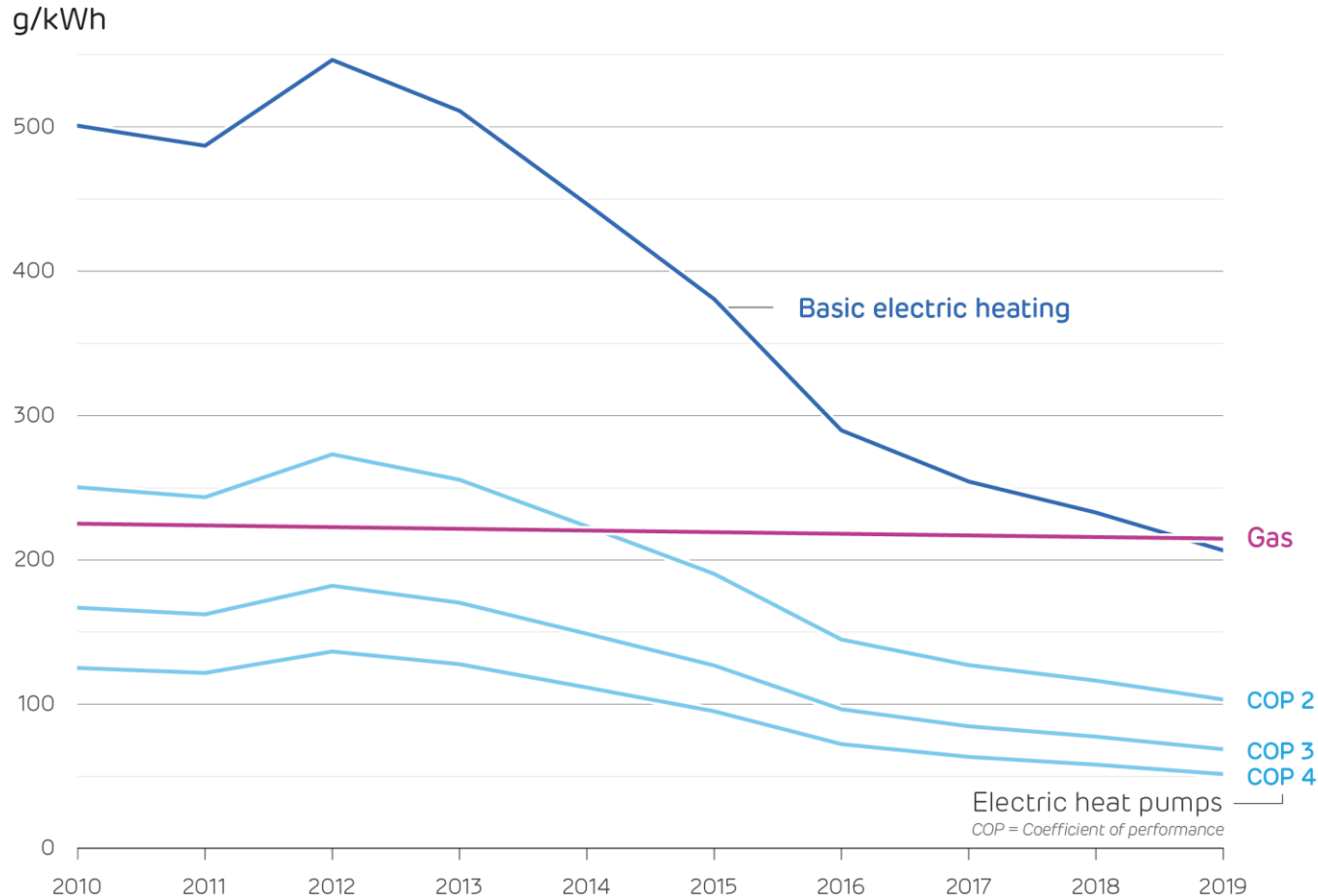
# Electricity is becoming increasingly green



Source: EEA (2020)



