Future Homes Hub

Future Homes Standard READY

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WELCOME TO THE

Future Homes Standard Technical Conference

Be sure to share your experience on LinkedIn using #FHSReady

Richard Lankshear

Programme Director

Future Homes Hub

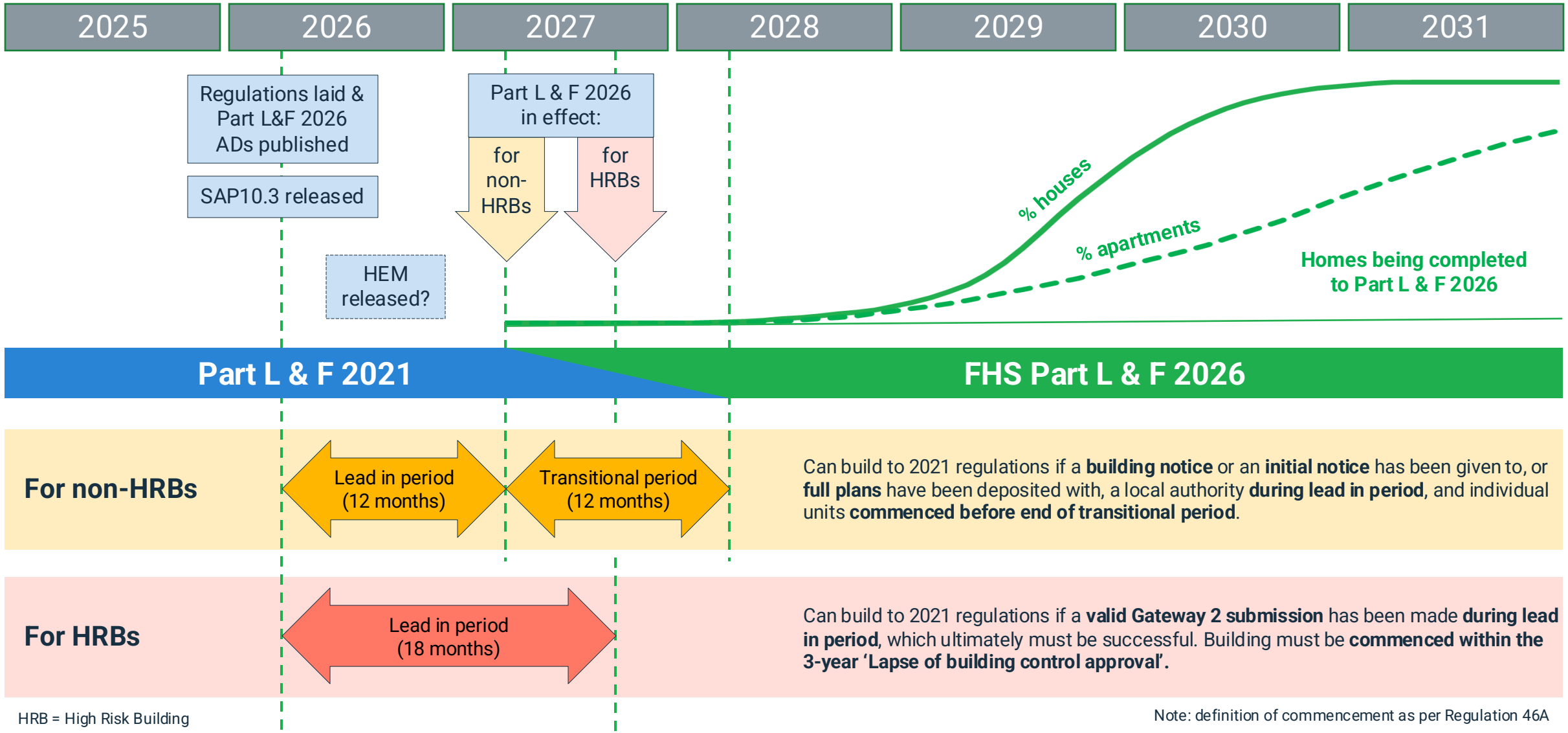
We’ve come a long way….

Future Homes Standard: New Parts L and F published on 24 March 2026

Part L 2026

Part F 2026

FHS Timeline



HRB = High Risk Building

Note: definition of commencement as per Regulation 46A

The Future Homes Standard Essentials

Seven actions to de-risk delivery today

1. Lead early, learn fast, share lessons
2. Prioritise grid availability
3. Own the customer journey
4. Evolve your design
5. Get heating design right
6. Build as designed
7. Commission with care

www.futurehomes.org.uk/future-homes-standard-ready

Google: FHS Essentials

User specific guidance - published

Get FHS Ready Webinars and Podcasts

Fridays 1-2pm

Available now in the members area

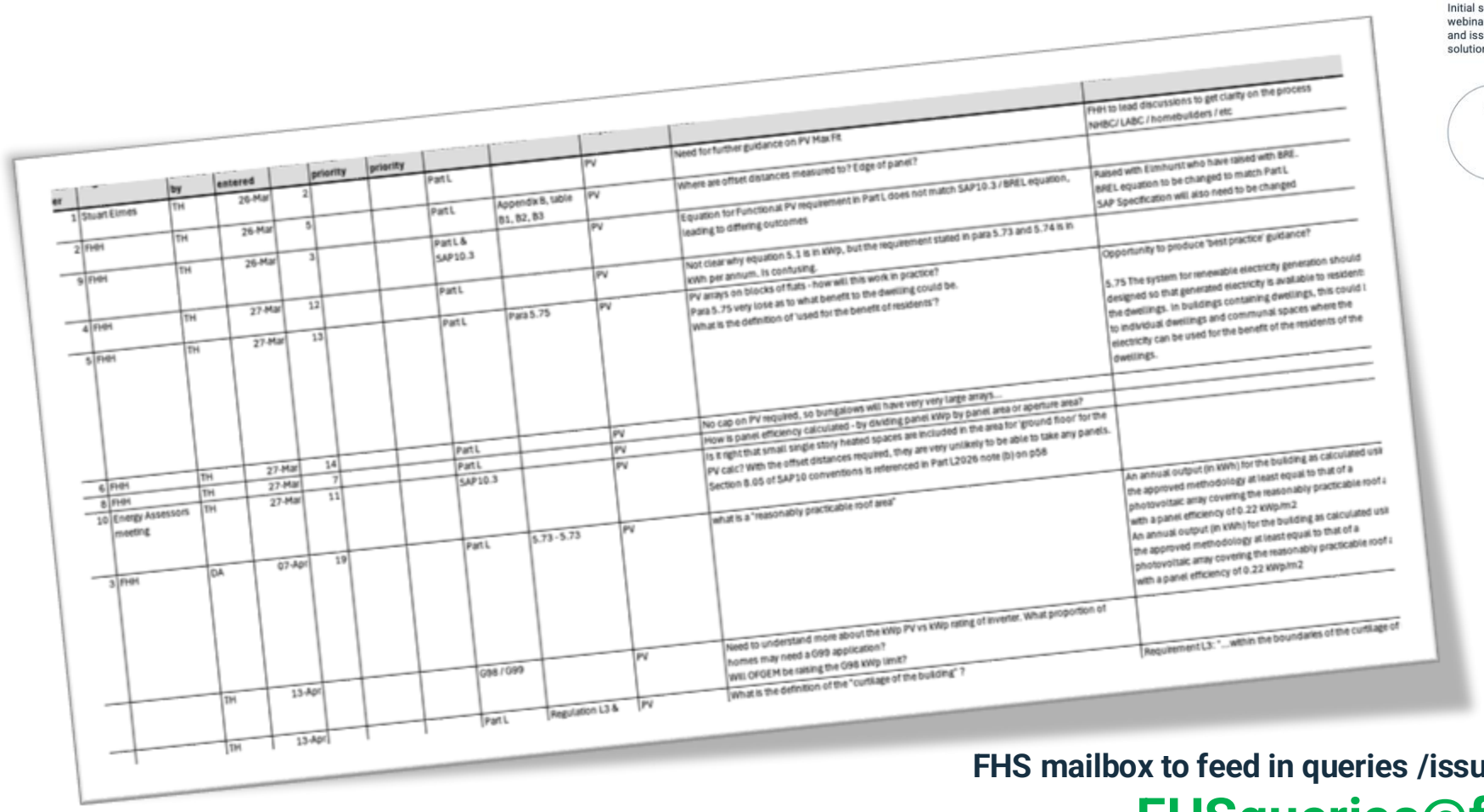
- Future Homes Standard Reflections
- Lead early, learn fast, share lessons
- Delivering homes with heat pumps
- Build as designed
- Prioritise grid availability

Coming up

- Getting heating design right, part 1 (19 June)
- Getting heating design right, part 2 (3 July)
- Commission with care (10 July)
- Owning the customer journey (17 July)
- Evolving your design (18 September)
- Ventilation in new homes (9 October)

On demand

FHS Publication issues



er		by	entered		priority	priority					
1	Stuart Elmes	TH	26-Mar	2			Part L		PV	Need for further guidance on PV Max Fit	FHH to lead discussions to get clarity on the process NHBC/ LABC / homebuilders / etc
2	FHH	TH	26-Mar	5			Part L	Appendix B, table B1, B2, B3	PV	Where are offset distances measured to? Edge of panel?	
9	FHH	TH	26-Mar	3			Part L & SAP10.3		PV	Equation for Functional PV requirement in Part L does not match SAP10.3 / BREL equation, leading to differing outcomes	Raised with Elmhurst who have raised with BRE. BREL equation to be changed to match Part L SAP Specification will also need to be changed
4	FHH	TH	27-Mar	12			Part L		PV	Not clear why equation 5.1 is in kWp, but the requirement stated in para 5.73 and 5.74 is in kWh per annum. Is confusing.	
5	FHH	TH	27-Mar	13			Part L	Para 5.75	PV	PV arrays on blocks of flats - how will this work in practice? Para 5.75 very lose as to what benefit to the dwelling could be. What is the definition of 'used for the benefit of residents'?	Opportunity to produce 'best practice' guidance? 5.75 The system for renewable electricity generation should designed so that generated electricity is available to resident the dwellings. In buildings containing dwellings, this could i to individual dwellings and communal spaces where the electricity can be used for the benefit of the residents of the dwellings.
6	FHH	TH	27-Mar	14			Part L		PV	No cap on PV required, so bungalows will have very very large arrays...	
8	FHH	TH	27-Mar	7			Part L		PV	How is panel efficiency calculated - by dividing panel kWp by panel area or aperture area?	
10	Energy Assessors meeting	TH	27-Mar	11			SAP10.3		PV	Is it right that small single story heated spaces are included in the area for 'ground floor' for the PV calc? With the offset distances required, they are very unlikely to be able to take any panels. Section B.05 of SAP10 conventions is referenced in Part L2026 note (b) on p58	
3	FHH	DA	07-Apr	19			Part L	5.73 - 5.73	PV	what is a "reasonably practicable roof area"	An annual output (in kWh) for the building as calculated usi the approved methodology at least equal to that of a photovoltaic array covering the reasonably practicable roof a with a panel efficiency of 0.22 kWp/m2
		TH	13-Apr				G98 / G99		PV	Need to understand more about the kWp PV vs kWp rating of inverter. What proportion of homes may need a G99 application?	An annual output (in kWh) for the building as calculated usi the approved methodology at least equal to that of a photovoltaic array covering the reasonably practicable roof a with a panel efficiency of 0.22 kWp/m2
		TH	13-Apr				Part L	Regulation L3 &	PV	Will OFGEM be raising the G98 kWp limit? What is the definition of the "curtilage of the building" ?	Requirement L3: "...within the boundaries of the curtilage of

FHS mailbox to feed in queries /issues:

FHSqueries@futurehomes.org.uk

Agenda

08:00 - 09:00	**Registration, Exhibition, Coffee and Pastries**
09:00 - 09:10	Welcome and introduction
09:20 - 10:10	Fabric first & reactions to SAP 10.3 Room 1
10:10 - 11:00	All things PV Room 1
11:00 - 11:30	**Morning Break and Exhibition**
11:30 - 12:20	Feeling the heat: part 1 Room 1
12:20 - 13:10	Fresh thinking on ventilation & IAQ Room 1
13:10 - 14:00	**Lunch and Exhibition**
14:00 - 14:50	Feeling the heat: part 2 Room 1
14:50 - 15:40	Learning by doing Room 1
15:40 - 16:10	**Afternoon Break and Exhibition**
16:10 - 17:00	Powering up Room 1

Professor David Glew

Head of Sustainable Buildings

Leeds Beckett University

Future Homes Standard
Technical Conference

Tuesday 9 June, Leeds Beckett University
Wednesday 17 June, Central Hall Westminster

LEEDS BECKETT UNIVERSITY
LEEDS SUSTAINABILITY INSTITUTE

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OUR WHY

RESPONDING TO THE GLOBAL CHALLENGES THAT AFFECT US ALL

At Leeds Beckett University, we're using research and knowledge exchange to address three core global challenges where our expertise, networks, and approach can effect meaningful change, in the communities in which we operate, the region that we're proud to call home, and on a national and international scale.

GREENER, SUSTAINABLE COMMUNITIES

SPORT AND HEALTHY COMMUNITIES

INCLUSIVE, PROSPEROUS COMMUNITIES

GREENER, SUSTAINABLE COMMUNITIES

Securing the future of our planet is arguably the greatest challenge we all face.

We're helping to develop innovative thinking for the Green Revolution, considering how we can address the climate emergency from many different angles.

Our impact extends from the local to the global.

By involving as many different voices as possible and looking at the problem from diverse perspectives, we're working to secure a greener future for all communities.

RESEARCH THEMES

Our research team specialises in three research themes:

LEEDS BECKETT UNIVERSITY
LEEDS SUSTAINABILITY INSTITUTE

Sustainable Behaviour

Our research provides insight into how people behave and explores how to develop behaviour change interventions that enable people to live more sustainably.

Sustainable Buildings

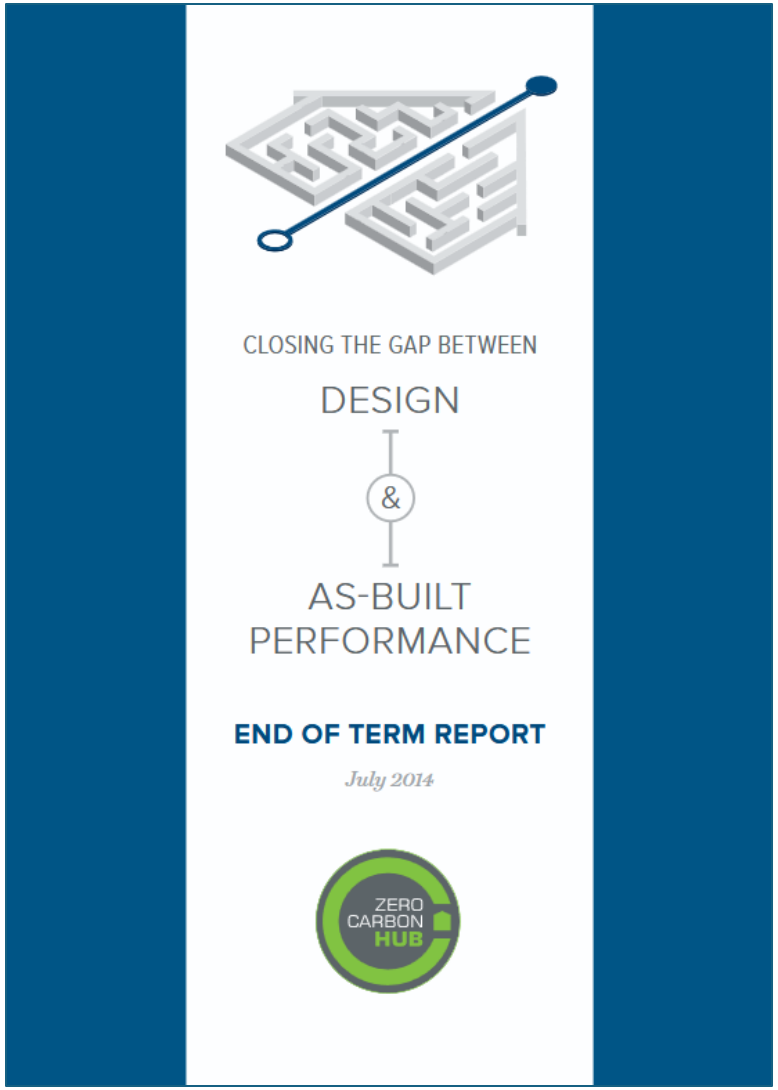
Research into how to design, build and evaluate buildings which are healthy and have low environmental impacts.

