



Contractors view on what's ahead: Opportunities through electrification: what do contractors expect from the supply chain?



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PEST Analysis



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PEST Analysis

Supply

- Materials and fuel shortage
- Freight disruption
- Brexit ostracization

- Political
- Instability
- Geopolitics COP26

- Economic
- Inflation
- Interest rates

Demand

- Cost until critical mass
- Eco-system is built-for lowest price

National drivers

- Climate change
- Demand for green energy
- Demand for energy security
- National security/critical infrastructure
- Fuel poverty - Warm banks

Importer of energy

Clean energy: climate change

Fiscal incentivisation

Prosumerism

- Social
- Speed of consumption

- Technological
- Race for global to be tech leaders

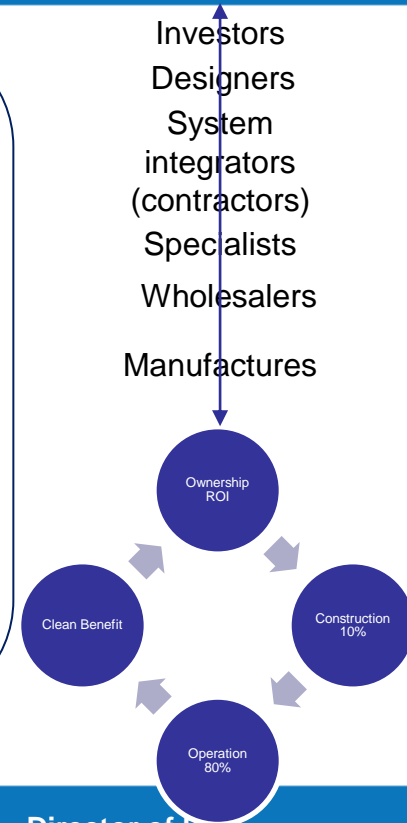
Individual drivers

- Consumer demand for smart homes – assisted living
- Generate, store and management on home energy
- Clean transport
- New disruptive business models to scale up adoption

Business models

Business model options:

- Does the high risk of insolvencies require credit control or collaboration?
- Are demand and margins sufficient to make the diversification work?
- Does green always cost more? Or is there a tipping point at critical mass?
- Have we reached the catalyst for change?
- Does cost drive adoption of generation/management/ prosumerism?
- Does energy cost drive the desire for quality products? #ETIM PIP
- Distressed purchasing on credit is unsustainable
- Retrofit requires an intelligent approach from an integrated supply chain



Achieving Net Zero Carbon

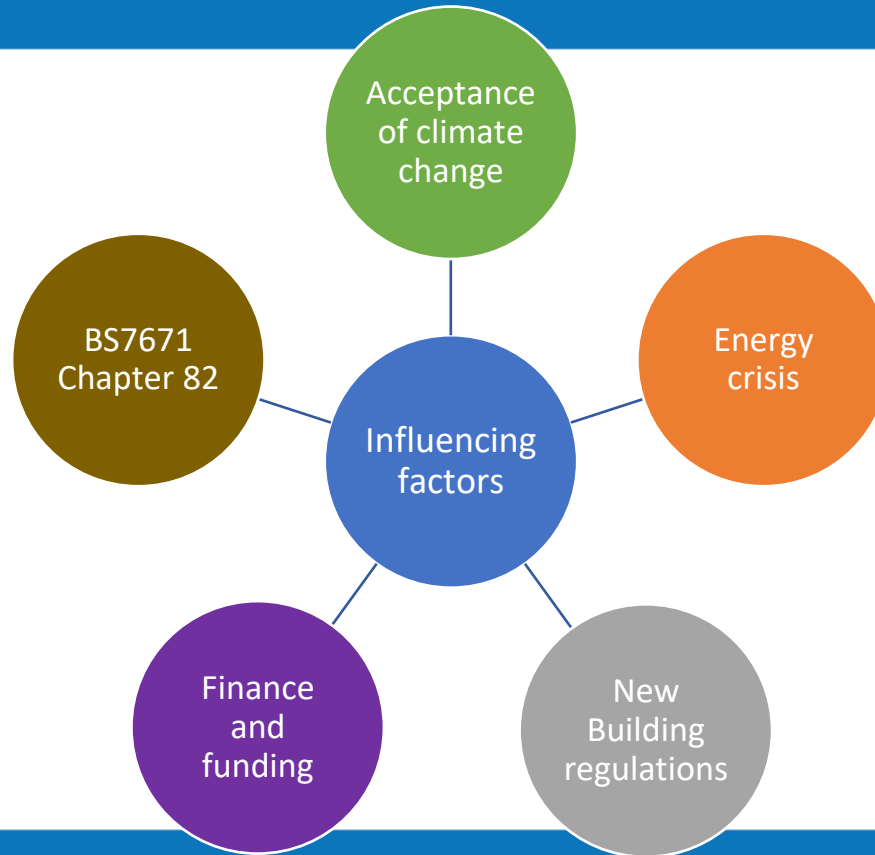
- How many of you have children?
- How many of you have grandchildren?
- How many of you have children, grandchildren, and/ or have nieces, nephews or friends with kids?

