



How changes in society, building
and wiring regulations are
creating low carbon opportunities



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Achieving Net Zero Carbon

Need for achieving Net Zero

- Climate change is undeniable
- Very short period of time to make the changes needed to mitigate against the severity of its impact



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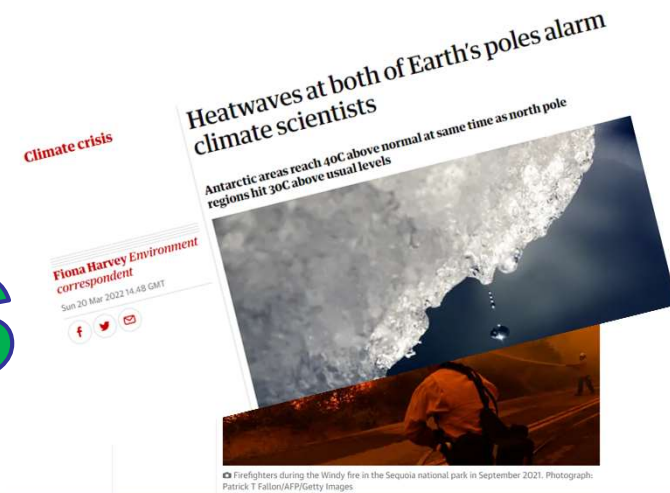
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We can do it



- Luckily, its within our grasp to halt the progress
- Decarbonation of transport fully underway
- Now to focus on the built environment

Opportunities



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Direction of travel

- Electrification of (nearly) everything
 - Electrification of transport
 - Electrification of heat

Why?

- Ease of decarbonizing electricity
 - PV, Wind, Energy storage (inc EV with V2G)
 - Still got a long way to go, but technology is with us

Hydrogen?

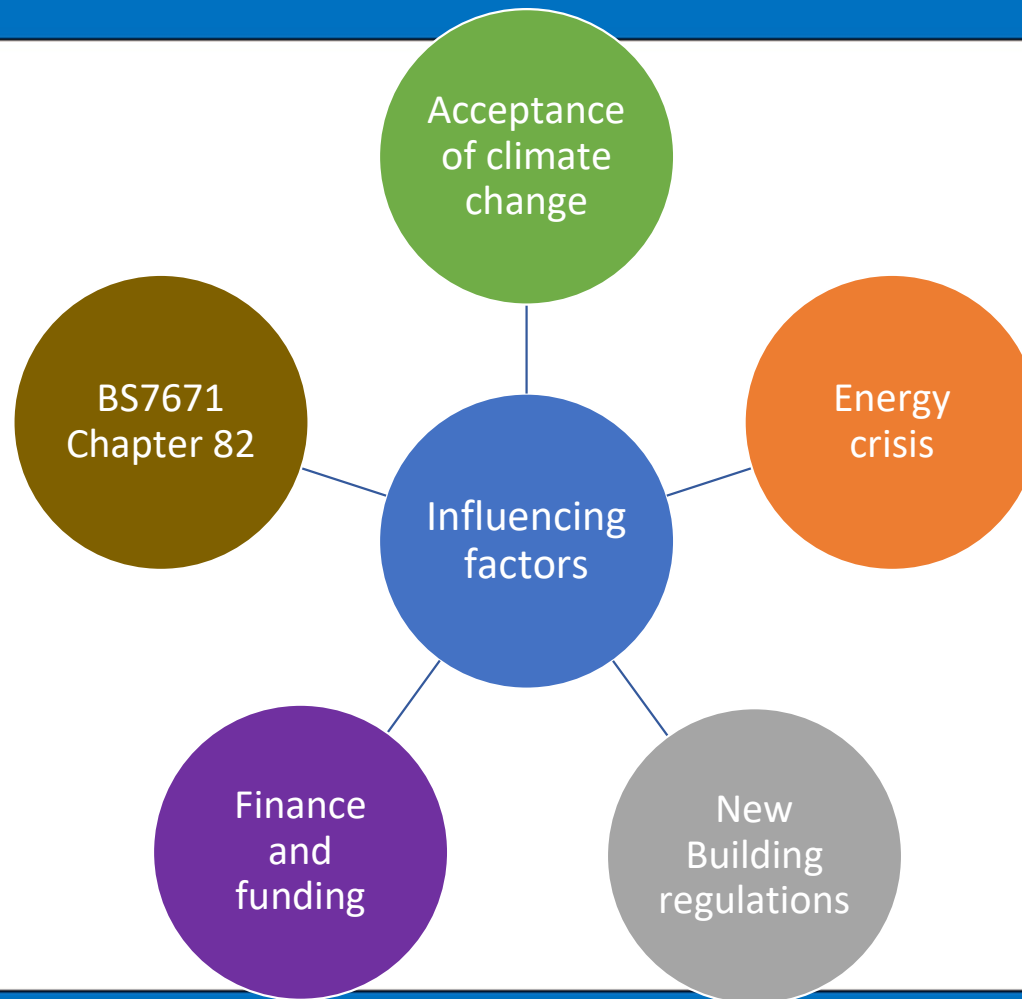
- Inefficient round-trip efficiency
- Difficult to produce cleanly
- Viable through *excess* renewable generation
- It will have its place as part of the low carbon future