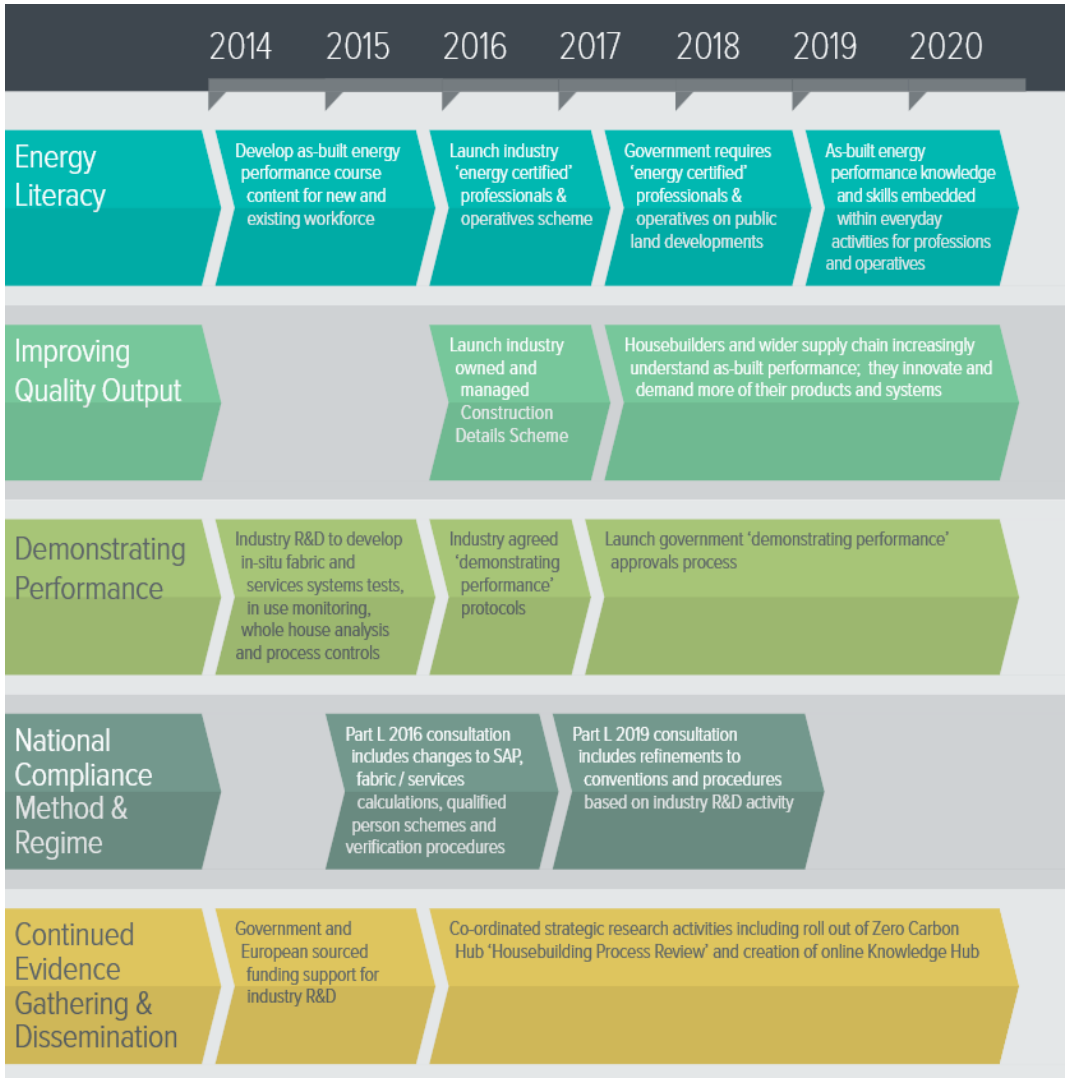
Sustainable Urban Environments

Monitoring urban landscapes to promote healthier, more sustainable cities and communities.

Zero Carbon Hub, *Closing the gap* (2014)

Prof Malcom Bell (steering group), Leeds Met University





Holistic research for new build homes

LEEDS BECKETT UNIVERSITY
LEEDS SUSTAINABILITY INSTITUTE

Design

- Design reviews
- Hygrothermal simulation
- Thermal bridging calculations
- Energy modelling
- Scenario analysis
- Codesign workshops
- Whole life carbon assessments

Construction

- Toolbox talks
- Site inspections
- Staged investigations (air tests etc.)
- Process evaluation
- Mid-construction junction checks
- Pre-handover testing

Post Occupancy

- Co-design & occupant handovers
- Interviews, focus groups & surveys (POE)
- Social science with design teams
- Indoor environmental monitoring (Air quality, comfort air temperature, humidity etc.)
- In use energy monitoring (Smart meters & SMETERS)
- Moisture & mould measurement & predictions

Post construction

- Fabric testing (HTC, coheating tests, QUB tests, U-values, air tests etc.)
- Thermography and leakage detection
- Systems testing (MVHR balancing etc.)
- Social science with construction teams

Future Homes Hub

Future Homes Standard READY

Future Homes Standard Technical Conference

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Fabric first and reactions to SAP 10.3

Ross Holleron
Head of Homes and Construction
Future Homes Hub

Paul Bainbridge
Technical Director
The FES Group

Matt Crawford
Head of Design and Technical Standards
Onward Homes

Jason Hewins
New Build Dwellings Manager
Elmhurst Energy

Gerard McGuigan
Technical Director
JSP Sustainability

Fabric first and reactions to SAP 10.3

JASON HEWINS

New Build Dwellings Manager

Elmhurst Energy

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SAP 10.3 & HEM

- On 10th February 2026 MHCLG confirmed Future Homes Standard would be with only SAP 10.3 to be used to demonstrate compliance.

- SAP 10.3 is a modified version of the current SAP 10.2 methodology;
  - Uses FHS notional dwelling to set FHS compliance standards
  - Uses updated primary energy and carbon factors

- Intention to provide a smoother transition to the Future Homes Standard whilst the industry adjusts to the Home Energy Model.

- The intent is still for Home Energy Model to replace SAP via a transition.

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SAP to HEM Transition

- The FHS consultation responses confirmed the following transition;
  - At least 3 months after the FHS is released (24th March 2026) that HEM will be ready and become an approved methodology for the FHS.
  - Then at least a two year dual running period will begin where SAP and HEM can be used for the FHS.
  - Towards the end of the dual running period MHCLG will give a six month notice that HEM will be taking over from SAP.
  - At the end of the six month period any uncommenced site/plots must be assessed on HEM.

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Fabric

- The notional dwelling contained the following changes for fabric;

	Part L 2021	Part L 2026 (FHS)
Floor (w/m²k)	0.13	
Wall (w/m²k)	0.18	
Roof (w/m²k)	0.11	
Door (w/m²k)	1	
Window (w/m²k)	u-1.2, g-0.63	u-1.2, g-same as actual
Airtightness	5 m³/m²/hr @ 50 Pa	4 m³/m²/hr @ 50 Pa
Ventilation	Natural with intermittent fans	Continuous dMEV, 0.15 w/l/s

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Opening U-values

- Part L 2021 allows the U-value of a window or door to be determined using standard sizes and configurations.

- In FHS u-value of windows and doors in new homes should be calculated using either;
  - the actual size and configuration of the window or door BS EN ISO 10077-1/10077-2, or
  - measured using the hot box method in BS EN ISO 12567-1/12567-2

- No longer possible to use standard sizes or configurations; every unit configuration will need an individual u-value to be entered.

Fabric first and reactions to SAP 10.3

GERARD McGUIGAN
Technical Director
JSP Sustainability

Part L 2026 Fabric Options

3 bedroom semi-detached with a floor area of 74 sq metres

4 bedroom detached home with a floor area of 138 sq metres

Glazing – Double & Triple

Double Glazed	1.30 u-value & 0.40 g-value
Triple Glazed	0.78 u-value & 0.38 g-value

Double Glazed	1.50 u-value & 0.40 g-value
Triple Glazed	0.98 u-value & 0.38 g-value

Traditional - 100mm Cavity

Wall	100mm blown fibre with aircrete block
Floor	EPS floor system 80mm topsheet
Roof	400mm loft roll
Glazing	Glazing bars front & side elevations. None on the rear
Door	1.10 u-value
Lintel	Thermally broken
Air Leakage	5.0

3 Bed	Fail by 6.39% (double glazed)
3 Bed	Pass by 5.68% (triple glazed)
4 Bed	Fail by 10.08% (double glazed)
4 Bed	Fail by 0.68% (triple glazed)

Traditional - 125mm Cavity

Wall	125mm blown fibre with aircrete block
Floor	EPS floor system 80mm topsheet
Roof	400mm loft roll
Glazing	Glazing bars front & side elevations. None on the rear
Door	1.10 u-value
Lintel	Thermally broken
Air Leakage	5.0

3 Bed	Fail by 1.7% (double glazed)
3 Bed	Pass by 10.37% (triple glazed)
4 Bed	Fail by 4.20% (double glazed)
4 Bed	Pass by 4.81% (triple glazed)

Traditional - 125mm Cavity

Wall	125mm blown fibre with aircrete block
Floor	EPS floor system 150mm topsheet
Roof	500mm loft roll
Glazing	Glazing bars front & side elevations. None on the rear
Door	1.10 u-value
Lintel	Thermally broken
Air Leakage	4.8

3 Bed	Pass by 2.60% (double glazed)
4 Bed	Pass by 0.15% (double glazed)

Traditional - 150mm Cavity

Wall	150mm blown fibre with aircrete block
Floor	EPS floor system 150mm topsheet
Roof	400mm loft roll
Glazing	Glazing bars front & side elevations. None on the rear
Door	1.10 u-value
Lintel	Standard duty insulated
Air Leakage	5.0

3 Bed	Pass by 1.31% (double glazed)
4 Bed	Pass by 0.43% (double glazed)

Timber Frame

Wall	140mm closed/open panel with reflective VCL & membrane
Floor	EPS floor system 150mm topsheet
Roof	500mm loft roll
Glazing	Glazing bars front & side elevations. None on the rear
Door	1.10 u-value
Air Leakage	4-5 dependent on house type

3 Bed	Pass by 0.40% (double glazed & air test of 4.50)
3 Bed	Pass by 6.60% (triple glazed & air test of 5.0)
4 Bed	Pass by 0.21% (double glazed & air test of 4.20)
4 Bed	Pass by 3.97% (triple glazed & air test of 5.0)

Fabric first and reactions to SAP 10.3

Matt Crawford
Head of Design and Technical Standards
Onward Homes

Who are Onward Homes

Onward are a Housing Association in Northwest

We own and manage over 36000 homes

We are just completed the 21 – 26 Affordable Homes Programme (AHP)

Submitted a bid to Homes England the new Social and Affordable Homes Programme (SAHP)

For context we will be increasing our delivery to an average of 650 homes a year.

Onward

Onward developments

As part of our SAHP bid we have commitments to Homes England on certain deliverables:

- EPC A and B rating
- Percentage of programme delivered in MMC
- Percentage of programme delivered to NDSS

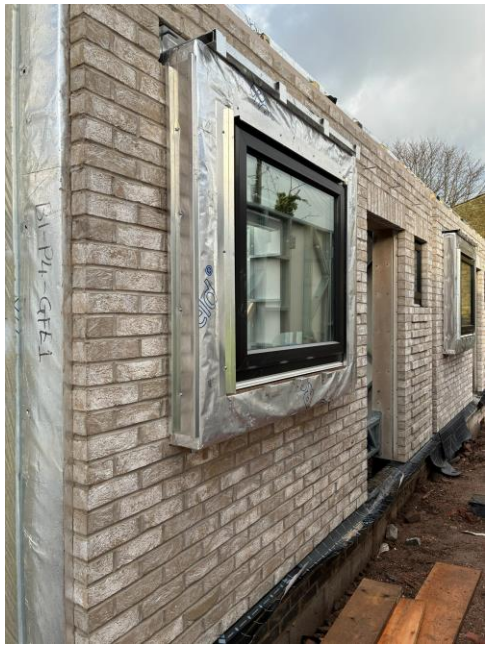
MMC is the preferred delivery of the external fabric.

Dispensation to this will be on our apartment schemes where pre-manufactured value (PMV) will be calculated and reported.

Onward

Delivery challenges

- Contractor experience differs
- Standardisation of junction details
- Array of technologies and risks associated i.e., potential approval and mortgage risk
- A continual learning curve / change of mindset
- Investment in my contractors – time / education / house types / collaboration
- Scheme viability and balance between improving our existing portfolio



On site quality

How can I bring our contractors on the journey?

- Facilitating sessions on legislative changes such as BNG and FHBS
- Contractors' QA processes
- Clerk of works undertaking onsite inspections, quality assurance and photo records

This is an industry challenge

Raising the profile of the industry but more importantly improving customer satisfaction and experience of living in an Onward home

Collaborate!

Onward

The Future Homes Standard Essentials

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https://futurehomes.org.uk/future-homes-standard-ready

Google: get future homes standard ready

All things PV

David Adams
Strategic Advisor
Future Homes Hub

Nick Hooper
Head of Renewables Innovation
Avonside Energy

Neil Macdonald
Principal Technical Specialist
NHBC

Paul Terry
Managing Director
UPOWA Ltd

All things PV

Nick Hooper

Head of Renewables Innovation

Avonside Energy

The Future Homes Standard – Own the Customer Journey

Avonside Energy

Avonside Energy

Our Values

Count On Us

Think Big, Move Fast

Success Through Great Relationships

Protecting the Future, Together

FHS Essentials

3. Own the Customer Journey

Ensure the end-to-end customer journey is designed to support householder confidence and customer satisfaction with low-energy homes. Focus on progressively introducing important messaging through the marketing, sales, handover, and aftersales stages.

1: Enquiry & Design

Our Design team assesses the site requirements to then design & quote a tailored PV solution that aligns with building specifications & SAP requirements.

2: Quotation & Order

We provide a detailed quotation based on the approved design, and once accepted, the order is confirmed and scheduled for delivery and installation.

3: DNO Application

On order, we do the G98/G99 application on the client's behalf.
To do this we need:

- A letter of authority
- Postal addresses
- Electricity MPANS

Own the customer journey…

Thanks for listening

Visit our website and access the full FAQs section anytime where you'll find helpful guides, answers to common questions, and support resources at:

https://www.avonsideenergy.co.uk/homeowner-information/

Or scan the QR code below:

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NETWORKING BREAK

Be sure to share your experience on LinkedIn using #FHSReady

Feeling the heat: part 1

Dan Neasham
Head of Sustainability and Performance
Future Homes Hub

Ben Cheetham
Design Manager
Gleeson

Linda Field
Head of New Build and Social Housing
Qvantum

Nathan Lord
Technical Sales Manager
East Goscote Plumbers Ltd

Neil Stone
Managing Director
REDD

The Future Homes Standard Essentials

Seven actions to de-risk delivery today

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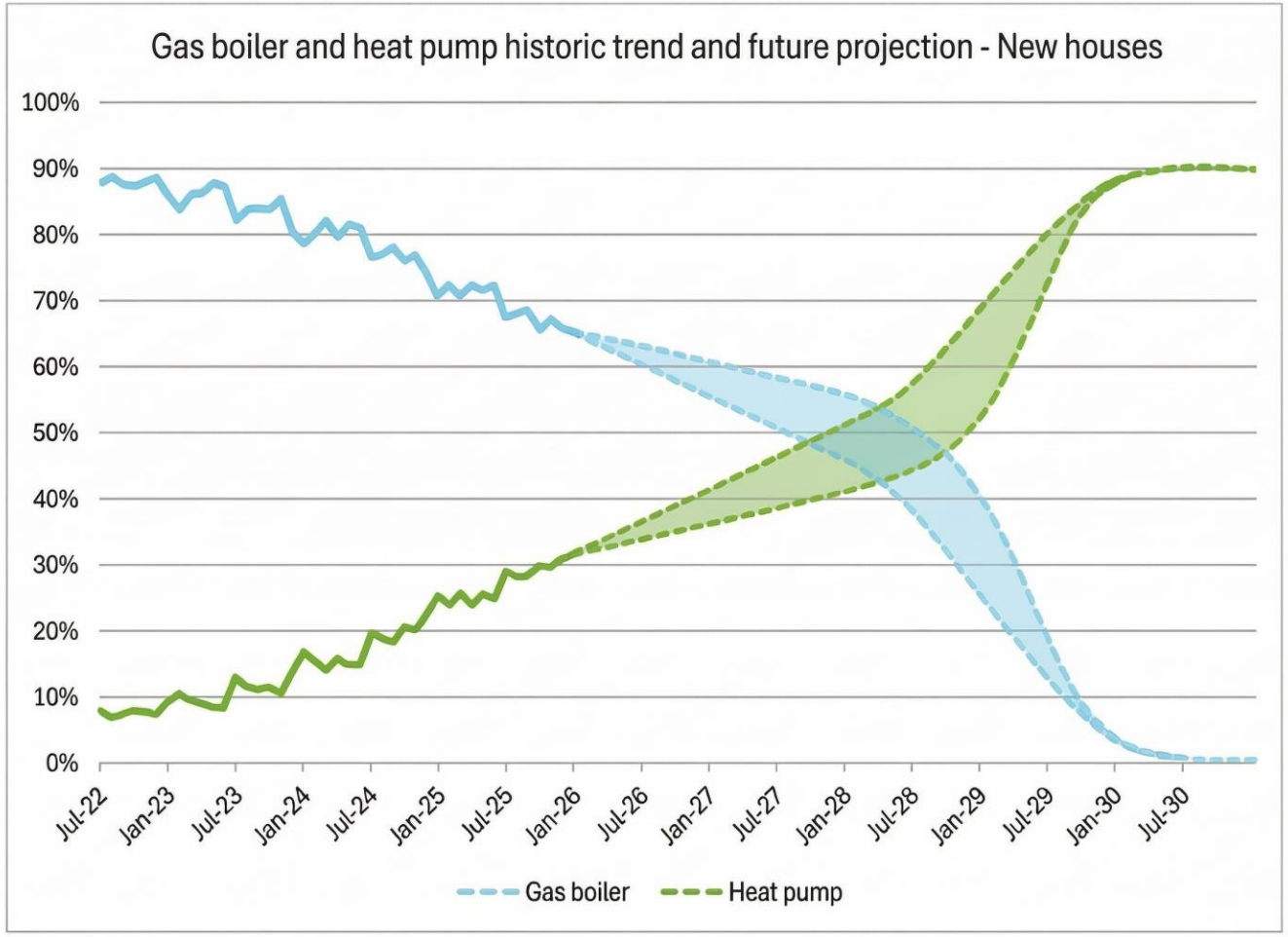
https://futurehomes.org.uk/future-homes-standard-ready