YOU HAVE THE POWER TO INFLUENCE THEIR FUTURE



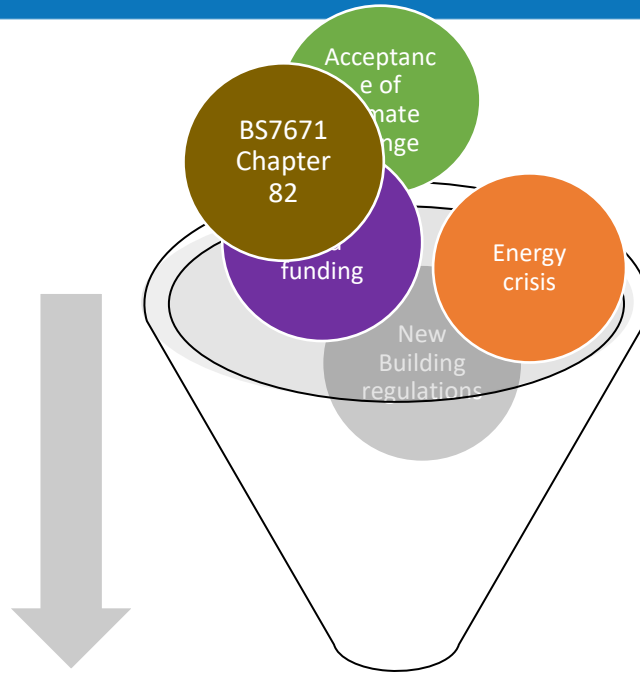
Influencing factors

Perfect
conditions for
getting it done



Influencing factors

Perfect
conditions for
getting it done



Demand and delivery

Influencing factors: The Wiring regulations BS7671 origins

BS7671
Chapter 82

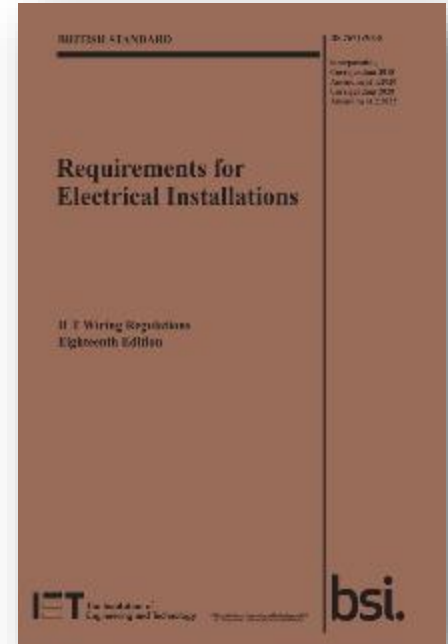
In 1882 the Society of Telegraph Engineers and of Electricians created the *Rules and Regulations for the prevention of fire risks arising from electric lighting*