Retrofitting our existing building stock

- 75% of our current building stock will still be with us in 2050
- Therefore, we must improve their efficiencies and the functionality
 - Reduce the amount of energy needed whilst retaining user comfort
 - Reduce the amount of CO2 emitted in its use
 - Reduce the cost of running the building
- Co-ordination of works is essential to success and cost reduction

Influencing factors

Perfect
conditions for
getting it done



Energy crisis

Acceptance
of climate
change

- Already covered
- People are now looking for solutions
- Considerable number

30 Mar / 2022
11:52

Molly Lempriere
Deputy Editor, Current Affairs



A third of Britons considering switch to heat pumps to reduce Russian gas reliance



There are seven million 'heat pump ready homes' in Britain already. Image: WPD.

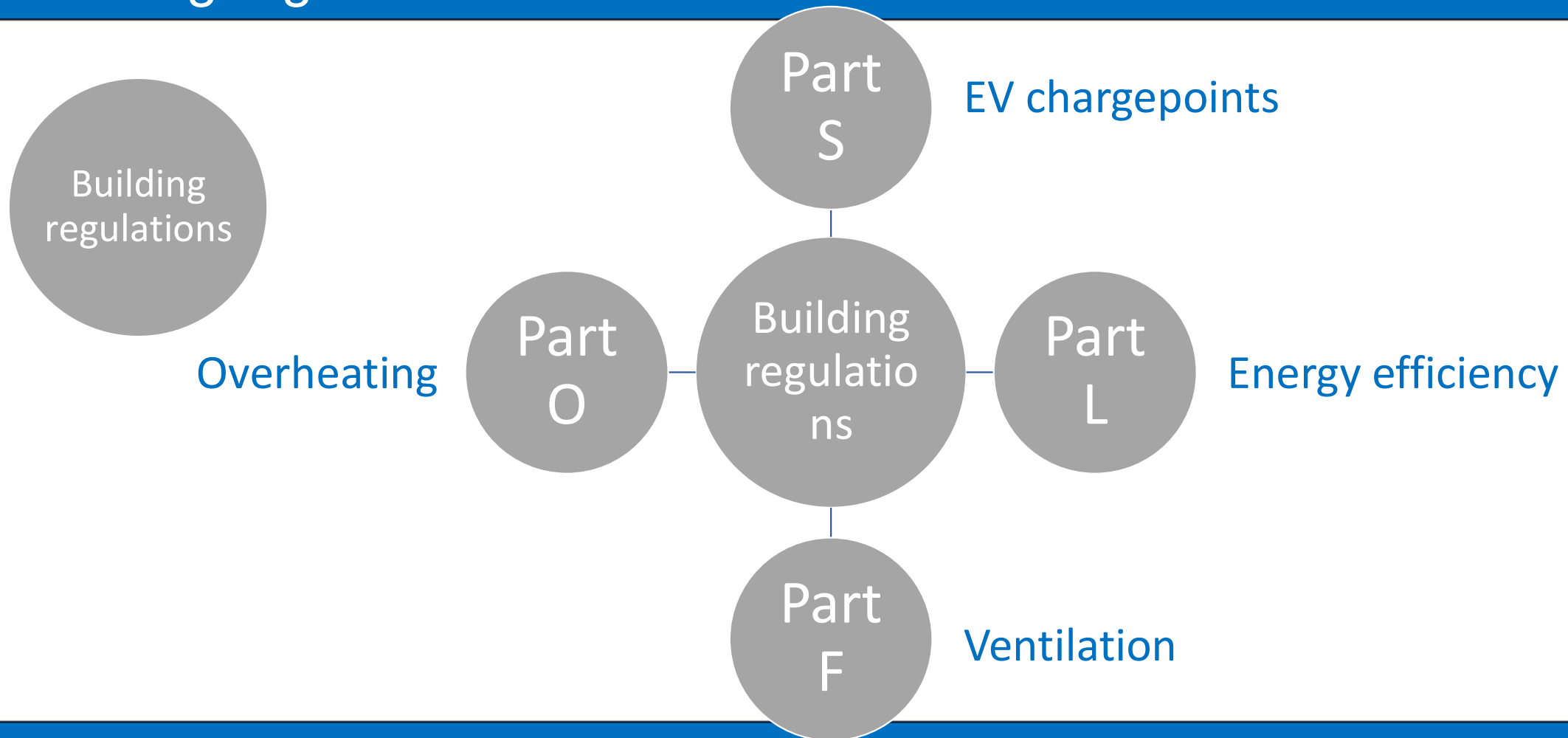
Energy crisis

An orange circle graphic containing the text "Energy Crisis".