# Heat pumps now much cleaner than gas – example UK



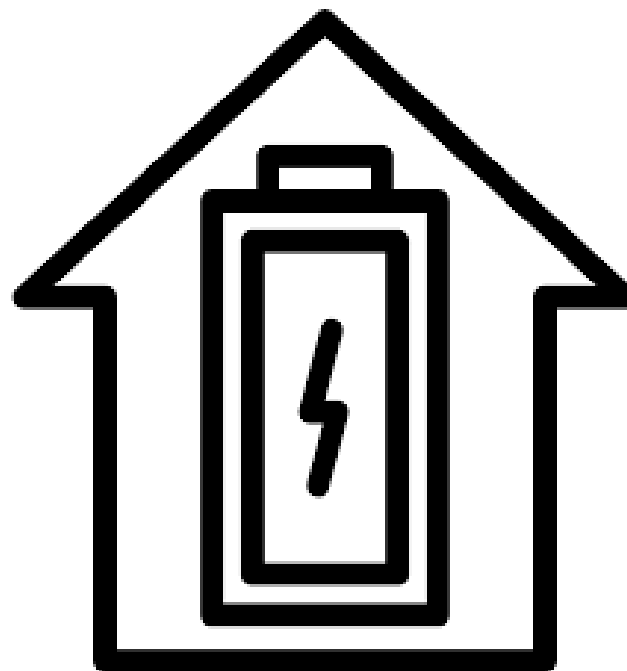
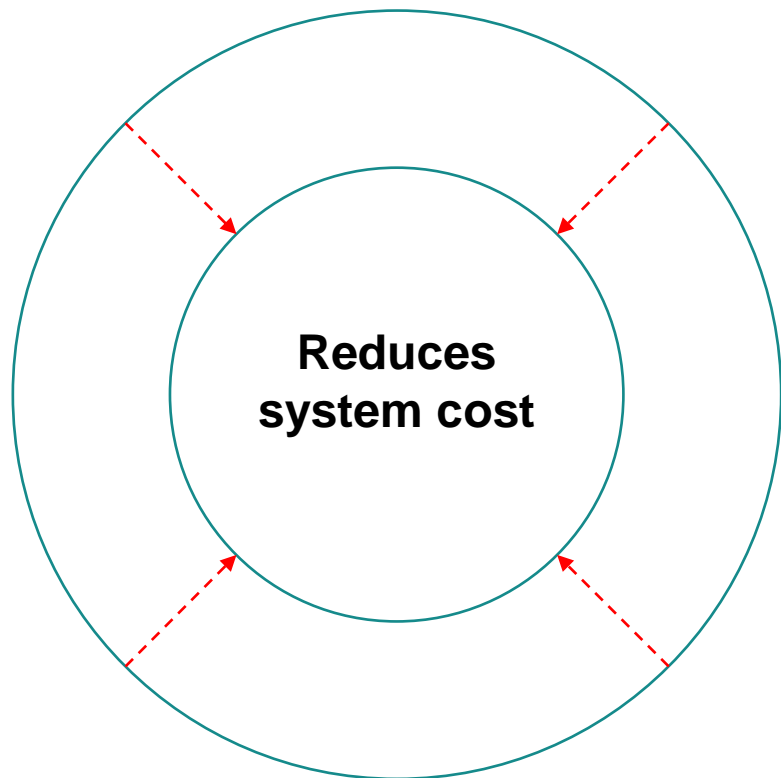
Source: Staffel 2019