- This came about after **electric street lighting** started to replace gas lighting



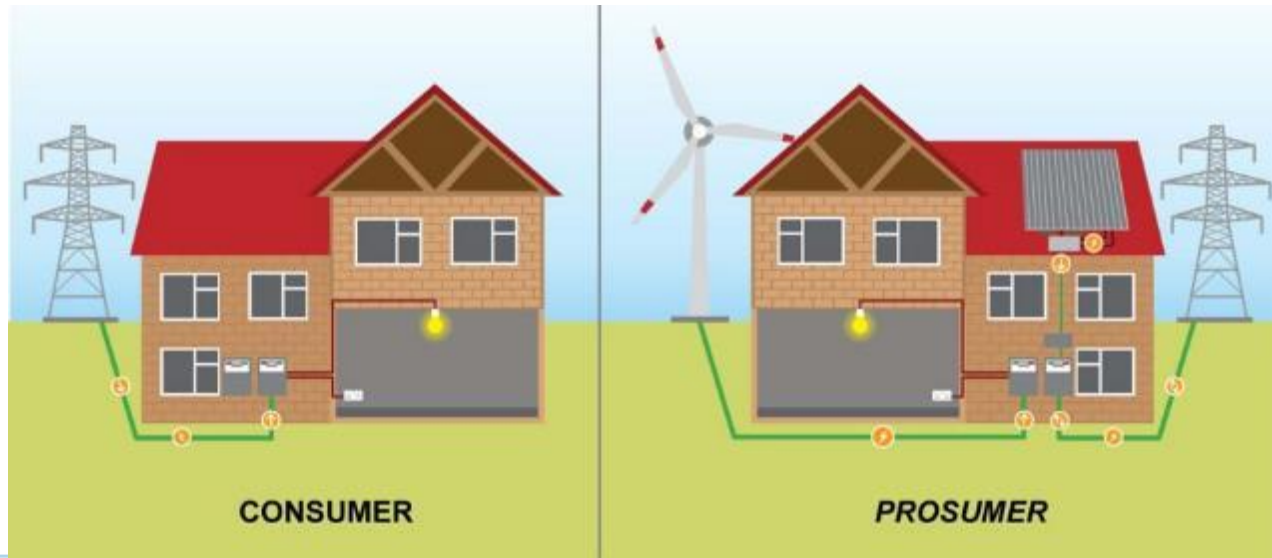
The Wiring Regulations – continuing to adapt

- The Wiring Regulations, or BS 7671, developed into a document more than 500 pages long
- Times, technologies and installations change
- In a new Part 8 was introduced bringing phrases such as prosumer and prosumers electrical installations
- These are new terms to the industry that bring big opportunities



The Wiring Regulations – with its new Part 8

- Introduced the terms: Energy Prosumer and Prosumers Electrical Installation 'PEI'