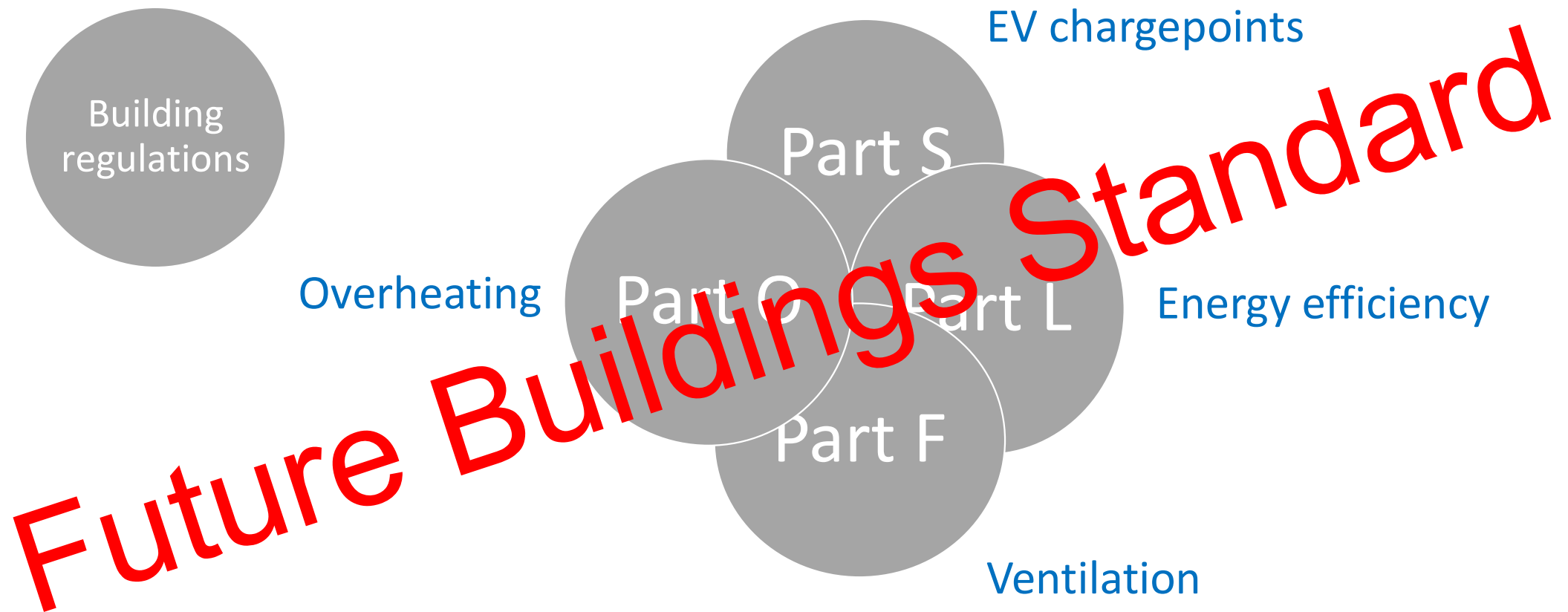
Energy Crisis

- Everyone is feeling the pinch
- Massive increase in enquiries for onsite generation and energy saving options (heatpumps, EESS)
- Coupled with carbon awareness, these are strong drivers
- Social responsibilities (local authorities and landlords) to ensure that buildings, especially dwellings are as energy efficient as possible to aid in preventing tenant fuel poverty.