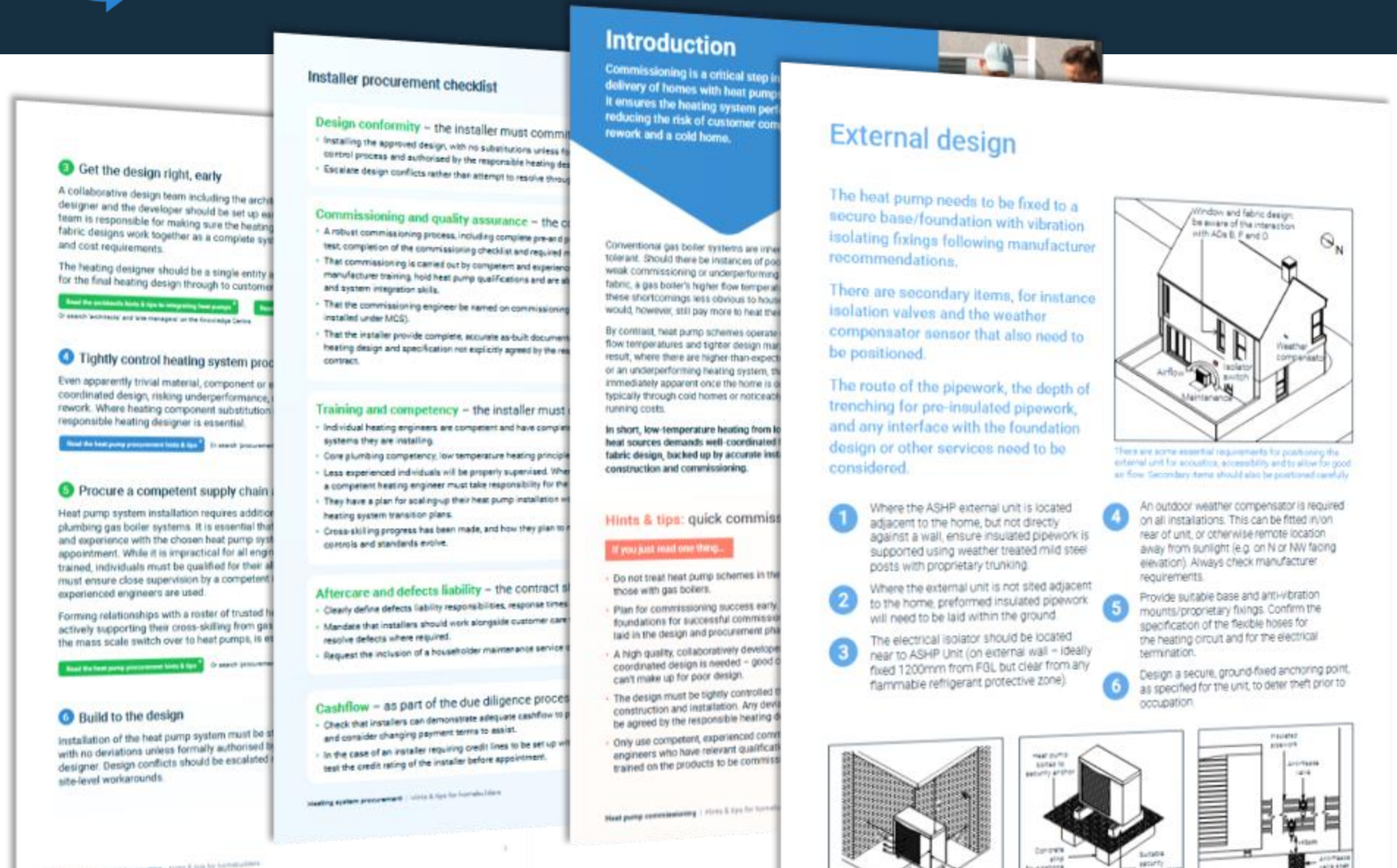
Google: get future homes standard ready

The sector is already scaling up



We must de-risk delivery in advance of adoption of heat pumps at scale under FHS

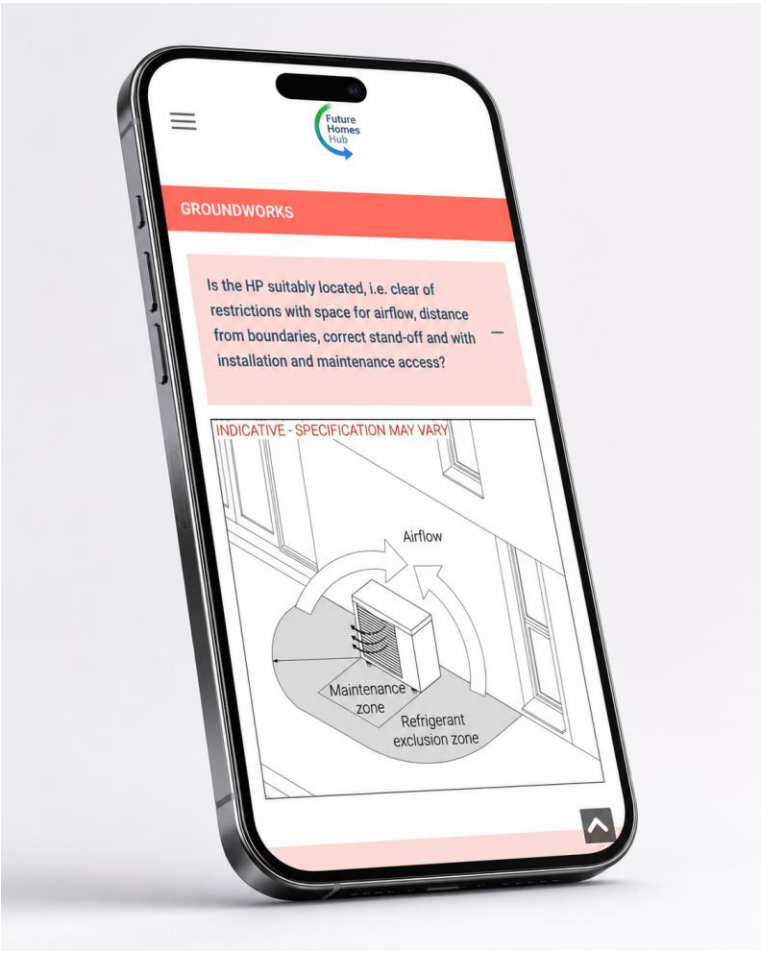
Some of our heat pump guidance



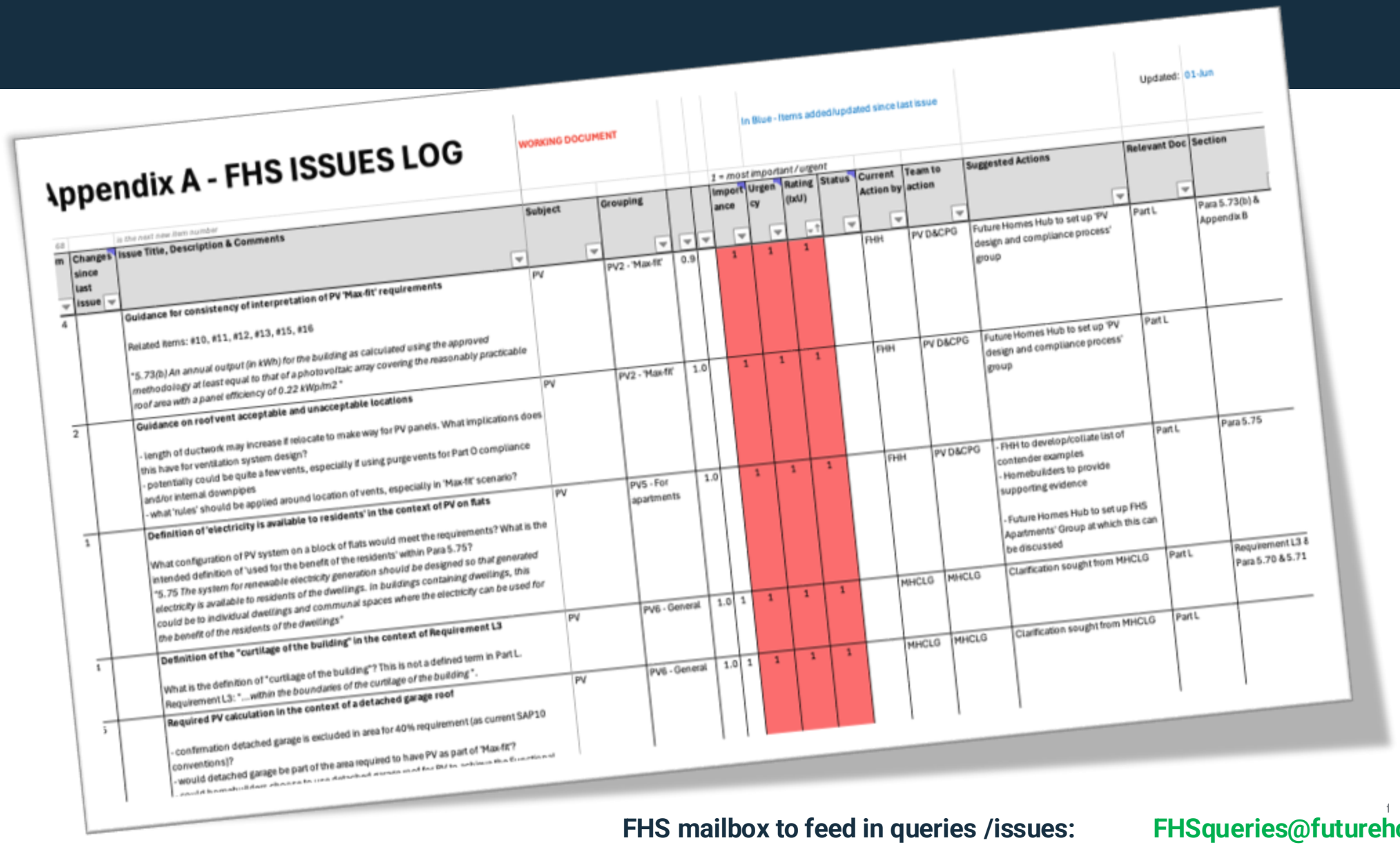
Including:

- Heat pump delivery guide
- Architect's heat pump hints and tips
- Heat pump procurement guide
- Heat pump commissioning guide

Site manager’s hints and tips



Facilitating resolution of FHS issues - Hub process



Appendix A - FHS ISSUES LOG

WORKING DOCUMENT

In Blue - Items added/updated since last issue

Updated: 01-Jun

1 = most important / urgent

Changes since last issue	Issue Title, Description & Comments	Subject	Grouping		Importance	Urgency	Rating (IxU)	Status	Current Action by	Team to action	Suggested Actions	Relevant Doc	Section
4	**Guidance for consistency of interpretation of PV 'Max-fit' requirements** Related items: #10, #11, #12, #13, #15, #16 *"5.73(b) An annual output (in kWh) for the building as calculated using the approved methodology at least equal to that of a photovoltaic array covering the reasonably practicable roof area with a panel efficiency of 0.22 kWp/m2 "*	PV	PV2 - 'Max-fit'	0.9	1	1	1		FHH	PV D&CPG	Future Homes Hub to set up 'PV design and compliance process' group	Part L	Para 5.73(b) & Appendix B
2	**Guidance on roof vent acceptable and unacceptable locations** - length of ductwork may increase if relocate to make way for PV panels. What implications does this have for ventilation system design? - potentially could be quite a few vents, especially if using purge vents for Part O compliance and/or internal downpipes - what 'rules' should be applied around location of vents, especially in 'Max-fit' scenario?	PV	PV2 - 'Max-fit'	1.0		1	1	1	FHH	PV D&CPG	Future Homes Hub to set up 'PV design and compliance process' group	Part L	
1	**Definition of 'electricity is available to residents' in the context of PV on flats** What configuration of PV system on a block of flats would meet the requirements? What is the intended definition of 'used for the benefit of the residents' within Para 5.75? *"5.75 The system for renewable electricity generation should be designed so that generated electricity is available to residents of the dwellings. In buildings containing dwellings, this could be to individual dwellings and communal spaces where the electricity can be used for the benefit of the residents of the dwellings"*	PV	PV5 - For apartments	1.0		1	1	1	FHH	PV D&CPG	- FHH to develop/collate list of contender examples - Homebuilders to provide supporting evidence - Future Homes Hub to set up FHS Apartments' Group at which this can be discussed	Part L	Para 5.75
1	**Definition of the "curtilage of the building" in the context of Requirement L3** What is the definition of "curtilage of the building"? This is not a defined term in Part L. Requirement L3: "...within the boundaries of the curtilage of the building".	PV	PV6 - General	1.0	1	1	1	1	MHCLG	MHCLG	Clarification sought from MHCLG	Part L	Requirement L3 & Para 5.70 & 5.71
1	**Required PV calculation in the context of a detached garage roof** - confirmation detached garage is excluded in area for 40% requirement (as current SAP10 conventions)? - would detached garage be part of the area required to have PV as part of 'Max-fit'?	PV	PV6 - General	1.0	1	1	1	1	MHCLG	MHCLG	Clarification sought from MHCLG	Part L	

FHS mailbox to feed in queries /issues: FHSqueries@futurehomes.org.uk

Feeling the heat: part 1

Linda Field

Head of New Build and Social Housing

Qvantum

Delivering The FHS - Comfortable & Compliant Homes

Linda Field, Head of New Build & Social Housing

QVANTUM

Key Elements of FHS

Low carbon heating

Residents' experience

Part O – overheat mitigation

Getting The Design Right

Right option for every home

Consider power early on

Importance of correct sizing and design – collaboration and a holistic approach

Consider how we live with heat pumps

Supporting The Installer

Importance of initial and ongoing training

Reduce product complexity where possible

Understand the context of installation

Providing Constant Comfort

Heat pumps provide consistent temperatures

Importance of education

Robust systems for maintenance


QVANTUM

Feeling the heat: part 1

Ben Cheetham
Design Manager
Gleeson

Design Impacts

External unit location – clearances & window/door clashes, condensate detail

Cylinder location with adequate space for components

Heating layout – sole responsible designer, pipework routes, radiators & clashes

Early engagement and coordination is key – prevent on-site issues

Clarity of drawings & designs – **eliminate ambiguity**

gleeson


UK CYLINDERS
ELITE
YOUR HOT WATER SPECIALISTS


GUIDES
How to hide Air Source Heat Pumps!