BS 7671 Chapter 82

The Energy Prosumer

BS 7671
Chapter 82

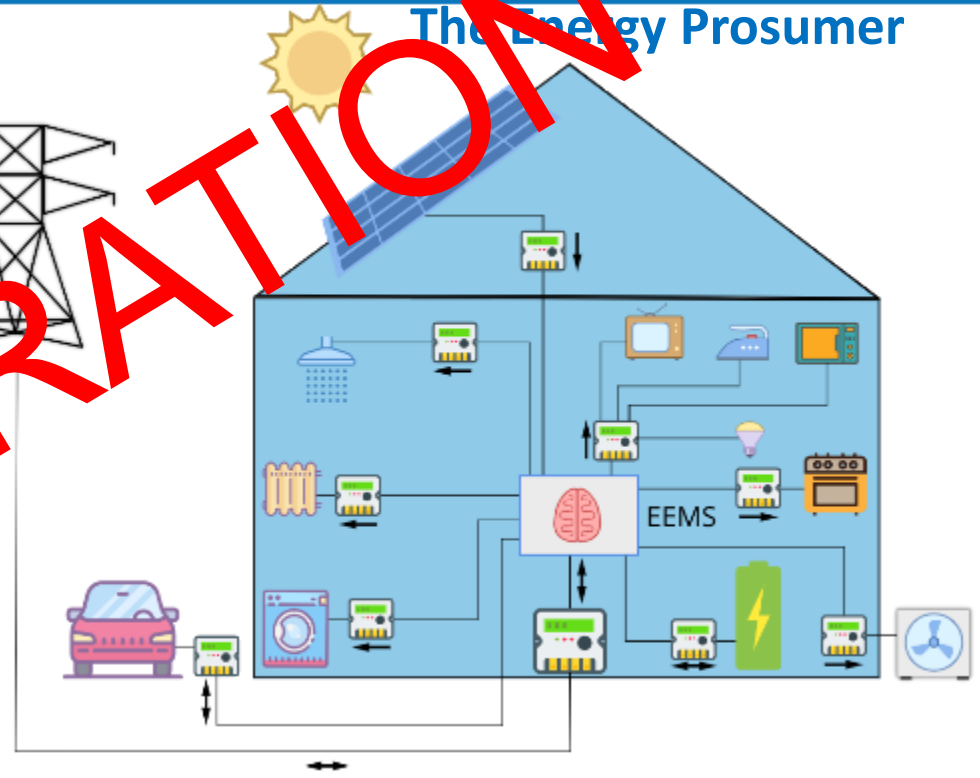


Energy Efficiency



Energy
Storage

Onsite generation