# 3 Principles for heat electrification



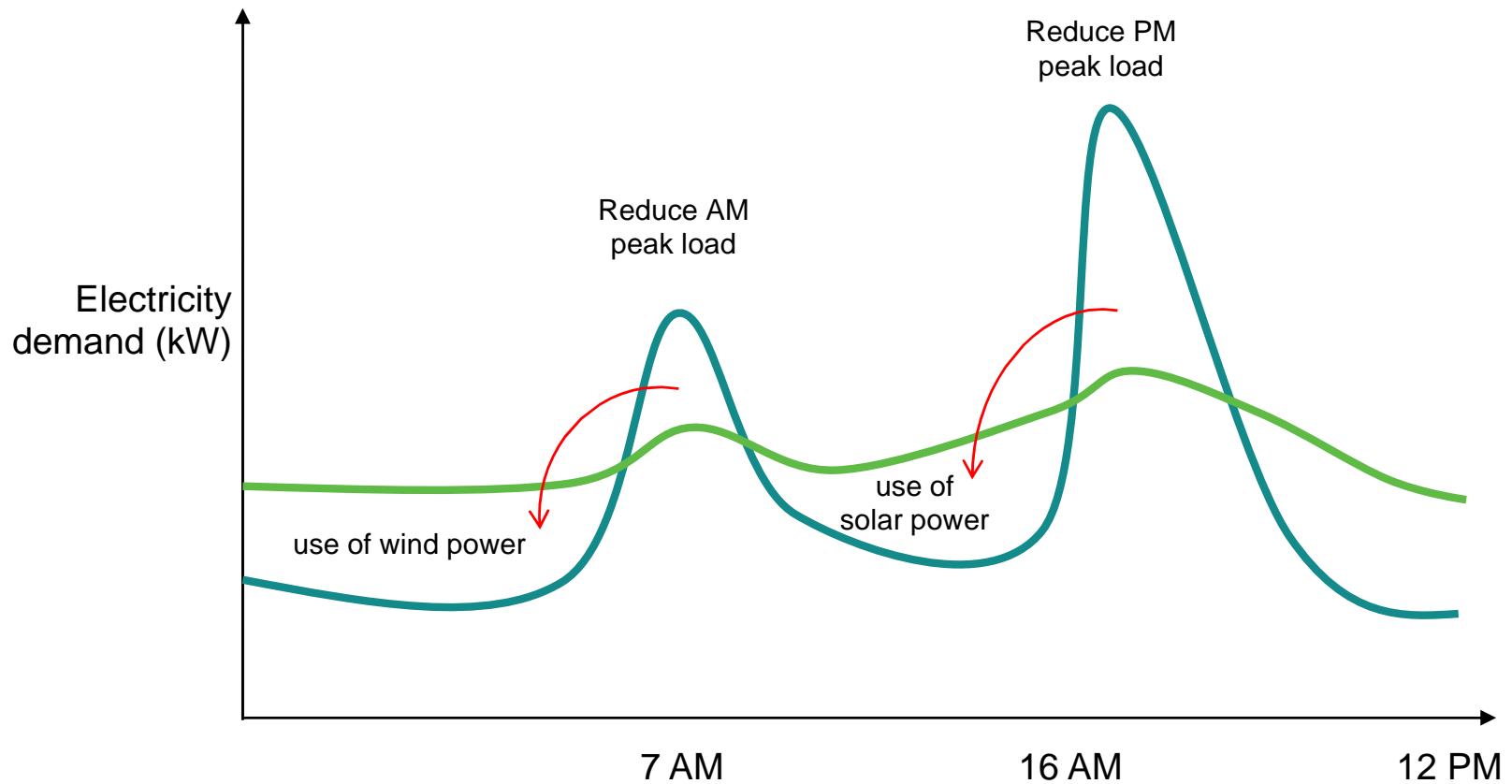
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# Principle 1: Put Efficiency First