Panasonic
INVERTER

Training

Commissioning is critical – trained installers, correct settings, simple process & controls

Site & technical teams – **need to know what good looks like**

Informed sales teams – **able to answer key customer queries**

Manufacturer to provide ongoing support and toolbox talks, **tailored to the audience**

Customer care & out of hours teams – **clear SLAs & call-out processes**

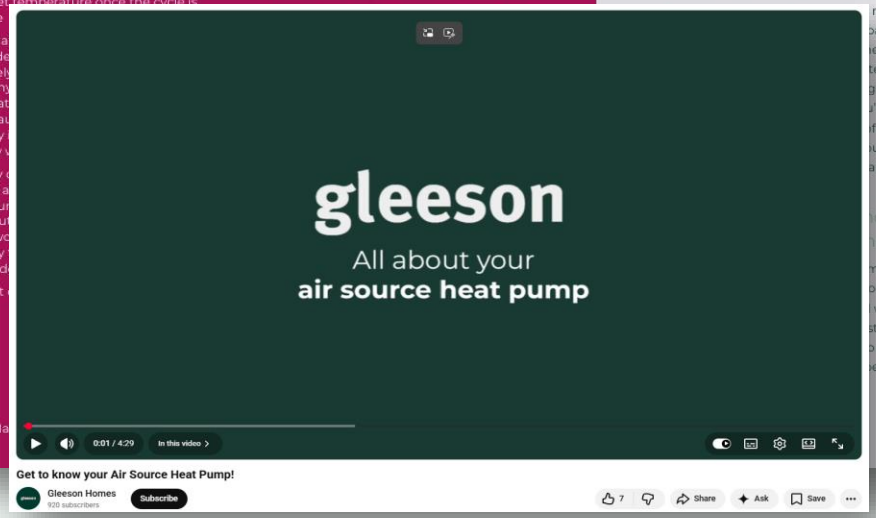
gleeson

Customer Journey

Top tips:

- An ASHP is intended to be quiet when running. To limit increases in noise from the ASHP over time, ensure it is maintained annually by a professional installer according to the manufacturer's instructions
- Around once a week, your ASHP will temporarily increase the water temperature in the cylinder to over 60°c. This a safety feature and will eliminate any dangerous legionella that can sometimes accumulate at lower temperatures. This may mean a brief spike in energy usage and noise from the outdoor unit, so if you notice this there is no need to worry - the system will return to your set temperature once the cycle is complete
- Occasiona… from unde… completel… to take any… condensat… unit has a… soakaway… allow any…
- Regularly … from the a… outdoor u… inlet or ou… will not wo… electricity … not provid…
- Do not sit …
- Don't place anything above the unit
- Do not insert fingers, twigs or other items into the unit
- Do not cover or enclose the unit (e.g. fence panels, trellis)
- Don't try to maintain the unit yourself, it could damage your unit and invalidate your warranty
- If you experience loss of heating, abnormally high energy bills or fault codes on your thermostat, please contact a qualified technician or your Gleeson Customer Relations Manager

Homeowner's Ma…



How to efficienctly use your heat pump

As a general rule, air source heat pumps work best when left at a set, constant internal temperature of around 21°c. However, depending on your lifestyle, it may be more cost effective to utilise the daily/weekly programmer to fluctuate the set temperature slightly.

In the house throughout the day?

If you're home regularly throughout the day (e.g. you work from home), you will be most comfortable and will achieve optimum efficiency by leaving the system at a set temperature, perhaps setting the programmer to reduce the temperature during the night.

Your ASHP is very intelligent and will learn from how long it takes to heat up your home. It also takes into account external weather conditions, so once you've input your preferred temperatures, there is no need for you to intervene.

Your ASHP will continue to tick over in the background, ensuring gradual heating.

Out and about most days?

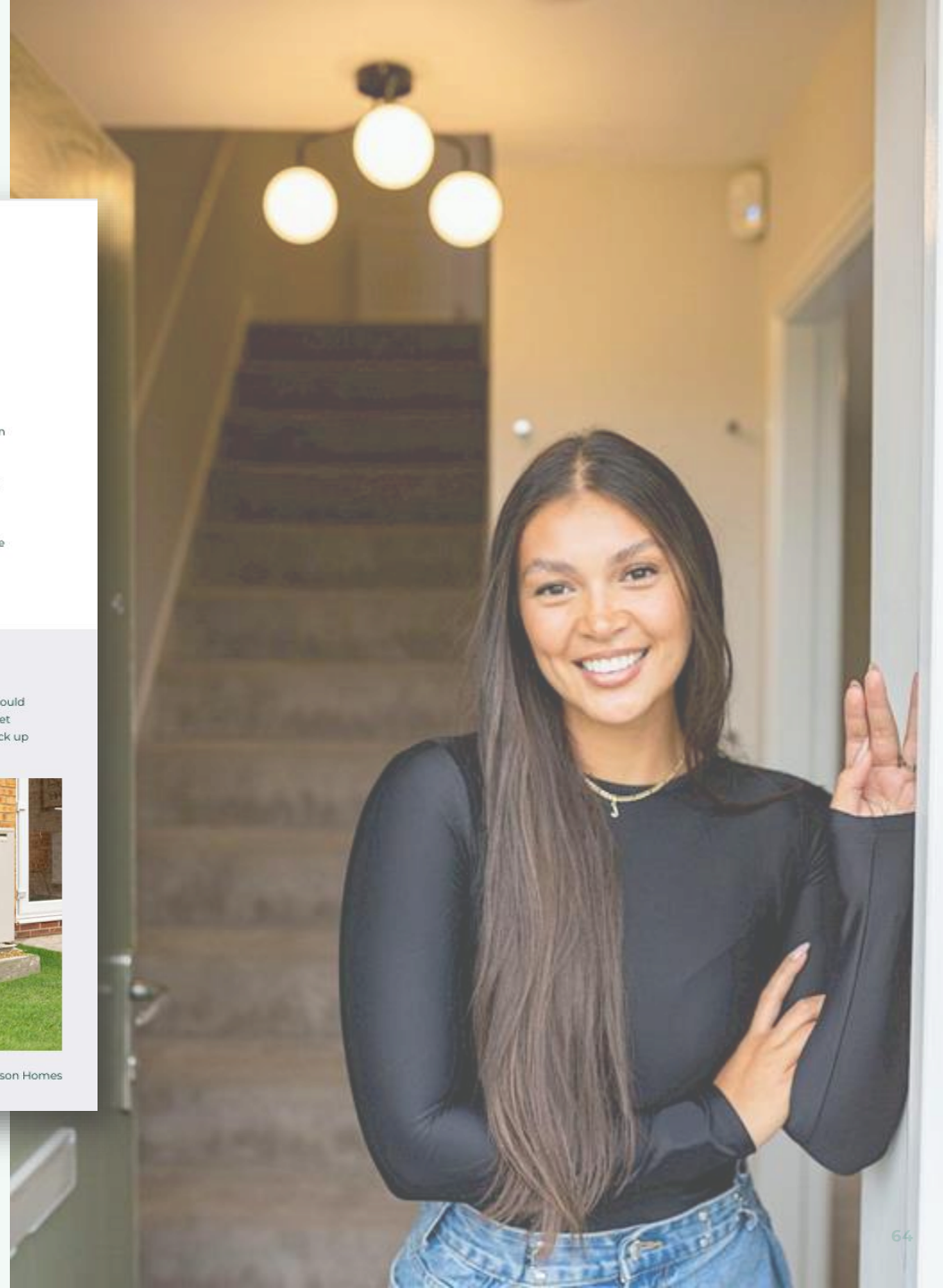
…rushing …back late - it …e system …tely 17°c) …g it back up …'re home, …f doing this …ur control …and the

…d …ds?

…mer can …o suit your … week, we …stem off …o keep it …erature

Going on holiday?

When you're heading off on holiday, we could advise selecting the 'holiday mode' and set the controls to bring the temperature back up before you return.



gleeson

Thank you

gleesonhomes.co.uk

Right where you belong

gleeson

Feeling the heat: part 1

Dan Neasham
Head of Sustainability and Performance
Future Homes Hub

Ben Cheetham
Design Manager
Gleeson

Linda Field
Head of New Build and Social Housing
Qvantum

Nathan Lord
Technical Sales Manager
East Goscote Plumbers Ltd

Neil Stone
Managing Director
REDD

Fresh thinking on ventilation & IAQ

Ross Holleron
Head of Homes and Construction
Future Homes Hub

Kelly Butler
Director of External Affairs
BEAMA

Matt Crawford
Head of Design and Technical Standards
Onward Homes

Debbie Haynes
Carbon Reduction & Sustainability Manager
OX Place

Fresh thinking on ventilation & IAQ

Ross Holleron
Head of Homes and Construction
Future Homes Hub

Ventilation as a critical building service

FHS Ready Essentials to de-risk delivery today

Ventilation → Commission with care 7

1 Lead early, learn fast, share lessons

Ventilation → Build as designed 6

2 Prioritise grid availability

Get heating design right 5

3 Own the customer journey

4

Ventilation → Evolve your design

Ventilation in new homes

Where to start for homebuilders

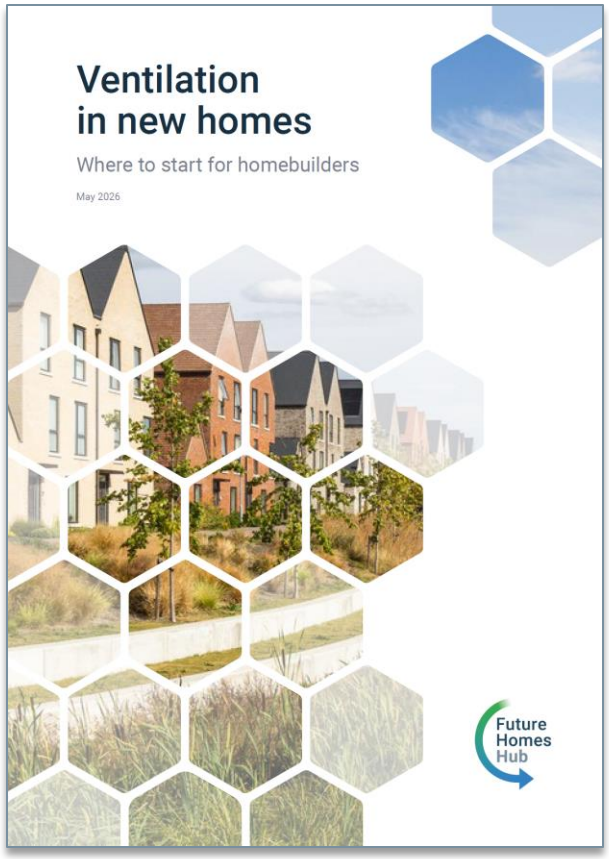
A new guide developed from within the Ventilation Implementation Group

Good ventilation is essential to healthy, comfortable & energy-efficient homes

- New homes become more airtight, ventilation more critical
- If not effective, increased risk of poor indoor air quality, condensation etc
- Success is more than selecting products or meeting minimum airflow rates

Ventilation should be treated as a critical building service

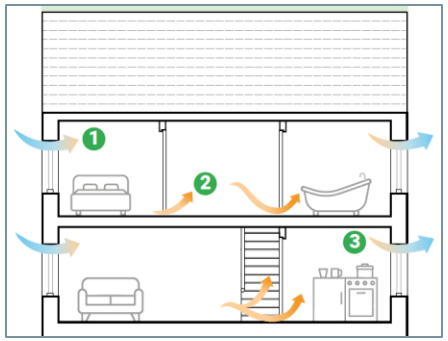
- Same as structure, fire safety, fabric & heating systems
- Considered alongside airtightness strategy
- A challenge across the entire delivery process



Structured around main stages & key decisions

Five good practice principles for reliable ventilation

1. Ventilation is a whole-dwelling system
2. Strategy should align with dwelling airtightness
3. A named ventilation designer should be stated
4. Installation by a competent person must follow the design
5. Measured performance should be verified



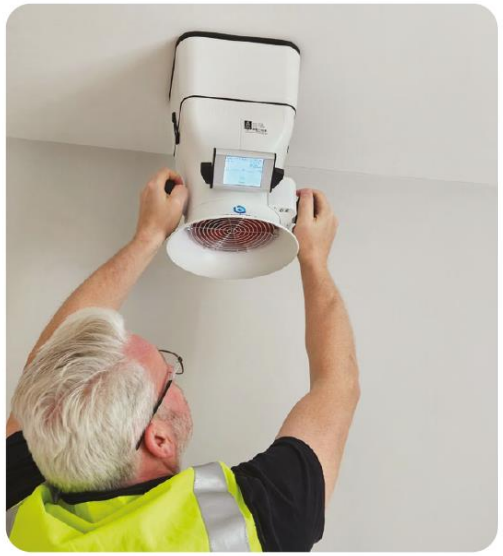
Responsibility & competency

- Defining good design
- Design to procurement
- Installation & site coordination
- Commissioning & handover

For ventilation systems to work:

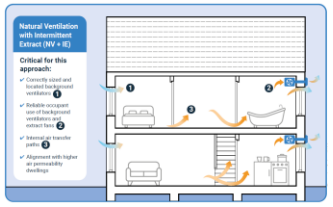
1. **Outdoor air needs to enter**
   Outdoor air must enter the dwelling through background ventilators, such as trickle vents, or mechanical supply terminals.
2. **Air needs to move through the dwelling**
   Air must move between rooms via door undercuts or transfer grilles. Obstruction of these paths disrupts airflow.
3. **Stale air needs to be removed**
   Depending on strategy, moisture and pollutants are removed via continuous extract or through a combination of background ventilators with intermittent extract.

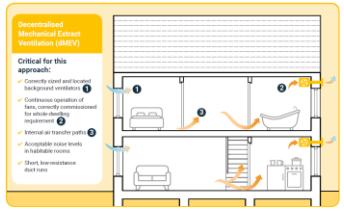
Value of verification & learning from homes in use

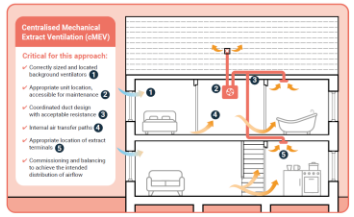


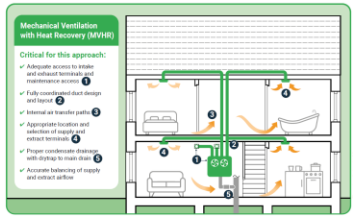
- **Independent verification**
  - Commissioning is frequently by installers
  - Verification changes behaviour
  - Taking a proportionate approach
  - CPS vs other compliance routes
- **In-use performance and occupant feedback**
  - Performance is determined in use
  - All important occupant interaction

© OX Place



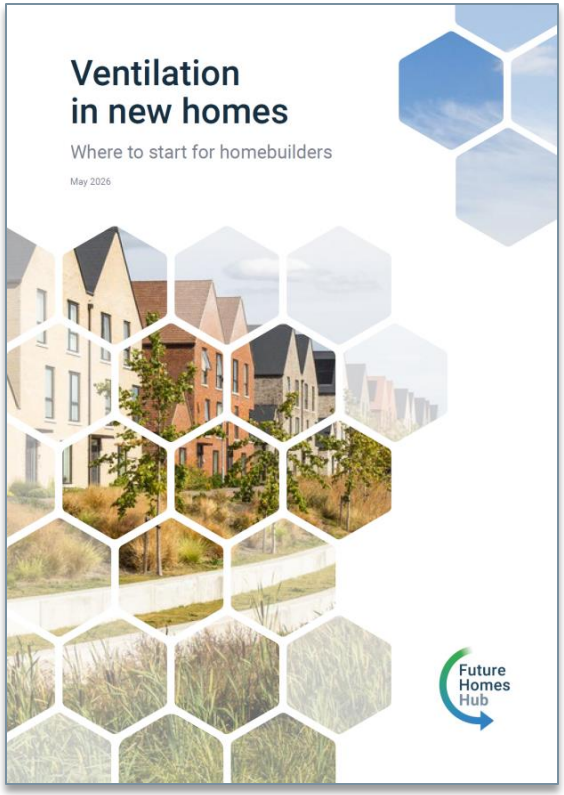






Ventilation in new homes

Where to start for homebuilders



Download it now from the FHH Knowledge Centre

- **Supporting web page developing where you will find**
  - Examples robust design packs
  - Links to CPS and Independent training courses
  - Homebuilder case studies

SCAN ME

A Introduction

B Getting ventilation right

C Defining good ventilation design

D From design to procurement

E Installation and site coordination

F Commissioning and handover

G Verification

H Learning from homes in use

Fresh thinking on ventilation & IAQ

Matt Crawford

Head of Design and Technical Standards

Onward Homes

Onward

Fresh thinking on ventilation

Matt Crawford
Head of Design and Technical Standards

Onward Homes

We are a housing association based in the Northwest

We own and manage over 36000 homes

We have completed the 2021/26 Affordable Homes Programme (AHP)

Submitted a bid to Homes England the new Social and Affordable Homes Programme (SAHP)

Our ambition is to increase delivery to an average of 650 homes a year

Onward

Onward developments

Procurement of our schemes:

- Package deals
- Land led opportunities
- Section 106 purchases

On package deals and land led schemes we have the potential to negotiate:

- The Onward design brief – MMC
- Onward house types / contactors house types
- Group deals on manufacturers
- Viability issues

Section 106 purchases – we get what we get

Onward

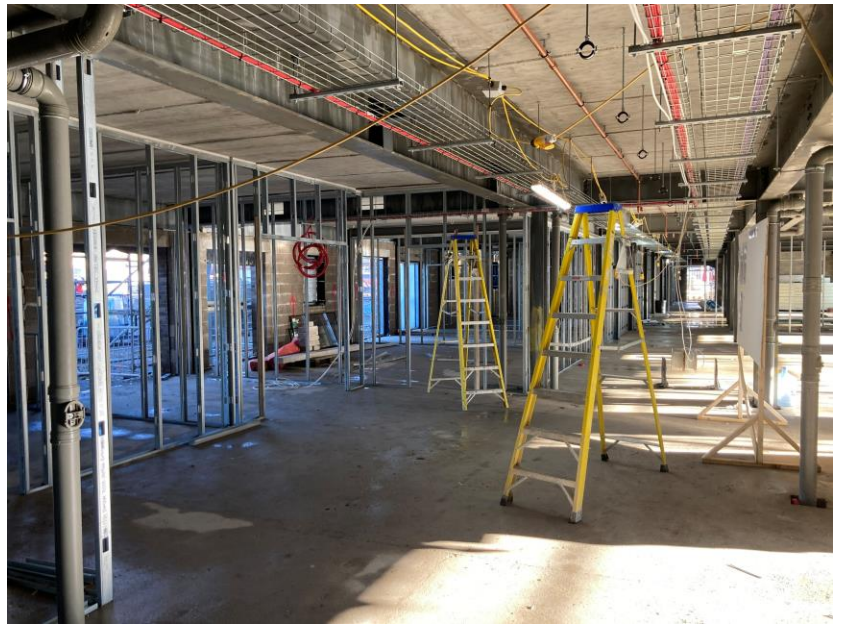
Onward standardisation

Onward design brief and standard house types

- An Onward product
- Consistency and standard product
- Ventilation designs and duct runs
- Standardise junction details

Key considerations:

- Economies of scale against standardisation
- Long term replacement and maintenance
- Like for like replacement or a mix of products



On site construction quality

We have over 20 active sites

- We work with national and regional contractors / SMEs, micro contractors and house builders
- Working with companies with limited resources
- Many rely on the design team for compliance
- Still being offered masonry - some don’t like change!
- Others are constantly on a learning and improving around fabric efficiency.