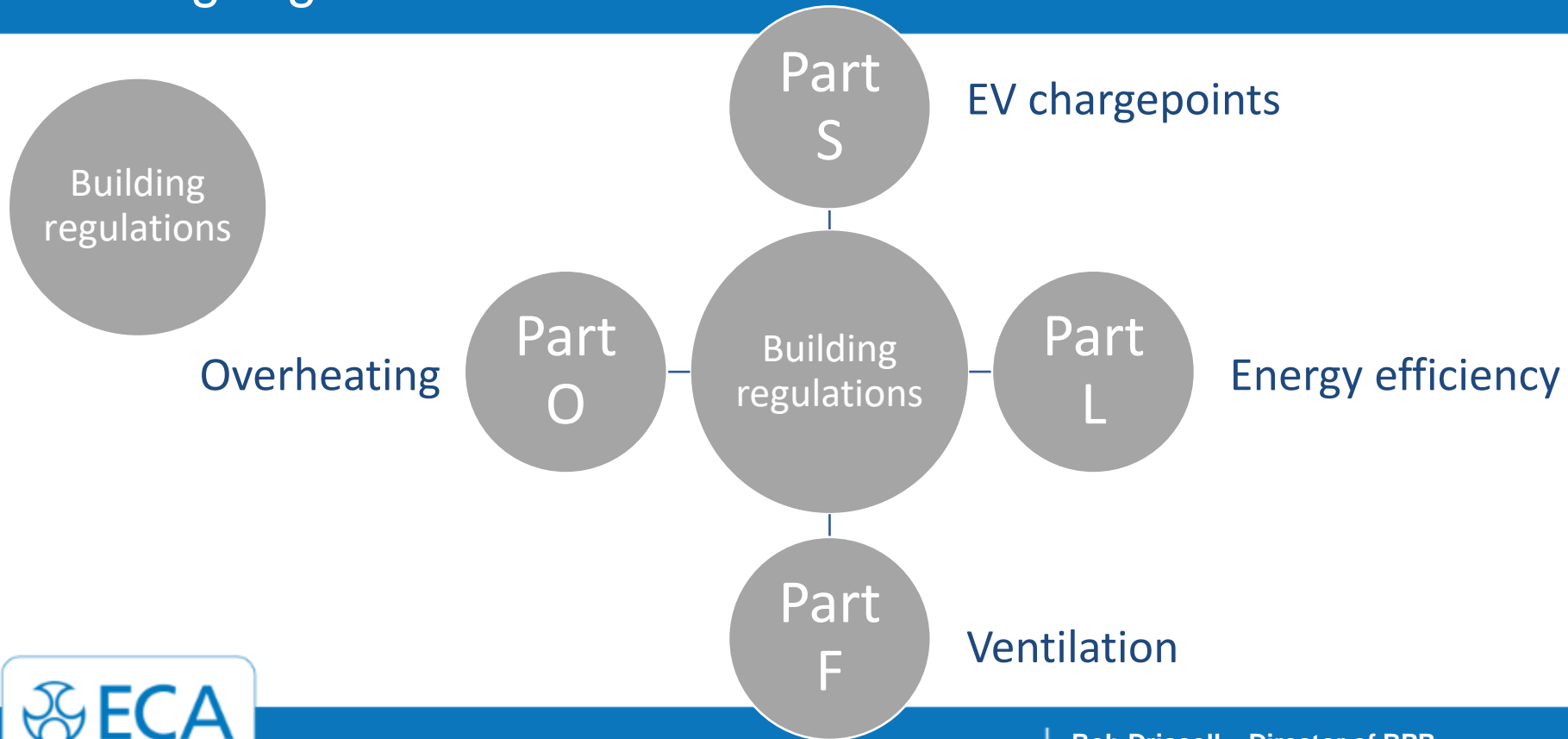
INTEGRATION



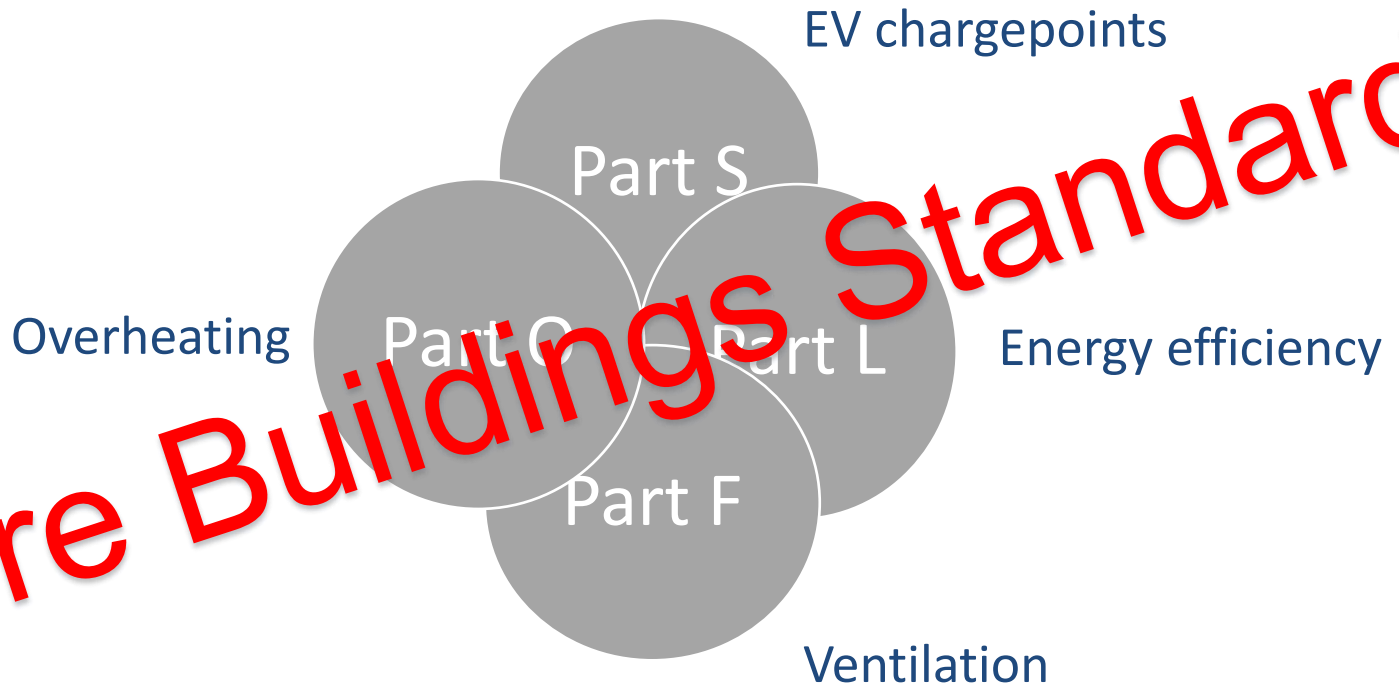
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Building regulations