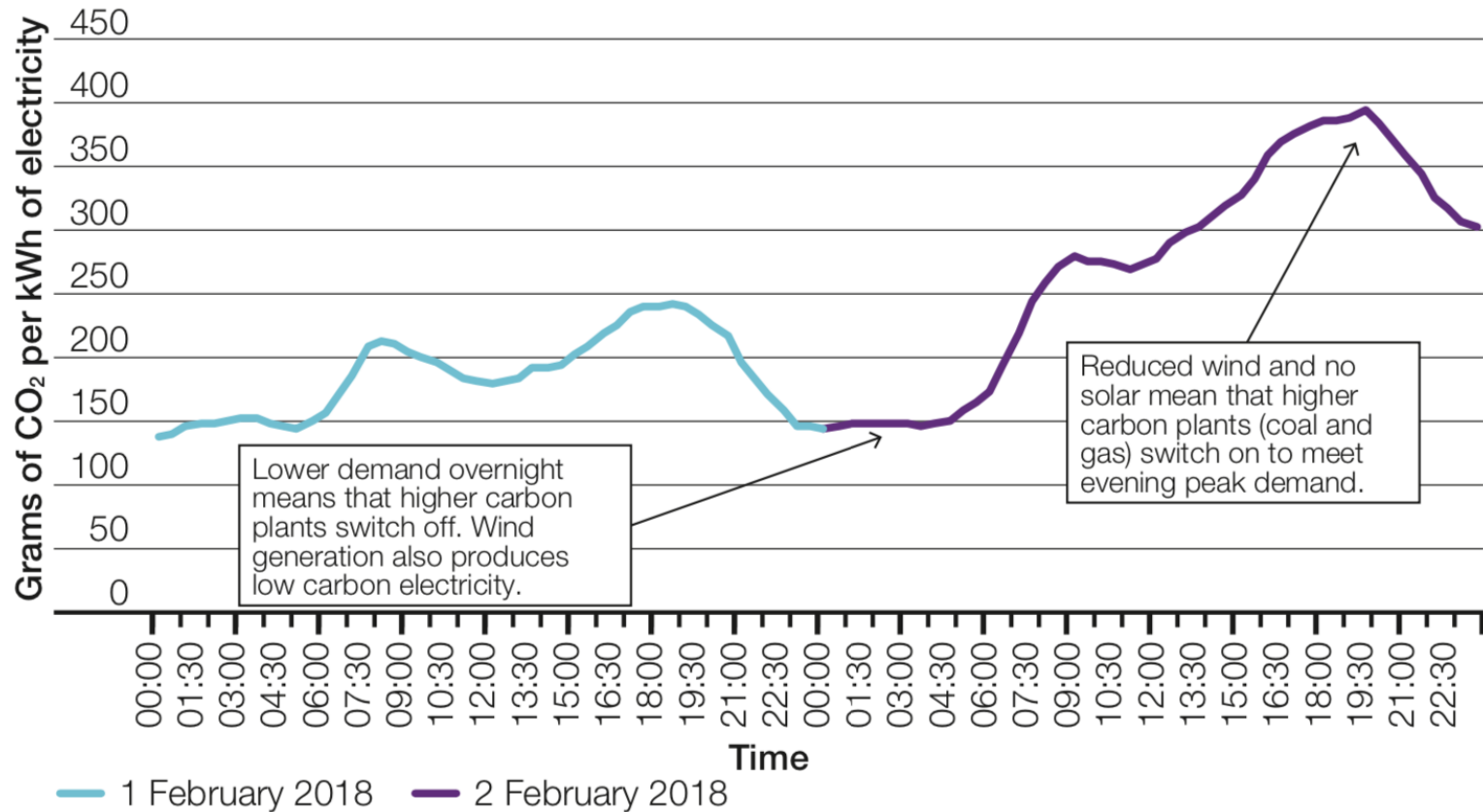


Provides thermal  
storage

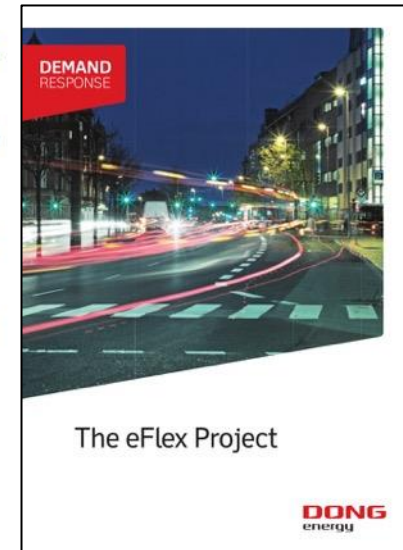
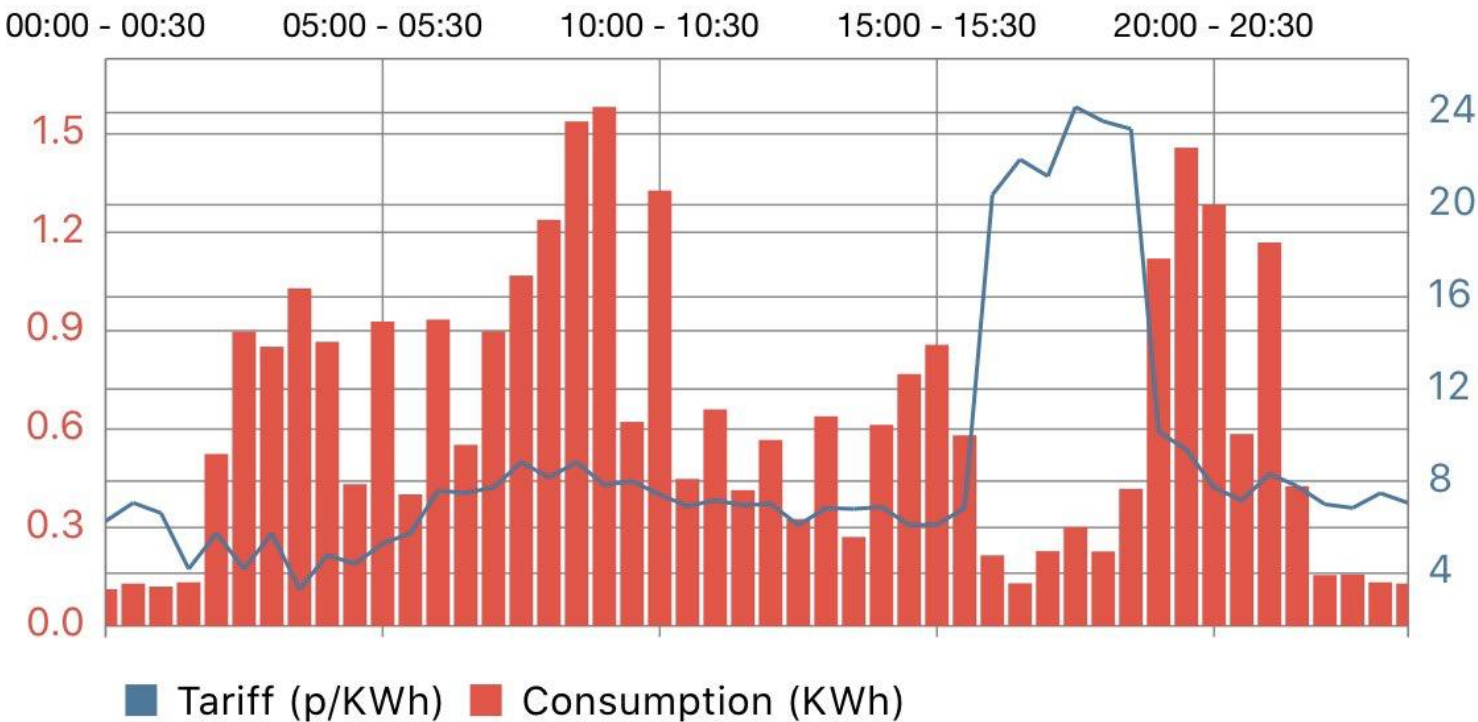
# Principle 2: Recognize the value of flexible heat load