Ensuring quality and customer satisfaction:

- In-house clerk of works
- On site testing and commissioning
- Regulatory sign offs

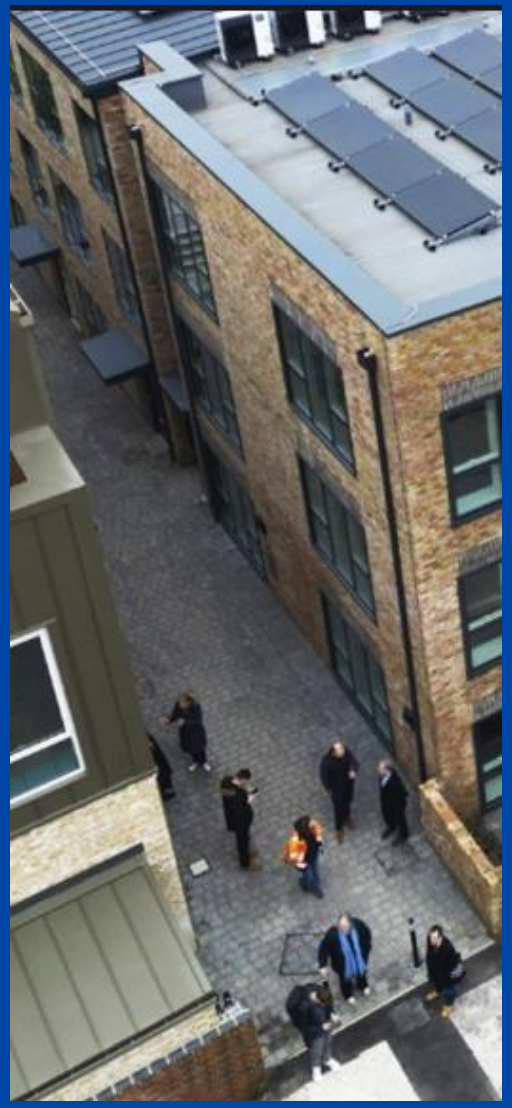
Onward

Fresh thinking on ventilation & IAQ

Debbie Haynes
Carbon Reduction & Sustainability Manager
OX Place

OX Place: Development Company of Oxford City Council

- Building over 2,000 new homes in the next ten years
- Social rent and shared ownership



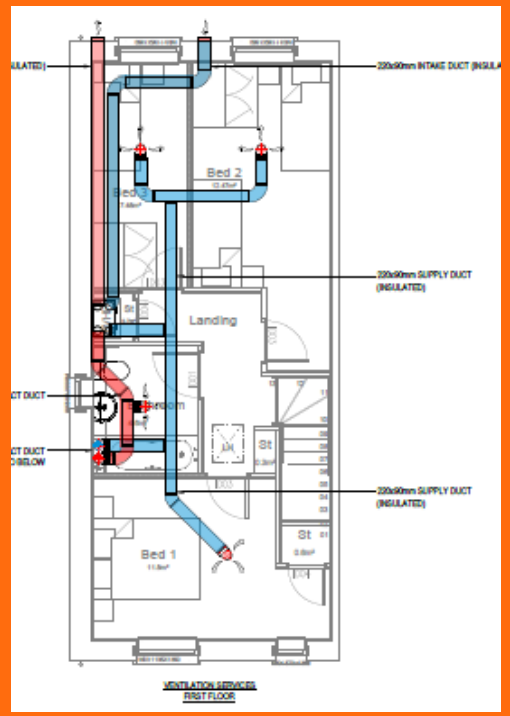
- Building to Future Homes Standard for 3 years
- Heat pumps, Solar PV and mechanical ventilation standard
- Air tightness 3-4 m3/h m2
- Employ Energy Quality Assurance service

OX Place

Energy Quality Assurance

Reducing the performance gap

Design stages



Stage 1–2:

- Review architectural drawings, ERs, M&E drawings and specifications.
- Highlight early performance risks and record them for follow-up.

Stage 3–4:

- Check proposed energy systems are appropriately designed, sized, and coordinated
- Review contractor design information, specifications, SAP modelling, and product data.
- Provide a Risk register for the design team to address

OX Place

Energy Quality Assurance

Reducing the performance gap

Construction stage

OX Place

Stage 5: Construction

- Site inspections focused on high-risk performance issues
- On-site training and practical guidance
- Monitor, prioritise, and mitigate performance risks

Stage 6: Handover & Close Out

- Airtightness, ASHP/ Ventilation commissioning test.
- Review test results, reporting and recommendations.
- Confirm compliance with energy strategy and performance standards.

Air tightness and Ventilation

Part F – mechanical ventilation

Air tightness strategy

Air tightness training

Site checks

Testing

NOTE: As defined in Appendix A, less airtight dwellings are dwellings which have one of the following.

a. A design air permeability higher than $5m^3/(h{\cdot}m^2)$ at 50Pa.

b. An as-built air permeability higher than $3m^3/(h{\cdot}m^2)$ at 50Pa.

- Blowerproof: Liquid Brush Membrane or Airtightness Membrane & Vapour Control
- Partel: VARA FLUID Brush or VARA FLUID Spray
- Passive House Systems (PHS): Airtight Liquid Membrane
- Soudal: Soudatight LQ

OX Place

Ventilation and benefits of Energy QA

Siting units

Checks, calcs and feedback at design stage

Site visit

Post commissioning checks

Insufficient ~6 mm internal door undercut identified during verification

Door undercuts corrected to 10 mm

There should be trickle vents on all habitable rooms but NOT on kitchens, WCs or bathrooms.

"Using flexible ducting into rigid ductwork – flexible liable to get damaged"

"The drawings show extensive use of rectangular ducting. This carries significantly higher pressure losses than circular ducting…. Circular ductwork should be used wherever possible, especially for intake and exhaust runs."

OX Place

Building Performance Evaluation –

10 houses, ASHP (5 Houses) and Centralised MEV(met Part F)

- Monitor energy use, temperature and humidity in five homes over six months including the heating season.

Relative Humidity

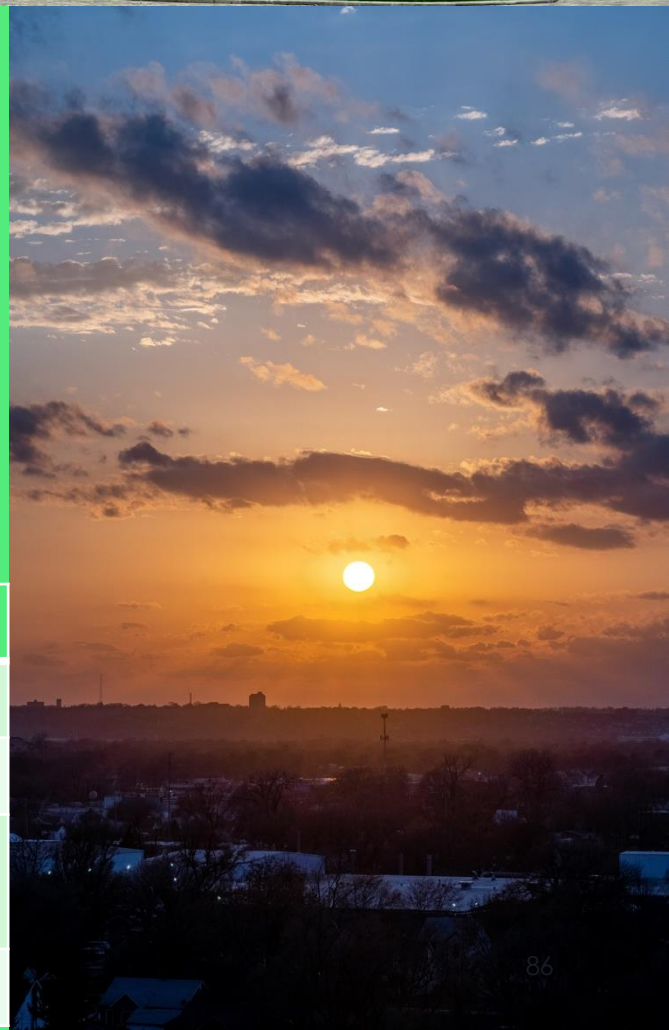
- Moisture conditions are generally well controlled but vary at room level, particularly in bedrooms
- There is no evidence of sustained moisture risk across the dwellings

Overall

- Suggest performance is primarily influenced by heating strategies, zoning and occupancy patterns, rather than systemic issues with building fabric or ventilation systems.

Residents feedback (8 Surveys)

	Average score (/5)
Comfort	4.4
Air Quality	4.1
Summer Temperature	3.3
Healthy	4.9



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Homes for living

Homes for life

We do homes for all.
Whether you want to rent, buy outright, or get a foot on the property ladder through shared ownership, we have a home for you.

The Future Homes Standard Essentials

Seven actions to de-risk delivery today

1. Lead early, learn fast, share lessons
2. Prioritise grid availability
3. Own the customer journey
4. Evolve your design
5. Get heating design right
6. Build as designed
7. Commission with care

https://futurehomes.org.uk/future-homes-standard-ready

Google: get future homes standard ready

Fresh thinking on ventilation & IAQ

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OX Place

Future Homes Hub

Future Homes Standard READY

Sponsored by e.on next

Future Homes Standard Technical Conference

LUNCH BREAK

Be sure to share your experience on LinkedIn using #FHSReady

Feeling the heat: part 2

Dan Neasham
Head of Sustainability and Performance
Future Homes Hub

Chris Carr
Managing Director
Carr & Carr

Craig Dolan
Senior Product Marketing Manager
Glen Dimplex

Mark Lufkin
Chief Product Officer
Wondrwall

Peter McBride
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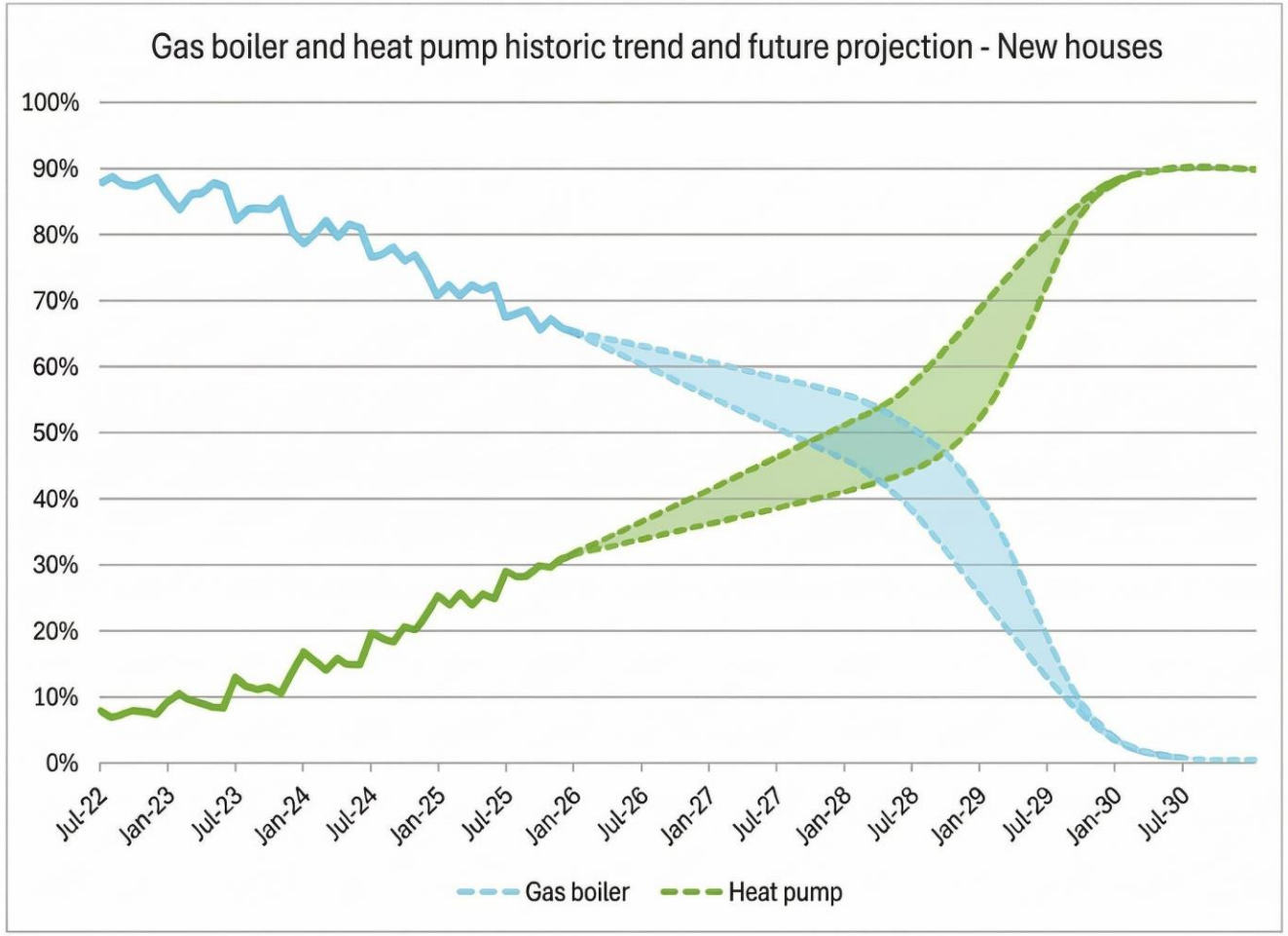
https://futurehomes.org.uk/future-homes-standard-ready

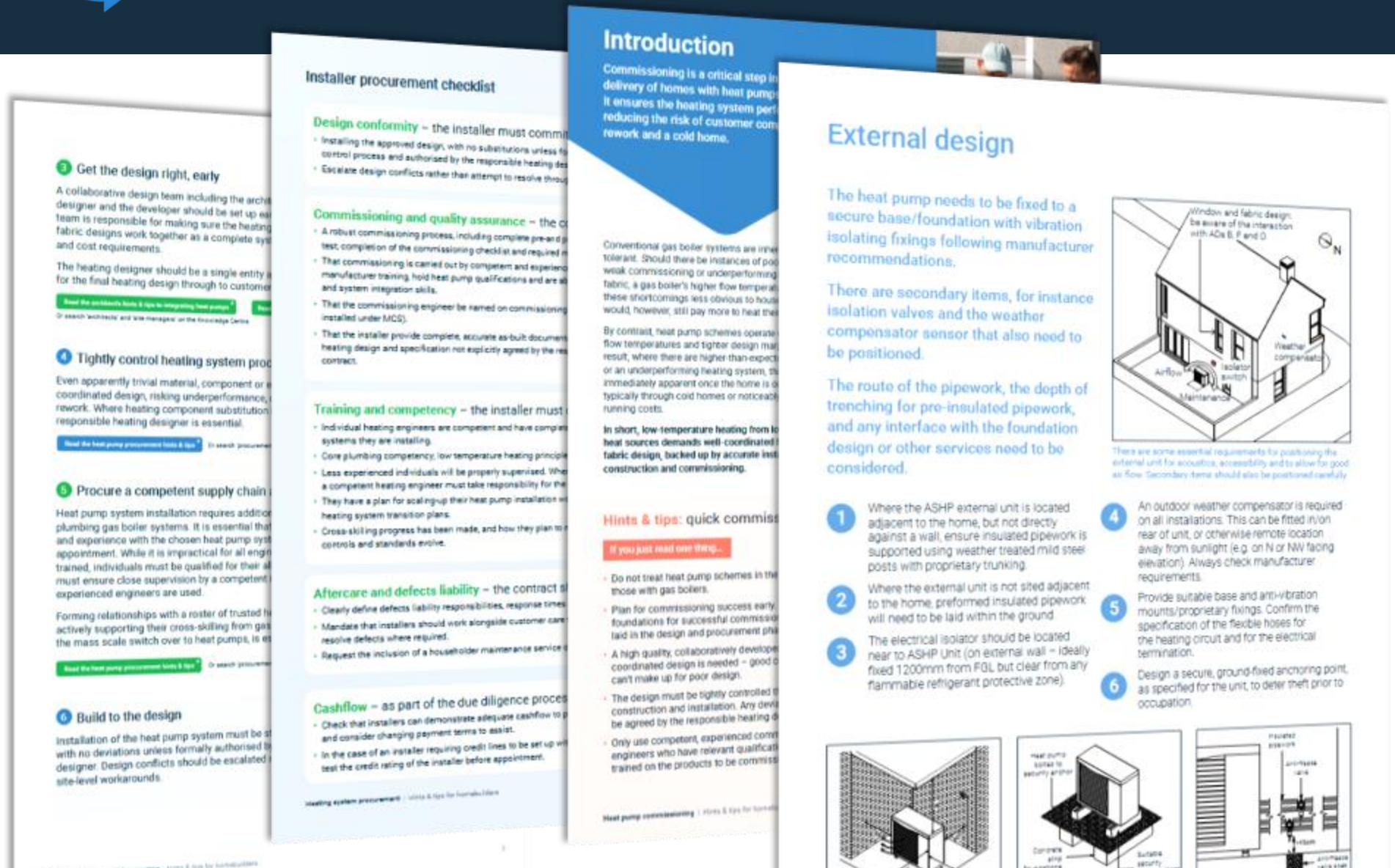
Google: get future homes standard ready

The sector is already scaling up



We must de-risk delivery in advance of adoption of heat pumps at scale under FHS

Some of our heat pump guidance



Including:

- Heat pump delivery guide
- Architect's heat pump hints and tips
- Heat pump procurement guide
- Heat pump commissioning guide

Non-heat pump solutions guidance on the way

Heating solutions focus 1/2

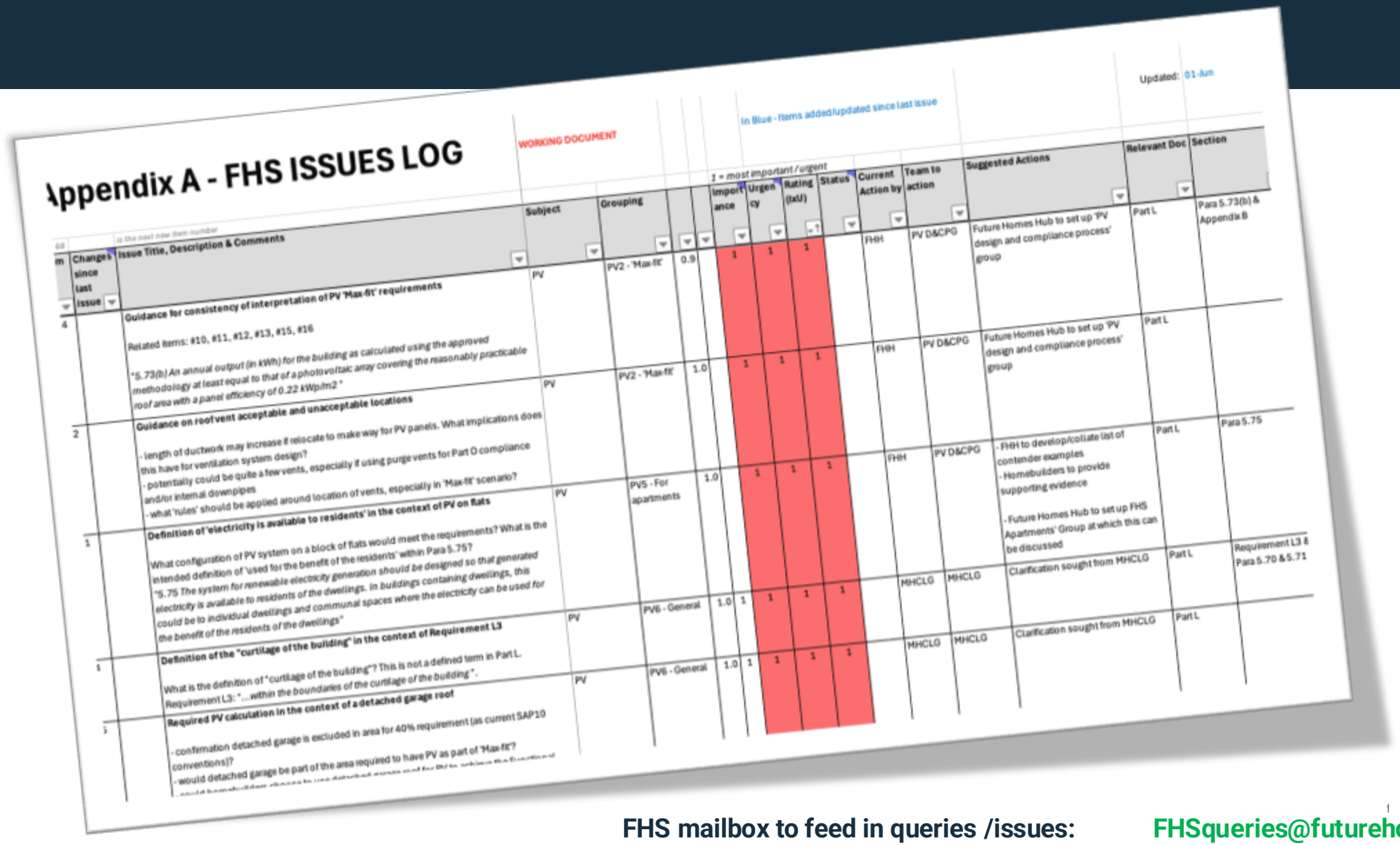
- Exhaust air heat pump
- Hot water heat pump
- Smart hot water cylinders
- Direct electric heating
- Infrared heating

Heating solutions focus 2/2

Heat networks:

- 4G with HIU
- 5G with apartment heat pumps

Facilitating resolution of FHS issues - Hub process



Appendix A - FHS ISSUES LOG

WORKING DOCUMENT

In Blue - Items added/updated since last issue

Updated: 01-Jun

1 = most important / urgent

Changes since last issue	Issue Title, Description & Comments	Subject	Grouping		Importance	Urgency	Rating (IxU)	Status	Current Action by	Team to action	Suggested Actions	Relevant Doc	Section
4	**Guidance for consistency of interpretation of PV 'Max-fit' requirements** Related items: #10, #11, #12, #13, #15, #16 *"5.73(b) An annual output (in kWh) for the building as calculated using the approved methodology at least equal to that of a photovoltaic array covering the reasonably practicable roof area with a panel efficiency of 0.22 kWp/m2 "*	PV	PV2 - 'Max-fit'	0.9	1	1	1		FHH	PV D&CPG	Future Homes Hub to set up 'PV design and compliance process' group	Part L	Para 5.73(b) & Appendix B
2	**Guidance on roof vent acceptable and unacceptable locations** - length of ductwork may increase if relocate to make way for PV panels. What implications does this have for ventilation system design? - potentially could be quite a few vents, especially if using purge vents for Part O compliance and/or internal downpipes - what 'rules' should be applied around location of vents, especially in 'Max-fit' scenario?	PV	PV2 - 'Max-fit'	1.0		1	1	1	FHH	PV D&CPG	Future Homes Hub to set up 'PV design and compliance process' group	Part L	
1	**Definition of 'electricity is available to residents' in the context of PV on flats** What configuration of PV system on a block of flats would meet the requirements? What is the intended definition of 'used for the benefit of the residents' within Para 5.75? *"5.75 The system for renewable electricity generation should be designed so that generated electricity is available to residents of the dwellings. In buildings containing dwellings, this could be to individual dwellings and communal spaces where the electricity can be used for the benefit of the residents of the dwellings"*	PV	PV5 - For apartments	1.0		1	1	1	FHH	PV D&CPG	- FHH to develop/collate list of contender examples - Homebuilders to provide supporting evidence - Future Homes Hub to set up FHS Apartments' Group at which this can be discussed	Part L	Para 5.75
1	**Definition of the "curtilage of the building" in the context of Requirement L3** What is the definition of "curtilage of the building"? This is not a defined term in Part L. Requirement L3: "...within the boundaries of the curtilage of the building".	PV	PV6 - General	1.0	1	1	1	1	MHCLG	MHCLG	Clarification sought from MHCLG	Part L	Requirement L3 & Para 5.70 & 5.71
1	**Required PV calculation in the context of a detached garage roof** - confirmation detached garage is excluded in area for 40% requirement (as current SAP10 conventions)? - would detached garage be part of the area required to have PV as part of 'Max-fit'?	PV	PV6 - General	1.0	1	1	1	1	MHCLG	MHCLG	Clarification sought from MHCLG	Part L	

FHS mailbox to feed in queries /issues: FHSqueries@futurehomes.org.uk

Feeling the heat: part 2

Craig Dolan
Senior Product Marketing Manager
Glen Dimplex

Feeling the heat: part 2

Chris Carr
Managing Director
Carr & Carr

My Journey To Electric Homes

The Perspective as an SME Builder

Chris Carr

Carr & Carr (Builders) Ltd

- Future Homes Standards – complex, but deliverable.
- Getting the right advice.
- To important to get if wrong!
- New house designs – not required but critical.
- Engage with energy supplier early.
- Choose your materials and supply chain wisely.
- On site training for sub-contractors – a new way to build.

All-In-One
Battery & Inverter System

One app, total control

Every Wondrwall device connects to one app. One interface, complete visibility, from anywhere.

Hand over packs and customer engagement on completion.

Wondrwall Group is rated **Excellent**

Based on 128 reviews

Trustpilot

Thank You.

Chris Carr (MD Carr & Carr Builders Ltd)

Linkedin.com/in/chris-carr-09429334

Feeling the heat: part 2

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Learning by doing

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Professor David Glew
Head of Sustainable Buildings
Leeds Beckett University

Olivia Greenhalgh
Sustainability Manager
First Choice Homes Oldham

Learning by doing

Professor David Glew

Head of Sustainable Buildings

Leeds Beckett University

LEARNING BY DOING

Dave Glew,
Director of Leeds Sustainability Institute
Leeds University

Future Homes Standard Technical Conference

Tuesday 9 June, Leeds Beckett University
Wednesday 17 June, Central Hall Westminster

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LEEDS SUSTAINABILITY INSTITUTE

Council's Low-Carbon Standard

(High performance with traditional approaches)

What does "good" learning look like?

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Phase 1 Pre Construction	Phase 2 During Construction	Phase 3 Post Construction and Occupation
• Design review	• As-built design review • Construction process review	• Whole building fabric performance tests • Elemental fabric performance tests • Airtightness tests • Post-occupancy electricity monitoring • Post-occupancy temperature monitoring • Post-occupancy humidity monitoring

Phase 1, Design

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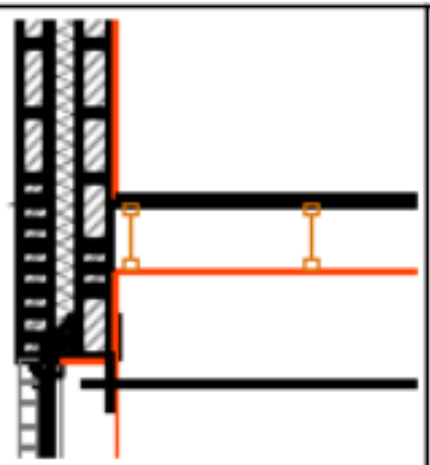
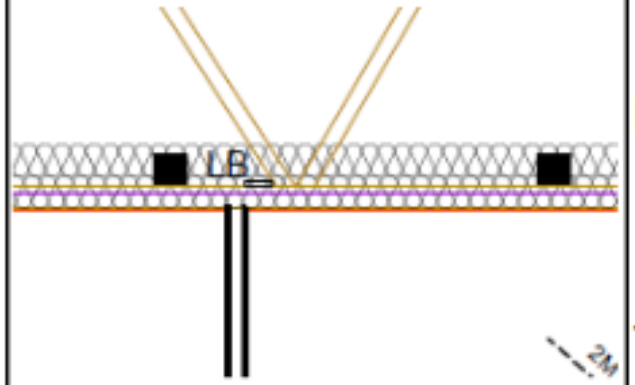
	Air barrier: if it is dry-lining how is it made continuous to prevent air exchange between cavity and intermediate floor void? How is the end intermediate floor joist sealed around?
	How is the air barrier made continuous at room perimeters? How is insulation at truss bracing junction treated to limit thermal bridging?

Phase 2, Construction - observations

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Phase 2, Construction - BPE

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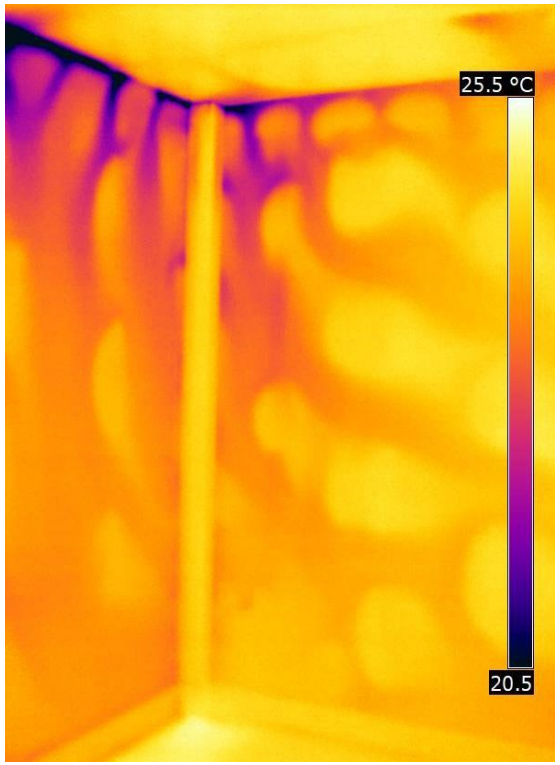

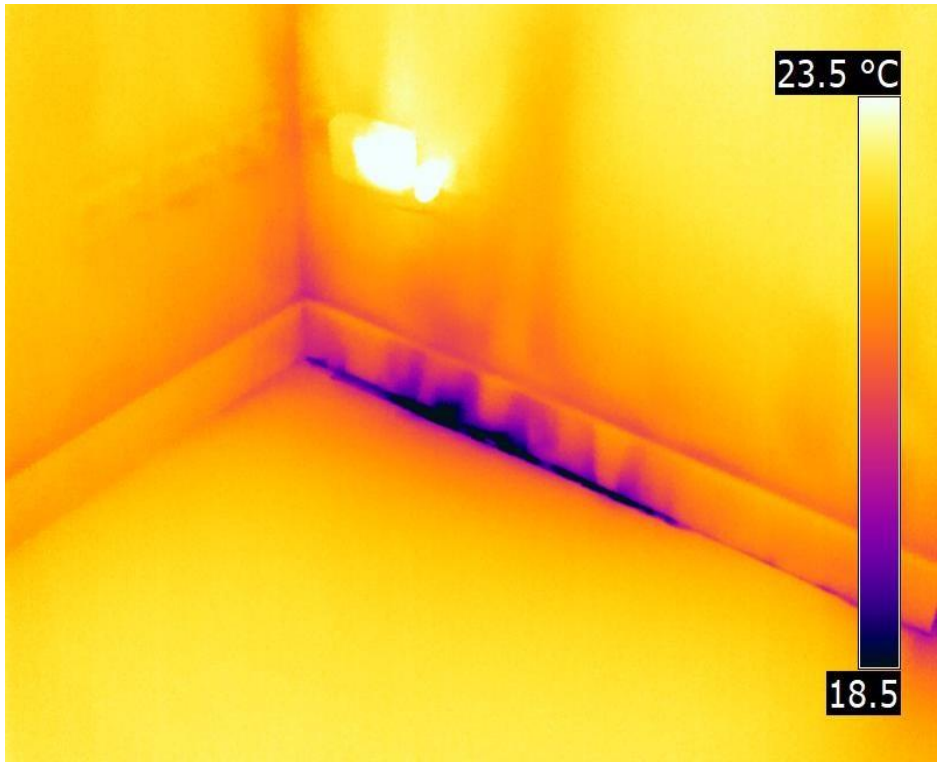

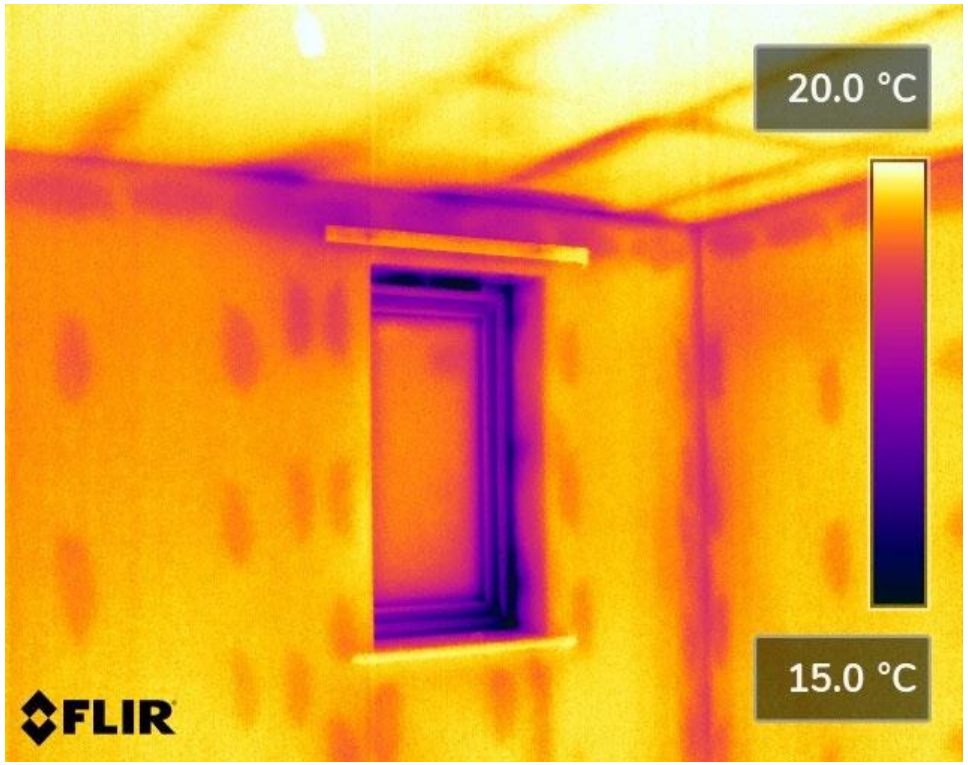

Phase 2, Construction – advanced BPE

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Phase 2, Construction – performance gap