Building regulations



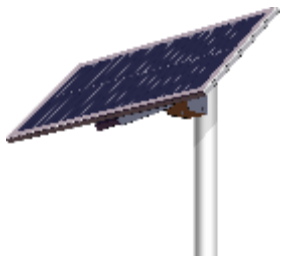
Future Buildings Standard



Approved Document L: Conservation of fuel and power

Part
L

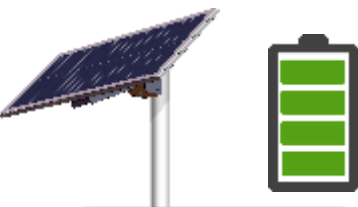
- 2 Parts:
- Volume 1: **Dwellings**
 - Now favours electrification of heat (Electricity generation is cleaner now)
 - Not just **heatpumps**
 - **Smart Electrical Storage / Infrared** (good for efficient buildings)
 - Heating systems designed as **Heatpump** ready
 - (max flow temperature of 55 deg C)
 - Require **PV systems** sized to min 40% ground floor area/6.5
 - (equates to min 4kWp for a 8m x 8m property)



Approved Document L: Conservation of fuel and power

Part L

- Volume 2: Buildings ***other than*** dwellings
 - Increased automatic **energy monitoring** and **power factor correction** (designs given adjustment factors)
 - Zoning and sub-division of heating and cooling zones
 - **Controls** for timing *and* temperature
 - Lighting automatic **controls** and better **efficiency**
 - Energy **submetering**
 - Lighting, heating, cooling (for at least 90% energy use)
 - Increased use of **Building Automation Control Systems (BACS)** required (heating / cooling >180kW)
 - Onsite generation and storage, appropriate to site



Approved Document S: Infrastructure for charging of EVs

Part S

- Extensive & prescriptive requirements
- Both for:
 - New buildings
 - Buildings and carparks undergoing significant renovations
- Increased requirements for **chargepoints** and **ducting** for future additions



The screenshot shows the cover and first few pages of a technical guidance note. At the top left is the ECA logo with the text 'Excellence in Electrotechnical & Engineering Services'. At the top right is a gear icon and the text 'TECHNICAL GUIDANCE NOTE'. The main title is 'Approved Document S: Infrastructure for charging electric vehicles'. Below this is a grey box with the text 'New suite of Building Regulations Approved Documents released (England only)'. A 'Key Information' box contains two bullet points: 'Approved document Part S covers the installation of Electric Vehicle Charge Points (EVCP) and/or cable routes in new buildings and buildings undergoing major renovation work' and 'The implementation date for the approved document is 15 June 2022 (unless planning is already granted, and works have commenced prior to 15 June 2022)'. Below this is section '1. Why the new approved document?' with a paragraph explaining the document's purpose. Section '2. Scope' lists building types covered: 'New residential buildings', 'New non-residential buildings', 'Buildings undergoing a material change of use', 'Residential buildings undergoing a major renovation', 'Non-residential buildings undergoing a major renovation', and 'Mixed-use buildings undergoing relevant building work'. Section '3. Residential Buildings – New Build' states that new residential buildings must have access to EVCP. At the bottom, there is a small disclaimer: 'ECA offers to provide free technical guidance services to registered ECA members. Details of what documents are available are given on our website. ECA is not responsible for any loss or damage to property or equipment or for any other loss or damage resulting from the use of the information provided in any document, published or not published, by ECA or any other person, in any form or by any means, including electronic, mechanical, photocopying, recording, or by any information storage and retrieval system.'