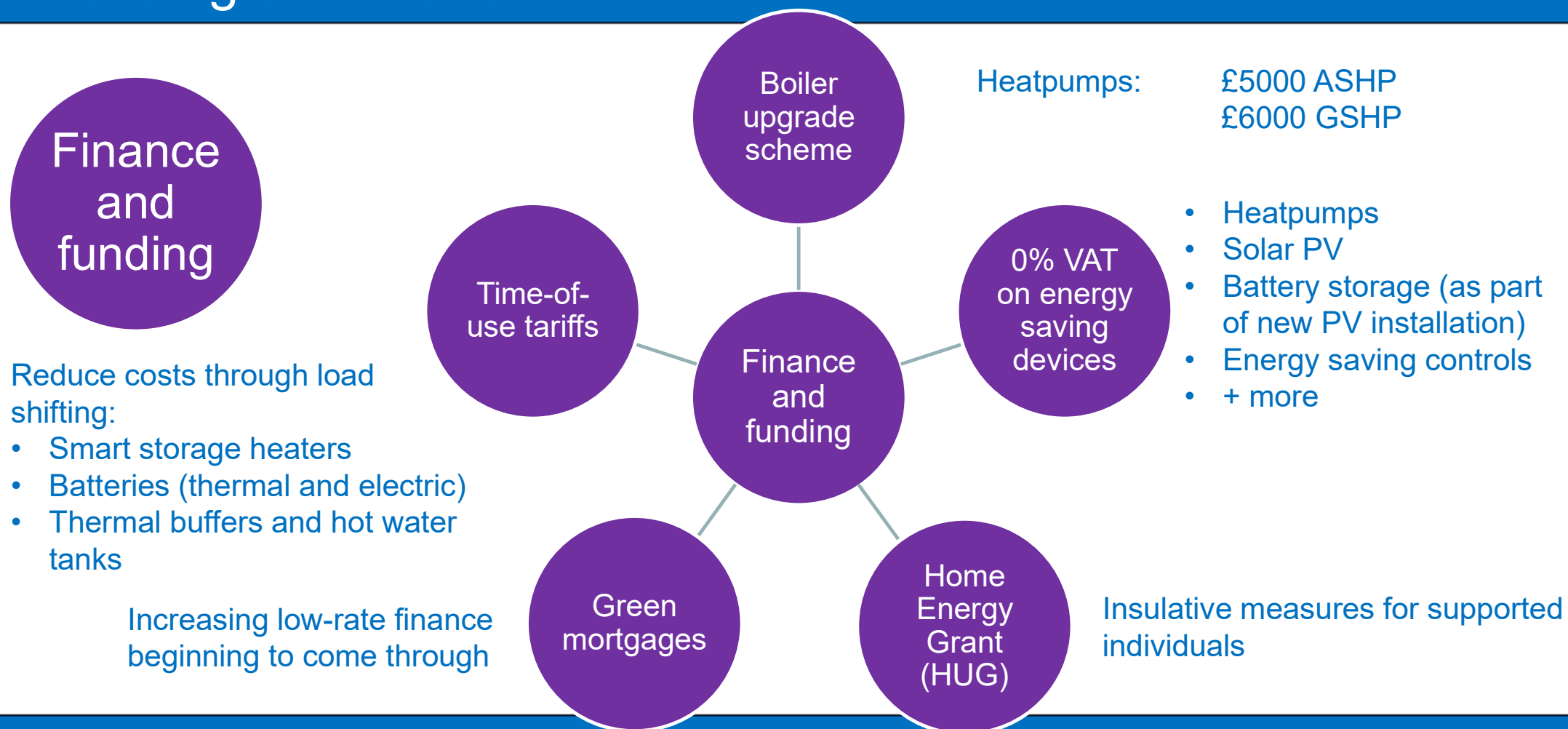
Building regulations



Building regulations



Funding and finance



BS 7671 Chapter 82

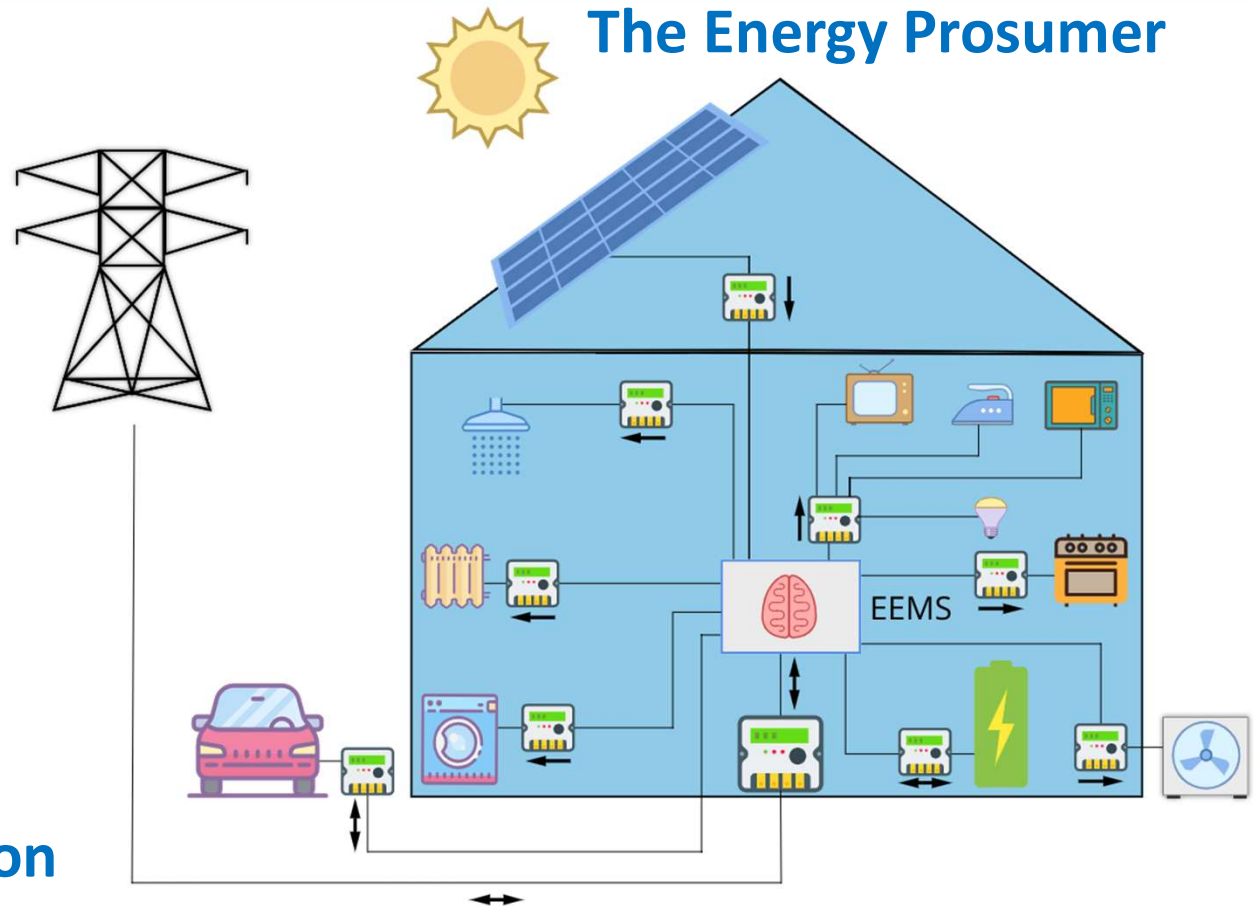
BS 7671
Chapter 82



Energy
Storage

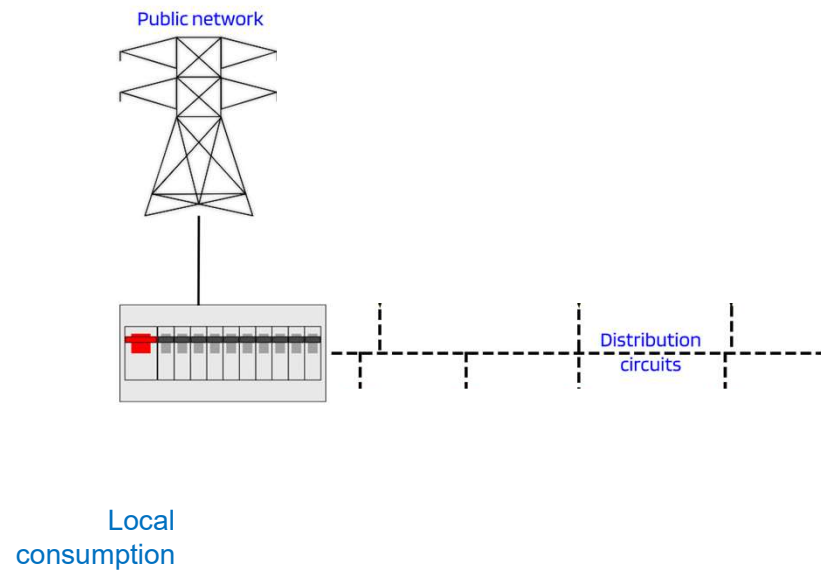


Onsite generation



BS 7671 Chapter 82

BS 7671 Chapter 82



BS 7671 Chapter 82

**GUIDANCE** Note

Planning for a Green Pivot v 1.2

NET ZERO CARBON OPPORTUNITIES FOR ECA MEMBERS

Highlighting new opportunities, training and accreditation for electrotechnical contractors in the world of the 'Green Economy'

Key information

- Much of the work in reaching our Net Zero Carbon 2050 targets fall within the scope of the electrical contractor
- Funded schemes may require specific training and accreditations
- Contains guidance on schemes, training and accreditations

**TECHNICAL GUIDANCE NOTE**

BS 7671:2018+A2:2022

Part 8 Chapter 82: The Energy Prosumer

New Addition to BS 7671: Part 8 Chapter 82: The Energy Prosumer and the Prosumer's Electrical Installation (P.E.I.)

Key Information

- As the UK progresses towards Net Zero 2050 our energy systems need to adapt and become more flexible and resilient.
- BS 7671:2018+A2:2022 Chapter 82 has been introduced to address how electrical installations can be designed to operate within the new energy system
- Chapter 82 introduces two new terms:
 - The Energy Prosumer
 - The Prosumers Electrical Installation (P.E.I.)
- The Energy Prosumer concept allows greater integration of our buildings as active components in a stable, flexible low-carbon system

1. Why do we need a new chapter?

One of the key ways the UK can decarbonise is through a low carbon electricity network. There is an ever-increasing amount of low carbon generation being added, including on and offshore wind generation, solar photovoltaics (PV)- both domestic/commercial roof-mounted systems and standalone solar farms, as well as biomass plants and anaerobic digestors. Energy generated from renewable energy accounted for 43.1% of the energy provided to the electricity grid in 2020 amounting to 134.6 TWh- more than that generated by fossil fuels (117.8 TWh)

The deployment of renewables will continue to increase with solar PV and wind power offering the cheapest form of energy generation.

However, the downside to renewable energy is its variable output during times of low sunshine and reduced wind speed.