# Principle 3: Understand the emissions effects of changes in load



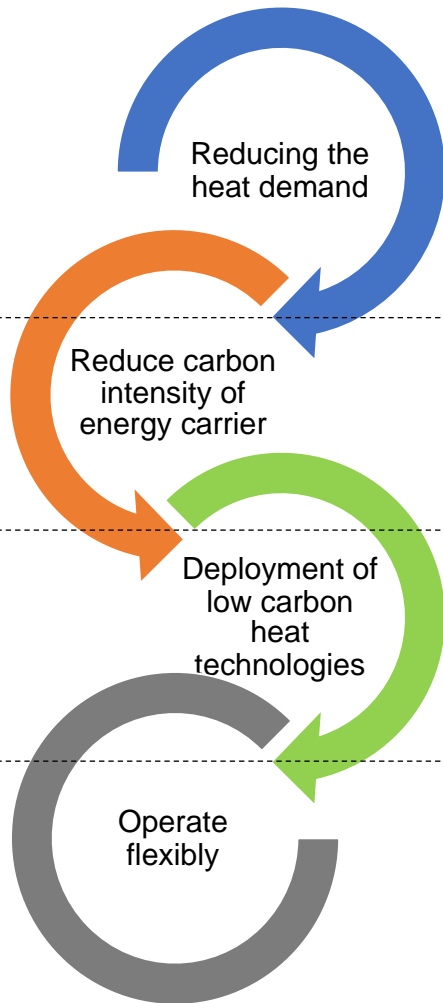
# Principle 4: Design tariffs to reward flexibility



# 4 Heat policy



# Heat policy



- Building codes, appliance standards and labelling
- Energy Efficiency Obligations and financial support schemes
- Carbon intensity standards
- Building codes, appliance standards and labelling
- Energy Efficiency Obligations and financial support schemes
- Electricity pricing



# 5 Conclusion



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# Conclusions

- Decarbonising heat is critical for meeting climate and clean air goals
- Electrification is a central pillar
- Energy efficiency is key to minimize costs and build in thermal storage
- Flexible operation of heat pumps is possible and can be incentivized through tariffs
- Whole range of policy instruments needed to accelerate replacement rates

# About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at [raponline.org](https://raponline.org)



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