EV Smart Charge Regulations

Part
S

BS 7671
Section
722

- Prescriptive requirements for integration with energy flexibility
- Smarter controls include:
 - Timed user settings
 - Ability to respond to local DNO signals
 - Cyber-security aspects
- Should be seen as a clear direction for **energy flexibility**
- This is the vanguard of flexibility legislation
 - Likely to be followed by similar for heating and high consumptive loads

INTEGRATION



Integration is key- Domestic and Commercial installations

Heating & Cooling
HVAC, heatpumps, Smart
electrical heating, MVHR

Solar PV & Energy Storage

Blinds and Shades
(Controlling solar gain)

Audio / visual /
conferencing



Electric Vehicles

Fire and Security
(interlinked with smart
building)

Environment Control/
Occupancy & air quality

Energy efficient
lighting &
controls



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What are contractors expectations?

- Contractors expect:
 - expert advice:
 - ‘what works together’
 - Cohesive systems
 - PV, Battery storage, load control, smart controls (heating and lighting)
 - Understanding of terminology

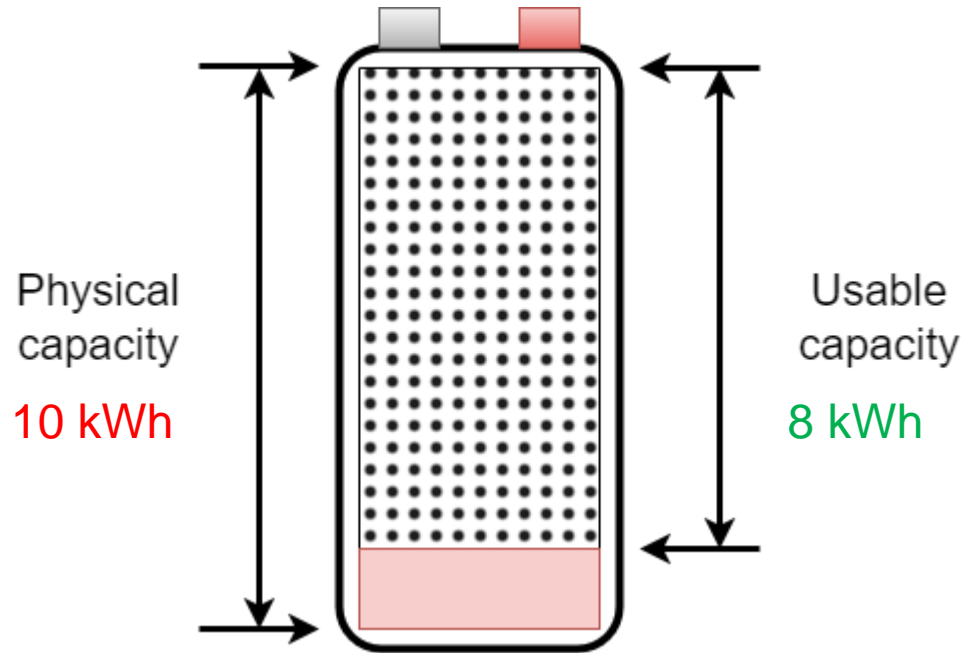


'When a man gets on to accumulators or rechargeable batteries his inherent capacity for lying comes out'

Thomas Alva Edison- 1908

Understanding the marketing- Batteries

- Usable capacity
- **Stated** capacity may not be what you think
- 10kWh Battery
- May only contain 8kWh of usable power
- Know your product
 - The end user will expect the 'available power'



Understanding the marketing- C rate

Example:

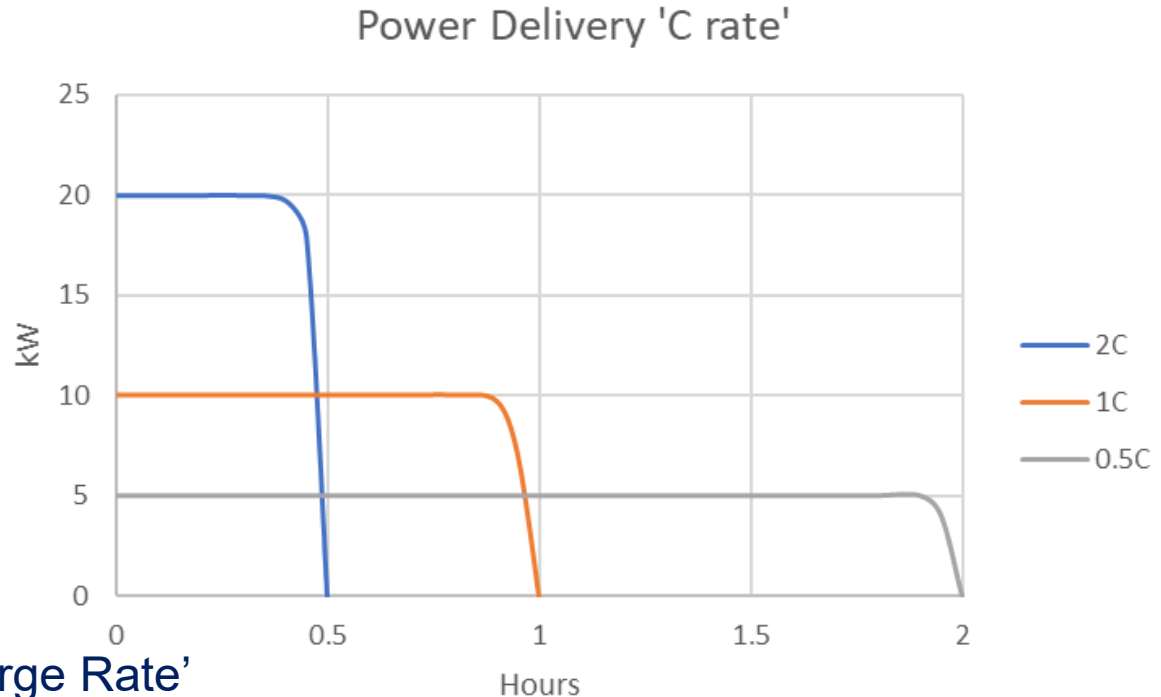
10kWh Battery

Deliverable power:

- 1C: 10kW for 1 hour
- 2C: 20kW for 30 minutes
- 0.5C: 5kW for 2 hours

Also described as:

‘Maximum Continuous Discharge Rate’



Change of mindset

- 20th Century led to disposable culture
 - Endless churn of products
 - Built in obsolescence
 - Unsustainable
- 21st Century
 - Customers need products built for longevity
 - Not endless minor iterative changes
 - Not replacement for high failure rates
 - Products need to be selected for their quality



Distributer benefits

- Legislation nudges this direction:
 - WEEE directive
 - Responsibility and burden on sellers
 - Additional work and costs for you and the installer
 - Reuse and recycling is great- **longer service life is better!**
- Don't fear this as your business model
 - Nearly everything in the drive for Net Zero involves 'Electrification'
 - There will still be ample demand and profits
 - Just a better environment



Distributors are trusted

- Distributors are upping their game
 - Increasing low carbon offerings
 - Dedicated ‘arms’ of business
- ‘Green’ is becoming mainstream
- Trade shows & events show the interest and demand

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Summary

- Many factors are driving the 'Green Revolution'
 - Societal, Standards, Regulations et al
- Generation, storage, flexibility and energy efficiency solutions are growing
- Quality over churn
- Customer demand is huge

INTEGRATION

Opportunities

Questions?