**TECHNICAL GUIDANCE NOTE**

Updated and new Building Regulations Approved Documents

New suite of Building Regulations Approved Documents released (England only)

Key Information

- New editions of building regulations approved documents (AD) released (England only)
- Addition of approved documents 'O' relating to overheating mitigation and 'S' infrastructure for the charging of electric vehicles
- New SAP 10.2 referenced
- ADs come into force from 15th June 2022 (unless planning already granted and works have commenced prior to 15th June 2023)

New building regulations Approved Documents Released

The [Department for Levelling Up, Housing and Communities](#) (previously MHCLG) have recently released a new suite of building regulations approved documents. The new approved documents take effect on **15 June 2022** for use in England. They do not apply to work subject to a building notice, full plans application or initial notice submitted before that date provided the work is started on site before 15 June 2023.

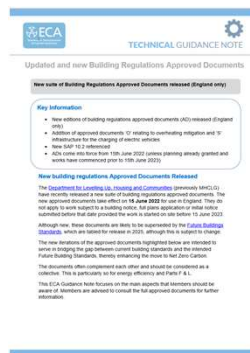
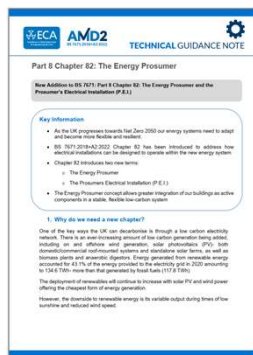
Although new, these documents are likely to be superseded by the [Future Buildings Standards](#), which are tabled for release in 2025, although this is subject to change.

The new iterations of the approved documents highlighted below are intended to serve in bridging the gap between current building standards and the intended Future Building Standards, thereby enhancing the move to Net Zero Carbon.

The documents often complement each other and should be considered as a collective. This is particularly so for energy efficiency and Parts F & L.

This ECA Guidance Note focuses on the main aspects that Members should be aware of. Members are advised to consult the full approved documents for further information.

BS 7671 Chapter 82





BS 7671:2018+A2:2022

TECHNICAL GUIDANCE NOTE

712 Solar Photovoltaic (PV) power supply systems

BS 7671 section on guidance for installation and design of photovoltaics has undergone extensive changes

Key Information

- Expanded from 5 to 14 pages of guidance.
- More detailed and more prescriptive in its requirements, with the major changes covering:
 - design criteria
 - cable selection sizing
 - selection of overcurrent devices

1. Brief

ECA Members can expect to see an increase in demand for Solar Photovoltaic (PV) systems over the coming years. Several factors are driving this, namely the legal requirement for the UK to become Net Zero Carbon by 2050 and the recent dramatic rise in energy prices, leading to homeowners considering on-site generation to help in reducing their energy bills. Changes to the Building Regulations Approved Document part L (Energy Efficiency), which come into force 15 June 2022 also increase the requirement in the amount of solar PV that new buildings are required to have.

It is, therefore, quite timely that BS 7671:2018+A2:2022 has increased the guidance and requirements for solar photovoltaic (PV) installations.

2. Installations within the scope of BS 7671

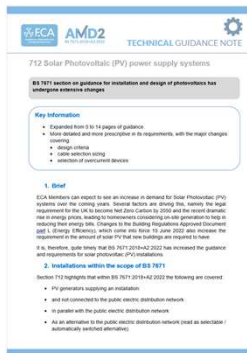
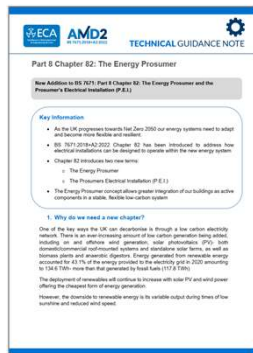
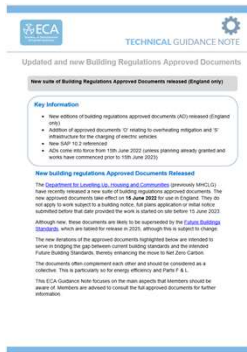
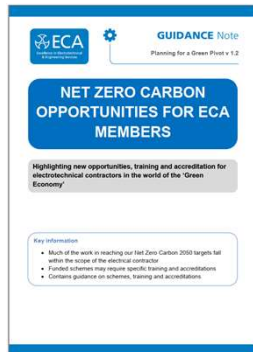
Section 712 highlights that within BS 7671:2018+A2:2022 the following are covered:

- PV generators supplying an installation:
- and not connected to the public electric distribution network
- In parallel with the public electric distribution network
- As an alternative to the public electric distribution network (read as selectable / automatically switched alternative)

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BS 7671 Chapter 82



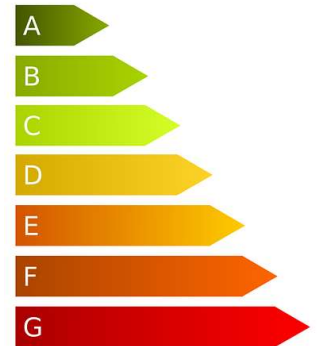
And many more on the ECA website

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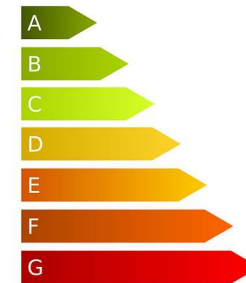
Thermal efficiency

- **Fabric first**
 - Internal, external insulation
 - Pipe lagging
 - Windows, doors
- Reduce the demands then consider your heating source
 - Ensures correct design and sizing for your heat source *regardless* of fuel source



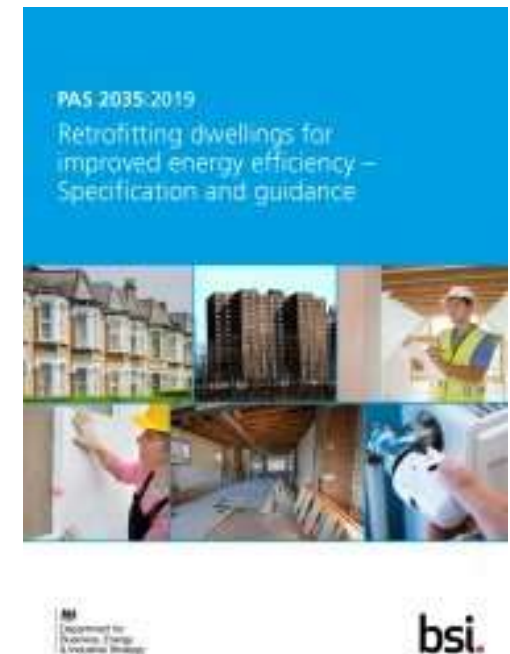
Electrical Efficiency and reducing import

- Onsite generation
- Onsite energy storage
- Selection of energy efficient equipment
- Use of energy efficiency control devices
- Designed to complement and interact as a collective



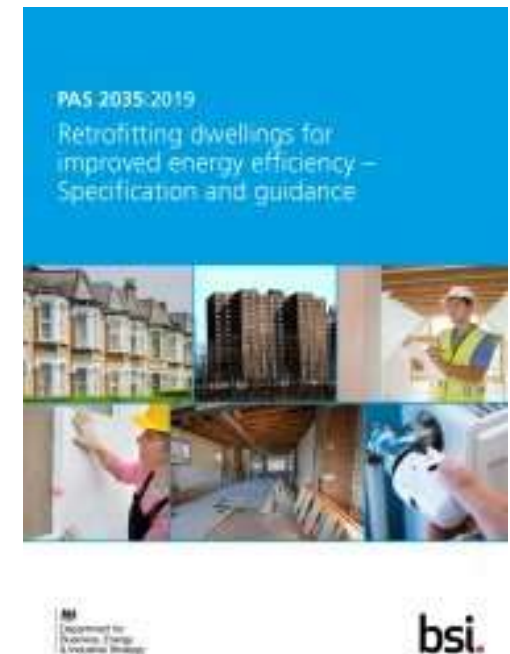
A Co-ordinated approach

- Important that improvements are made in a coordinated manner.
- Consider the long-term improvements to be made
- Butterfly effect- one change can influence another
- Coordinated plan of works is essential:
 - Short term
 - Medium term
 - Long term
- This is where PAS2035 is important



PAS 2035- Retrofit process

- Multiple roles:
 - Advisor (simple web or telephone advice)
 - Assessor
 - Designer
 - Co-Ordinator
 - Evaluator
 - Installer (under PAS2030)
- Multiple roles can be performed by one person
- Required for most funded installations



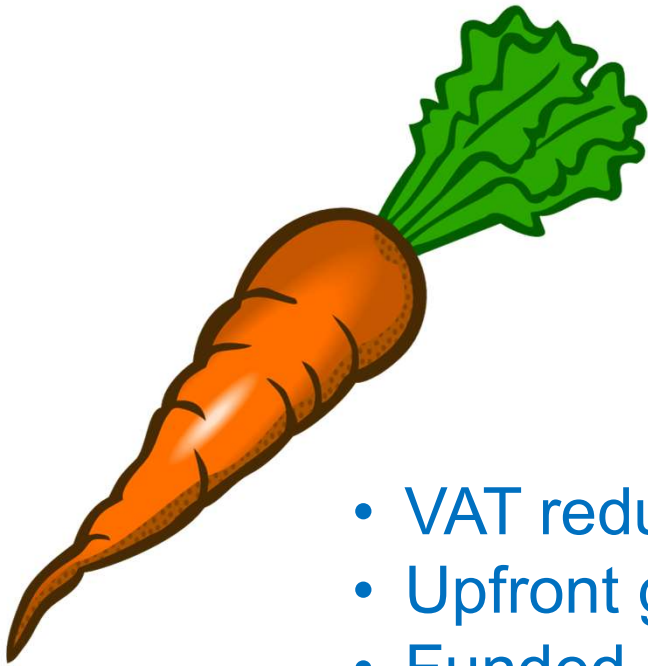
PAS 2035- Ensuring co-ordination of works

- Many measures impact others:
 - Thermal demand affects heating sizing
 - Insulative measures could impact current and future measures
 - Reducing airflow
 - Requirement for passive airflow design, or
 - Mechanical Ventilation Heat Recovery (MVHR)
 - Impeding the addition of future circuits / equipment
 - Solar PV
 - EESS
 - Electric Vehicle Charge Points
 - Consideration for existing installations

Summary

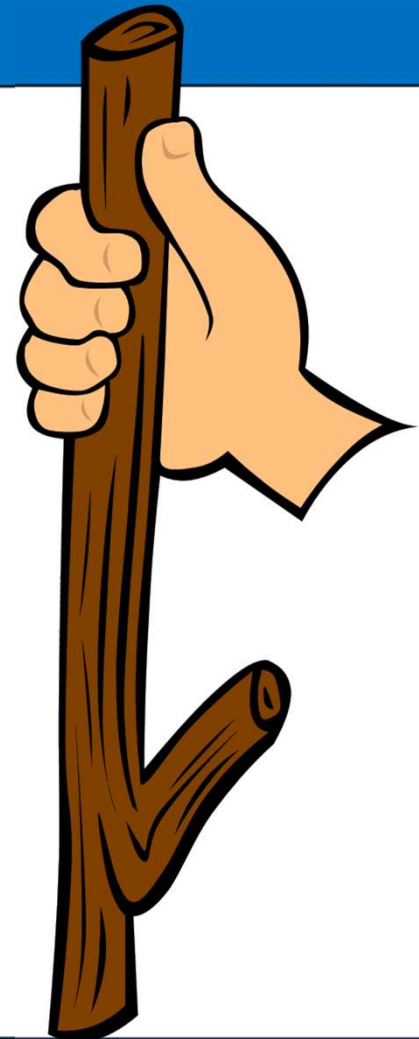
- Many factors are driving the adoption of energy efficiency and reducing energy demands
 - Climate crisis, Energy crisis, Legislation, Standards, Guidance and Funding opportunities
- Retrofitting should be coordinated
 - Use specialists such as PAS2035 retrofit coordinators to ensure nothing is overlooked
- Improvements have multiple benefits
 - Costs, Lower-carbon, happy & healthy customers

Summary

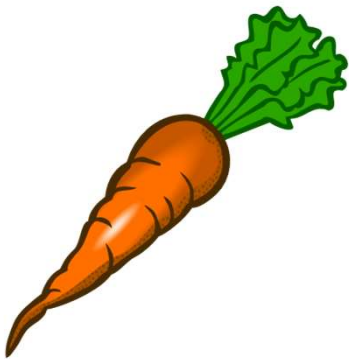


- VAT reduction
- Upfront grants
- Funded schemes

- Building regulations Approved Documents
- Changes in BS7671
- PAS 2035



Summary



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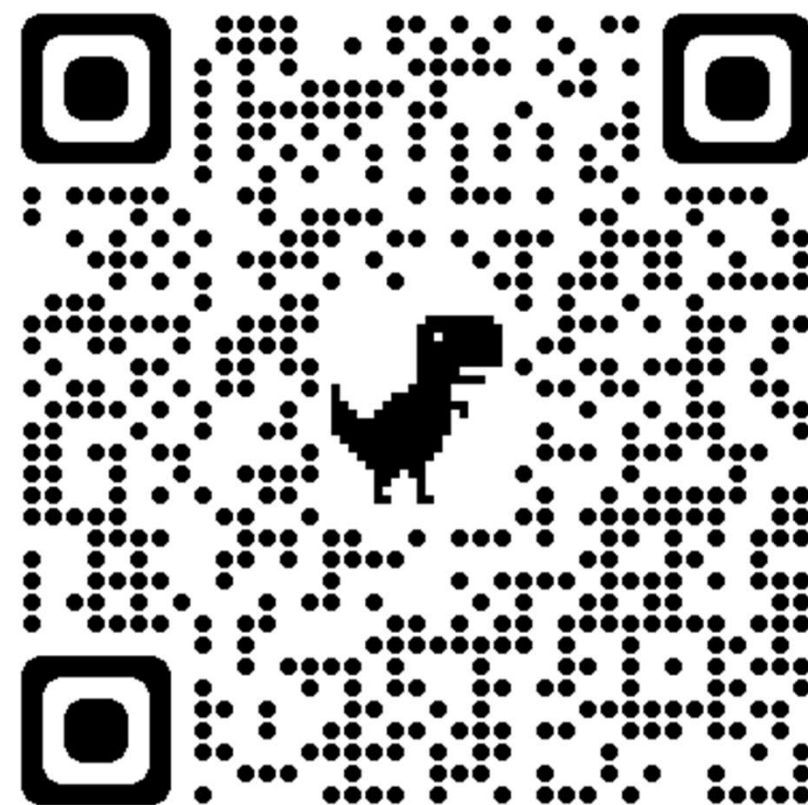
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Challenge for a Cause **2022**

INCA TRAIL

<https://electricalcharity.enthuse.com/pf/luke-osborne>



Questions?