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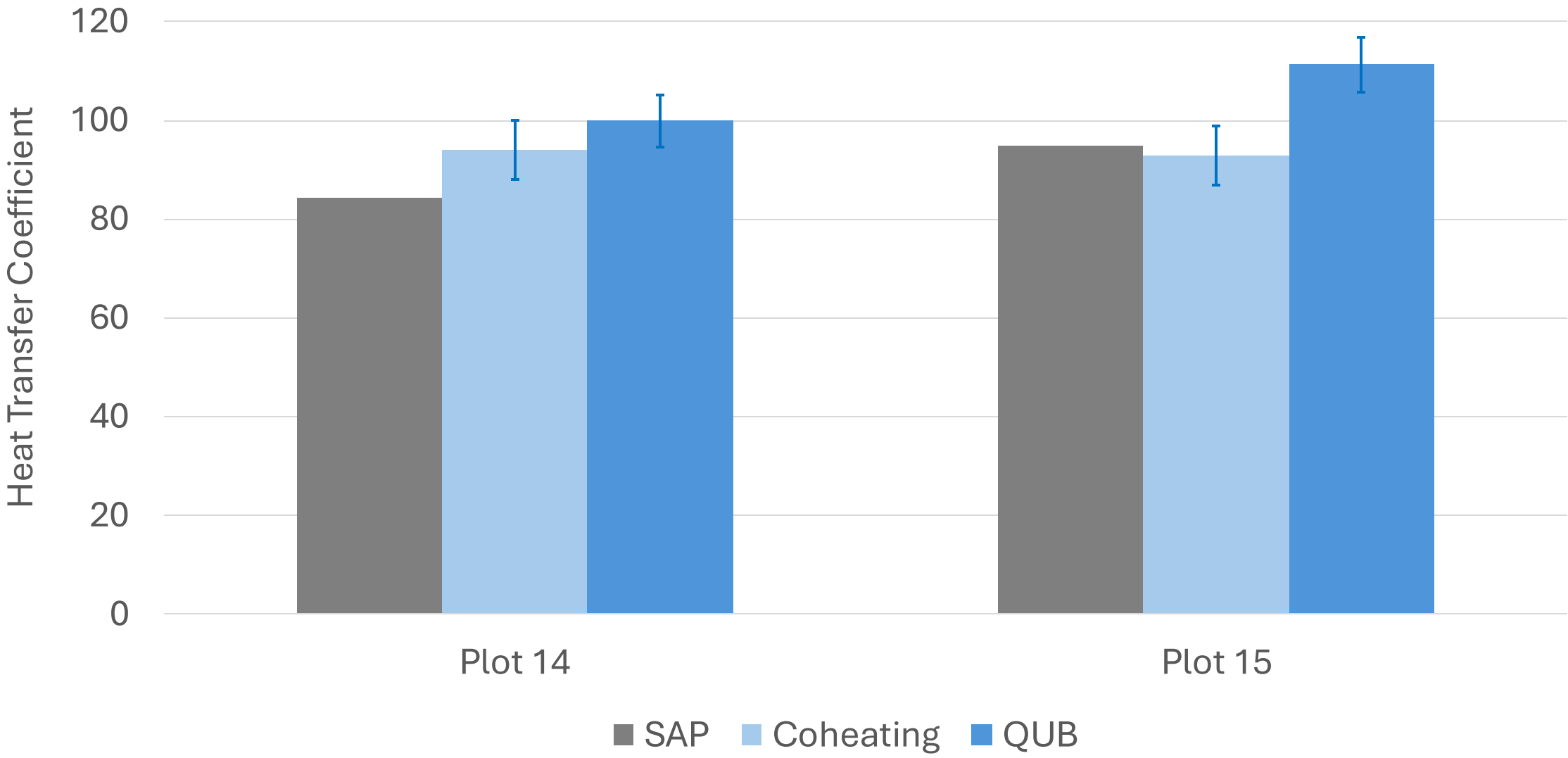

Phase 3, Post occupancy – (sub)metering

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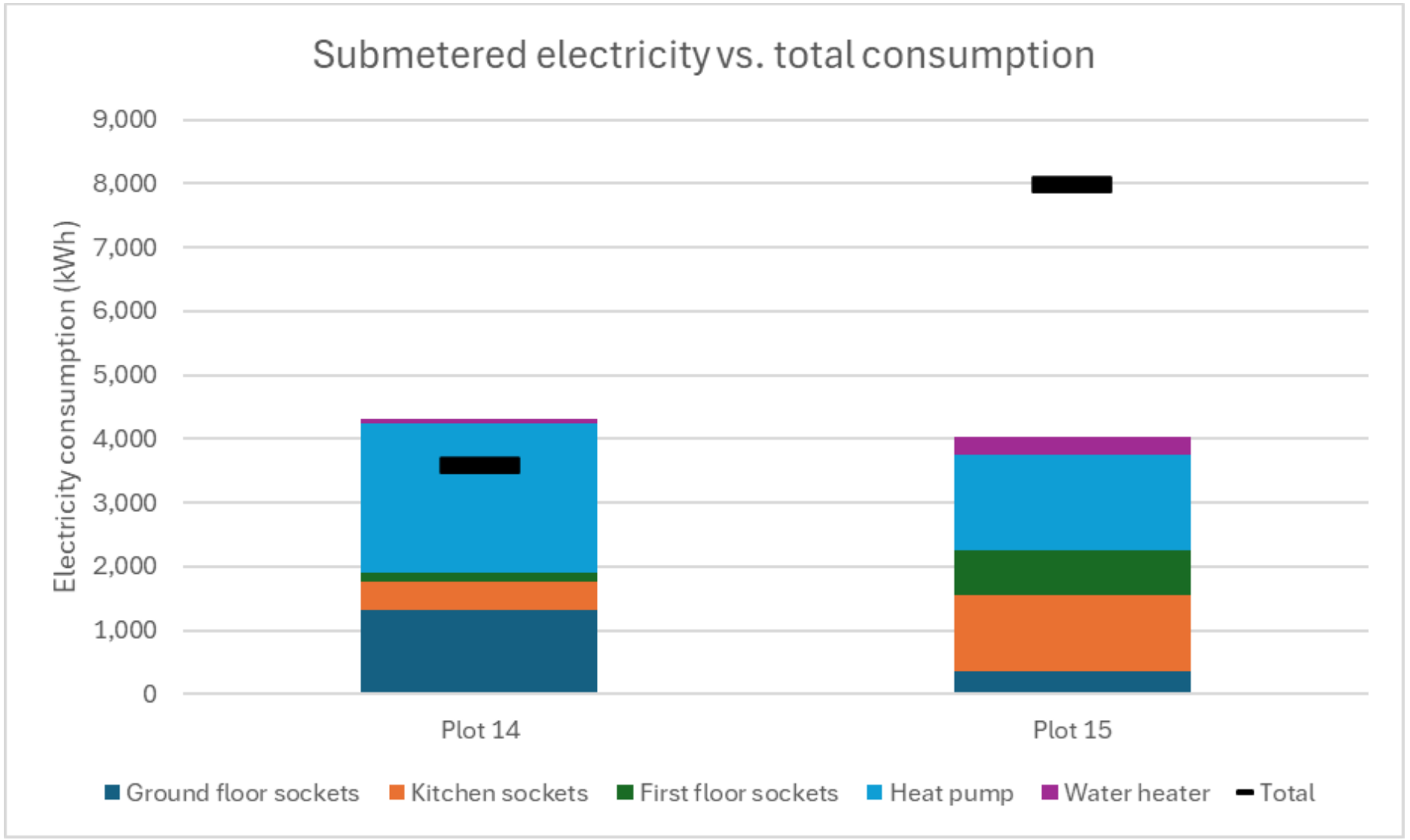

Phase 3, Post occupancy - compliance

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Table 3-1: Outputs from CIBSE TM52 overheating analysis

	Plot 14 living room	Plot 14 bedroom	Plot 15 living room	Plot 15 bedroom
Criterion 1: ≤ 3% of hours over T_{max}	Pass	Pass	Pass	Pass
Criterion 2: Weighted exceedence ≤ 6	Pass	Pass	Pass	Fail
Criterion 3: ΔT not more than 3°C	Pass	Pass	Pass	Pass
Overall: Must not fail against two or more criteria	**Pass**	**Pass**	**Pass**	**Pass**

Phase 3, Post occupancy - occupants

LEEDS BECKETT UNIVERSITY
LEEDS SUSTAINABILITY INSTITUTE

"The noise of that thing outside [and] noise from the heat system in the tank upstairs. Like a…like a….constant humming noise and then it'll go off obviously when the heating's off, you can hear the difference."

"No, just leave it. It just looks after itself."

"Well it's got to be red hot in the house obviously to get your water. Now it's 21 degrees in here and I've got it on 23, I've set it on 23 but if I don't, they'll be no hot water."

"Yeah. Red hot. Fine."

"We can't have a bath each. You know, I've got to have a bath then she's got to have a shower because there's not enough hot water for two baths straight after each other."

LEEDS BECKETT UNIVERSITY
LEEDS SUSTAINABILITY INSTITUTE

Learning by doing…

- Effective design and build QA
- Deeper BPE (sub sample?)
- Data vs information
- Mechanism to rectify
- Every occupant is different

Council gained…

- Validation of performance
- Improved design & process
- Confidence in their standard
- Lessons for future
- Visibility

LEARNING BY DOING

Dave Glew,
Director of Leeds Sustainability Institute
Leeds University

Future Homes Standard Technical Conference

Tuesday 9 June, Leeds Beckett University
Wednesday 17 June, Central Hall Westminster

LEEDS BECKETT UNIVERSITY
LEEDS SUSTAINABILITY INSTITUTE

What does good learning look like?

- *Purposeful & planned*
- *Resourced & buy in (norm)*
- *Detailed enough & scalable*
- *Start before start, end after end*
- *Mechanism to rectify problems*
- *Standardised?*

NOT: "We are doing some monitoring..."

Learning by doing

Ben Cheetham
Design Manager
Gleeson

Introduction

- FHS represents a step change for our business and industry
- Familiar look – fundamentally different performance & operation
- Installing key elements of FHS today, develop experience and capability
- Collaboration across teams and industry

gleeson

Our Approach

Pilot Site

- ASHP trials on select plots
- Controlled conditions
- Early testing of spec & design

Design Review

- Refine design & details
- Collaborate across teams
- Learn from site feedback

Skills & Training

- Tailored training
- Build ASHP confidence
- Understanding of “good”

Wider Rollout

- Consistent quality at scale
- Robust supply & SLAs
- Customer focus

gleeson

Key Learnings

Technical

- Early design coordination
- Standardised to de-risk
- Design as a complete system

Operational

- Lock specification— no product/material substitutions
- People & process drive success as much as the technology
- Build to the design, learn and improve

Customer

- Set expectations: low temperature, always on
- Keep controls & handover simple
- Teach the basics, get the right balance

gleeson

Thank you

gleesonhomes.co.uk

Right where you belong

gleeson

Learning by doing

Olivia Greenhalgh

Sustainability Manager

First Choice Homes Oldham

firstchoice HOMES OLDHAM

OUR HOMES

PROPERTY TYPES

HOUSES	49%
FLATS	43%
BUNGALOWS	4%
MAISONETTES	3%

AGE OF OUR STOCK

91% BUILT BEFORE 1980

PRE-1945	1945-1964	1965-1980	1981-2000	2001+
14%	26%	51%	3%	6%

LARGEST AGE GROUP:

51% BUILT BETWEEN 1965–1980

ENERGY PERFORMANCE

64.5% HOMES EPC C OR ABOVE

SAP 70.9 AVERAGE ENERGY EFFICIENCY RATING

OUR CUSTOMERS

11,324 CURRENT TENANTS

firstchoice HOMES OLDHAM

WEST VALE DEVELOPMENT

2018

2025


firstchoice
HOMES OLDHAM

firstchoice HOMES OLDHAM

WEST VALE DEVELOPMENT

SUSTAINABLE HOMES AT A GLANCE

COLDHURST, OLDHAM

£21m INVESTMENT

88 AFFORDABLE HOMES

62 AFFORDABLE RENT APARTMENTS

26 SHARED OWNERSHIP HOUSES

88 HOMES

100% OFF-GAS

88 AIR SOURCE HEAT PUMPS

33 EV CHARGE POINTS

TIMBER FRAME CONSTRUCTION

HIGH PERFORMANCE INSULATION

A **34** HOMES

B **54** HOMES

2,809 TREES, SHRUBS, HEDGES & PLANTS

NATIVE PLANTING

WILDFLOWER MEADOWS

BIODIVERSITY HABITAT

96% WASTE DIVERTED FROM LANDFILL

SOCIAL VALUE & COMMUNITY ENGAGEMENT

WEST VALE DEVELOPMENT

LOCAL EMPLOYMENT

NEARLY

100

JOBS CREATED

APPRENTICESHIPS & STUDENT PLACEMENTS

IN COLLABORATION WITH OLDHAM COLLEGE

COMMUNITY INVESTMENTS

£9,500

INVESTED IN TREE INSPECTIONS & PLANTING

£63,500

INVESTED IN ALLEYWAY CLEAN-UPS & COMMUNAL GARDEN OVERHAULS

RESIDENT INVOLVEMENT

WEST VALE RESIDENT ENGAGEMENT PANEL

Incorporating local feedback into the development process

LEISURE SPACE ENHANCEMENT

NEW PLAY AREA

Safe outdoor activity for existing and new residents

Learning by doing – lessons from Westvale

Resident engagement	• Early and throughout • Make the changes meaningful
Heating and hot water	• Spec demos • Info packs for resident
Ventilation	• Consider before fabric • Excess heat strategy
R+M	• Engage with DLO at spec stage • Define specs to align to FHS for pipeline

Learning by doing

Ross Holleron
Head of Homes and Construction
Future Homes Hub

Ben Cheetham
Design Manager
Gleeson

Professor David Glew
Head of Sustainable Buildings
Leeds Beckett University

Olivia Greenhalgh
Sustainability Manager
First Choice Homes Oldham

Future Homes Hub

Future Homes Standard READY

Sponsored by e.on next

Future Homes Standard Technical Conference

NETWORKING BREAK

Be sure to share your experience on LinkedIn using #FHSready

Powering up

Dan Neasham
Head of Sustainability and Performance
Future Homes Hub

Nigel Banks
Technical Director - Zero Bills & Low Carbon Homes
Octopus Energy

Neil Fitzsimons
Managing Director
Power On

Nicola Kennedy
Head of Microgrids
E.ON Next

The Future Homes Standard Essentials

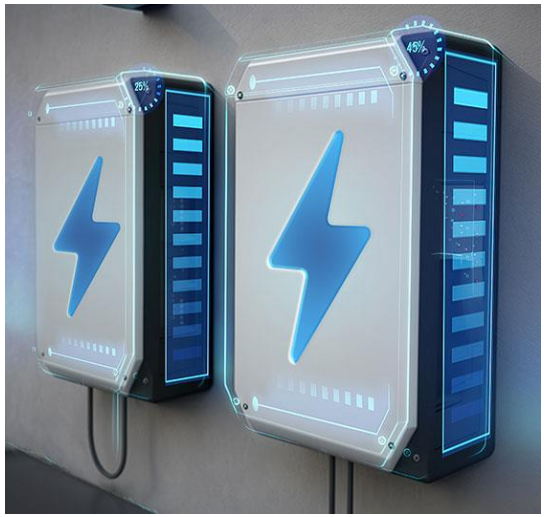
Seven actions to de-risk delivery today

1. Lead early, learn fast, share lessons
2. Prioritise grid availability
3. Own the customer journey
4. Evolve your design
5. Get heating design right
6. Build as designed
7. Commission with care

https://futurehomes.org.uk/future-homes-standard-ready

Google: get future homes standard ready

New homes bring new electrical demands



Developer risks

Viability:

Where possible **sites should be assessed**, and **network operator queried** before site acquisition

Programme:

Allow time for assessment, **operator engagement**, design and **possible reinforcement**

Design:

Competent load assessment and design, done early, is **essential to ensure right sized connections**

Commercial:

Consider larger / more substations, **larger POCs, down stream network enhancement** and mitigation

Customer:

Customers will **expect to see benefits** so curtailing export (and import) **should be minimised**

A change in approach is needed

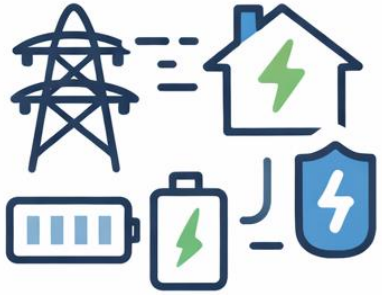
Estimate capacity and engage with the network operator early

Choose your delivery model up-front and build your team

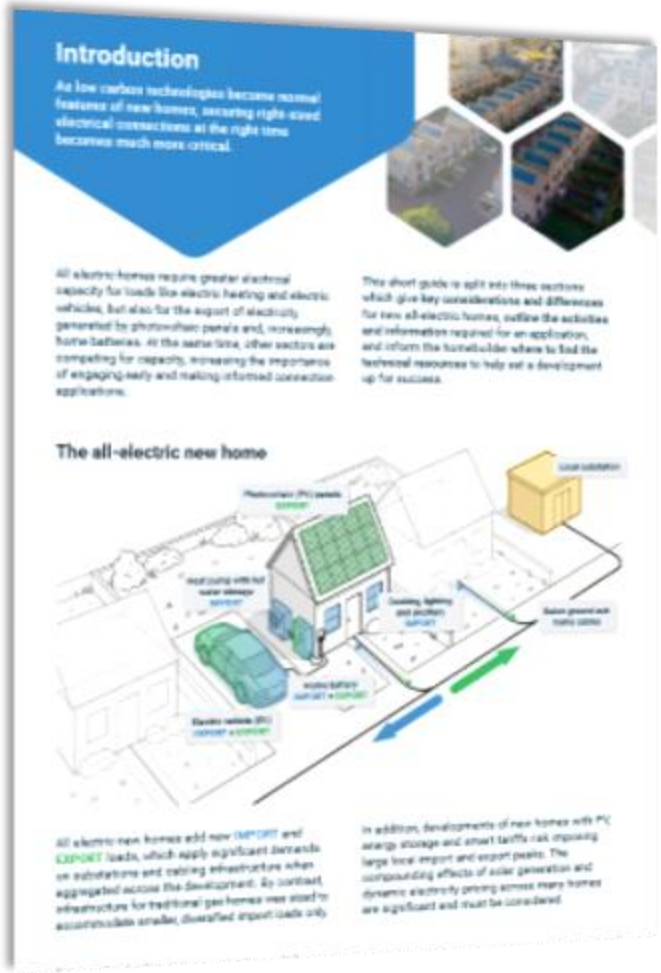
Avoid over or under-assessing the electrical demand

Develop the electrical design with network operator input

Remember: Mitigations to connection constraints exist

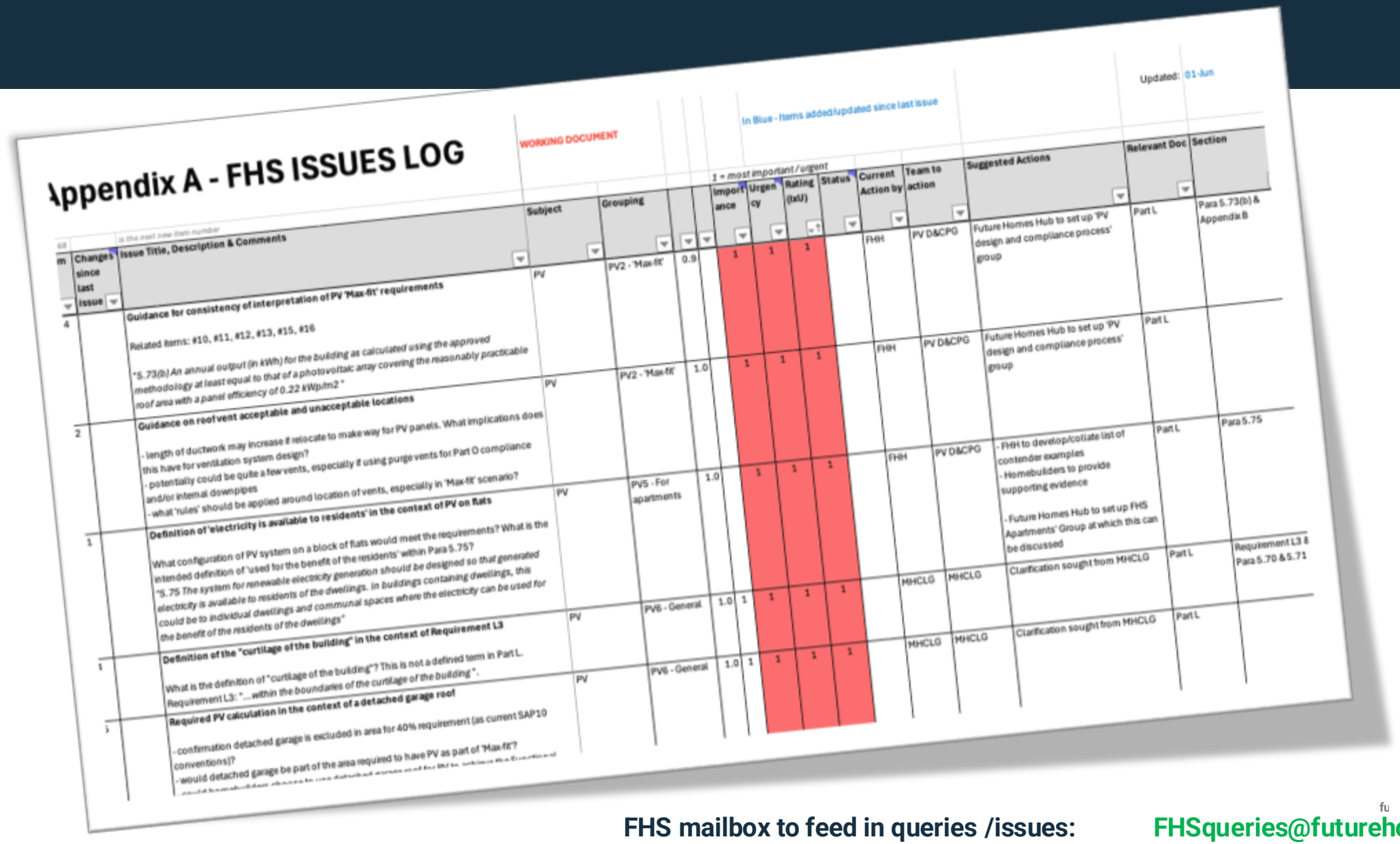


Help is available



- Network operators are very happy to discuss propositions at no cost
- Make sure a competent client agent is engaged early in the process
- Hub guidance is available, with more on the way: https://knowledge.futurehomes.org.uk/resource/grid-connections/

Facilitating resolution of FHS issues - Hub process



Appendix A - FHS ISSUES LOG

WORKING DOCUMENT

In Blue - Items added/updated since last issue

Updated: 01-Jun

1 = most important / urgent

Changes since last issue	Issue Title, Description & Comments	Subject	Grouping		Importance	Urgency	Rating (IxU)	Status	Current Action by	Team to action	Suggested Actions	Relevant Doc	Section
4	**Guidance for consistency of interpretation of PV 'Max-fit' requirements** Related items: #10, #11, #12, #13, #15, #16 *"5.73(b) An annual output (in kWh) for the building as calculated using the approved methodology at least equal to that of a photovoltaic array covering the reasonably practicable roof area with a panel efficiency of 0.22 kWp/m2 "*	PV	PV2 - 'Max-fit'	0.9	1	1	1		FHH	PV D&CPG	Future Homes Hub to set up 'PV design and compliance process' group	Part L	Para 5.73(b) & Appendix B
2	**Guidance on roof vent acceptable and unacceptable locations** - length of ductwork may increase if relocate to make way for PV panels. What implications does this have for ventilation system design? - potentially could be quite a few vents, especially if using purge vents for Part O compliance and/or internal downpipes - what 'rules' should be applied around location of vents, especially in 'Max-fit' scenario?	PV	PV2 - 'Max-fit'	1.0		1	1	1	FHH	PV D&CPG	Future Homes Hub to set up 'PV design and compliance process' group	Part L	
1	**Definition of 'electricity is available to residents' in the context of PV on flats** What configuration of PV system on a block of flats would meet the requirements? What is the intended definition of 'used for the benefit of the residents' within Para 5.75? *"5.75 The system for renewable electricity generation should be designed so that generated electricity is available to residents of the dwellings. In buildings containing dwellings, this could be to individual dwellings and communal spaces where the electricity can be used for the benefit of the residents of the dwellings"*	PV	PV5 - For apartments	1.0		1	1	1	FHH	PV D&CPG	- FHH to develop/collate list of contender examples - Homebuilders to provide supporting evidence - Future Homes Hub to set up FHS Apartments' Group at which this can be discussed	Part L	Para 5.75
1	**Definition of the "curtilage of the building" in the context of Requirement L3** What is the definition of "curtilage of the building"? This is not a defined term in Part L. Requirement L3: *"...within the boundaries of the curtilage of the building".*	PV	PV6 - General	1.0	1	1	1	1	MHCLG	MHCLG	Clarification sought from MHCLG	Part L	Requirement L3 & Para 5.70 & 5.71
3	**Required PV calculation in the context of a detached garage roof** - confirmation detached garage is excluded in area for 40% requirement (as current SAP10 conventions)? - would detached garage be part of the area required to have PV as part of 'Max-fit'?	PV	PV6 - General	1.0	1	1	1	1	MHCLG	MHCLG	Clarification sought from MHCLG	Part L	

FHS mailbox to feed in queries /issues: FHSqueries@futurehomes.org.uk

Powering up

Nigel Banks

Technical Director - Zero Bills & Low Carbon Homes

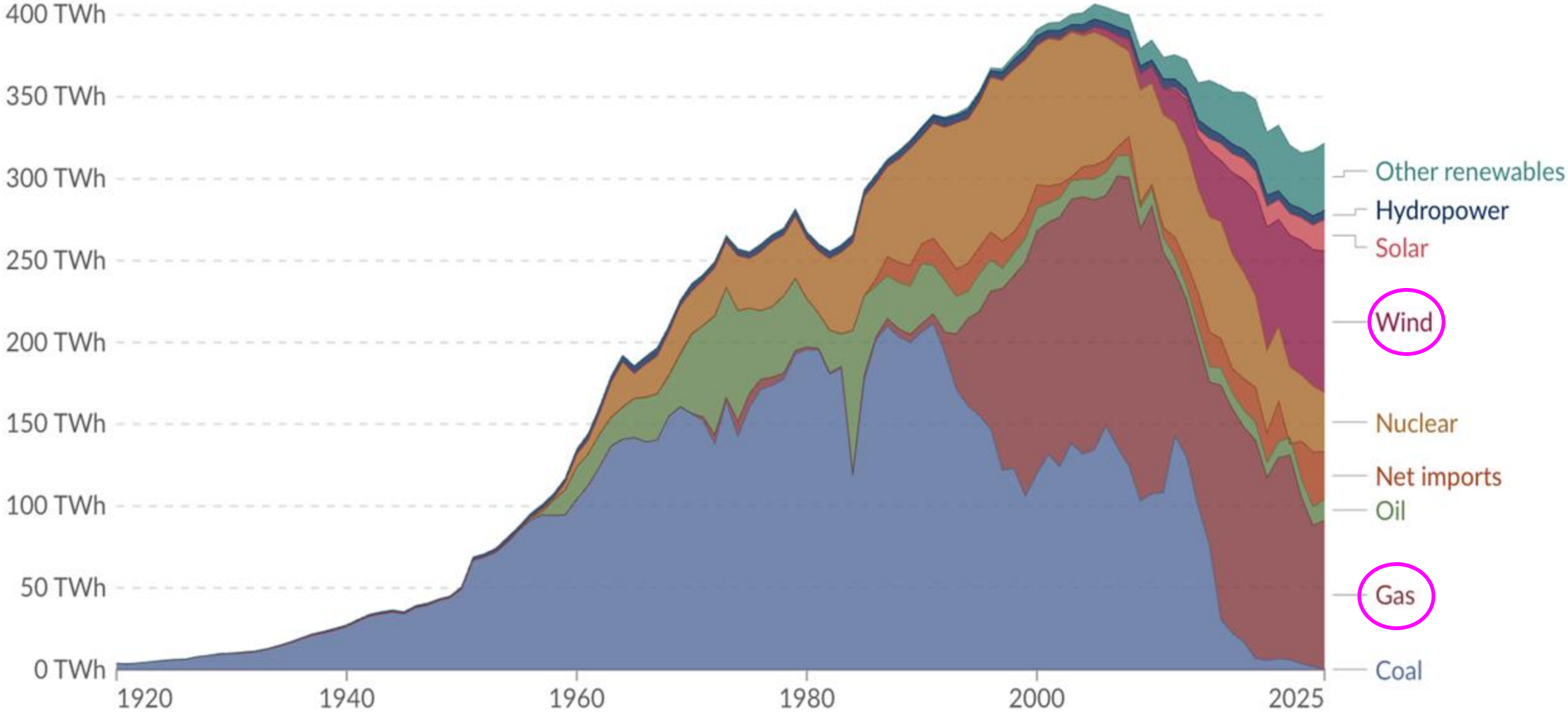
Octopus Energy

Getting connections right: *The electricity supplier's perspective*

Nigel Banks
Technical Director, Octopus Energy

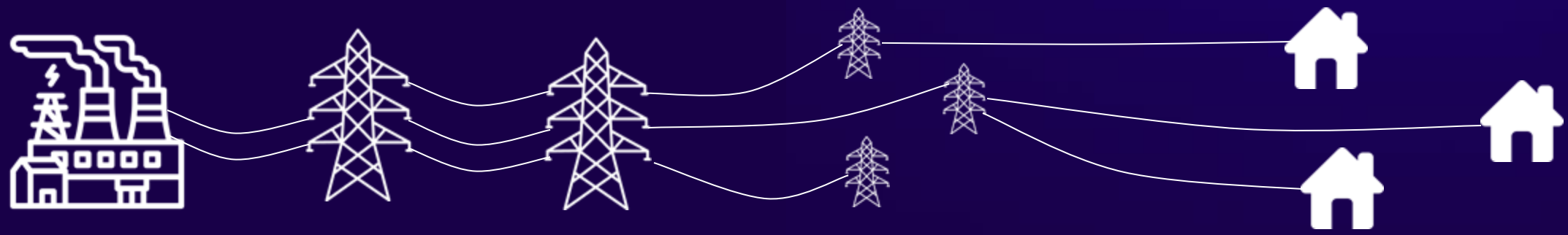
octopus energy

The electricity grid has transformed... and still is changing



The energy landscape is shifting – from static to decentralised

Before



Dispatchable fossil fuel generation

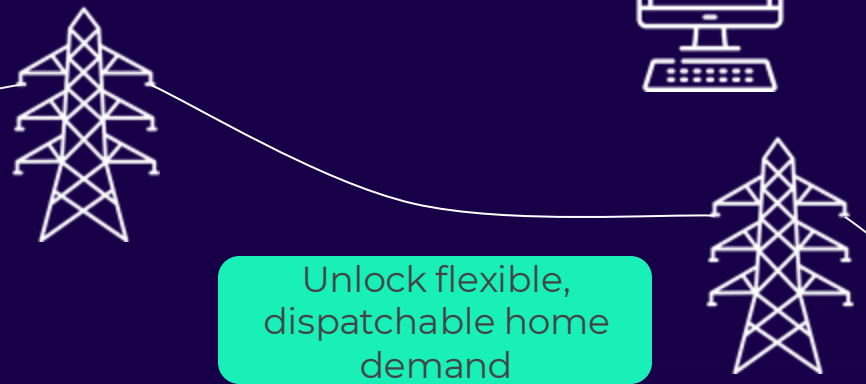
Linear transmission and distribution

Static consumption by the end consumer

Now

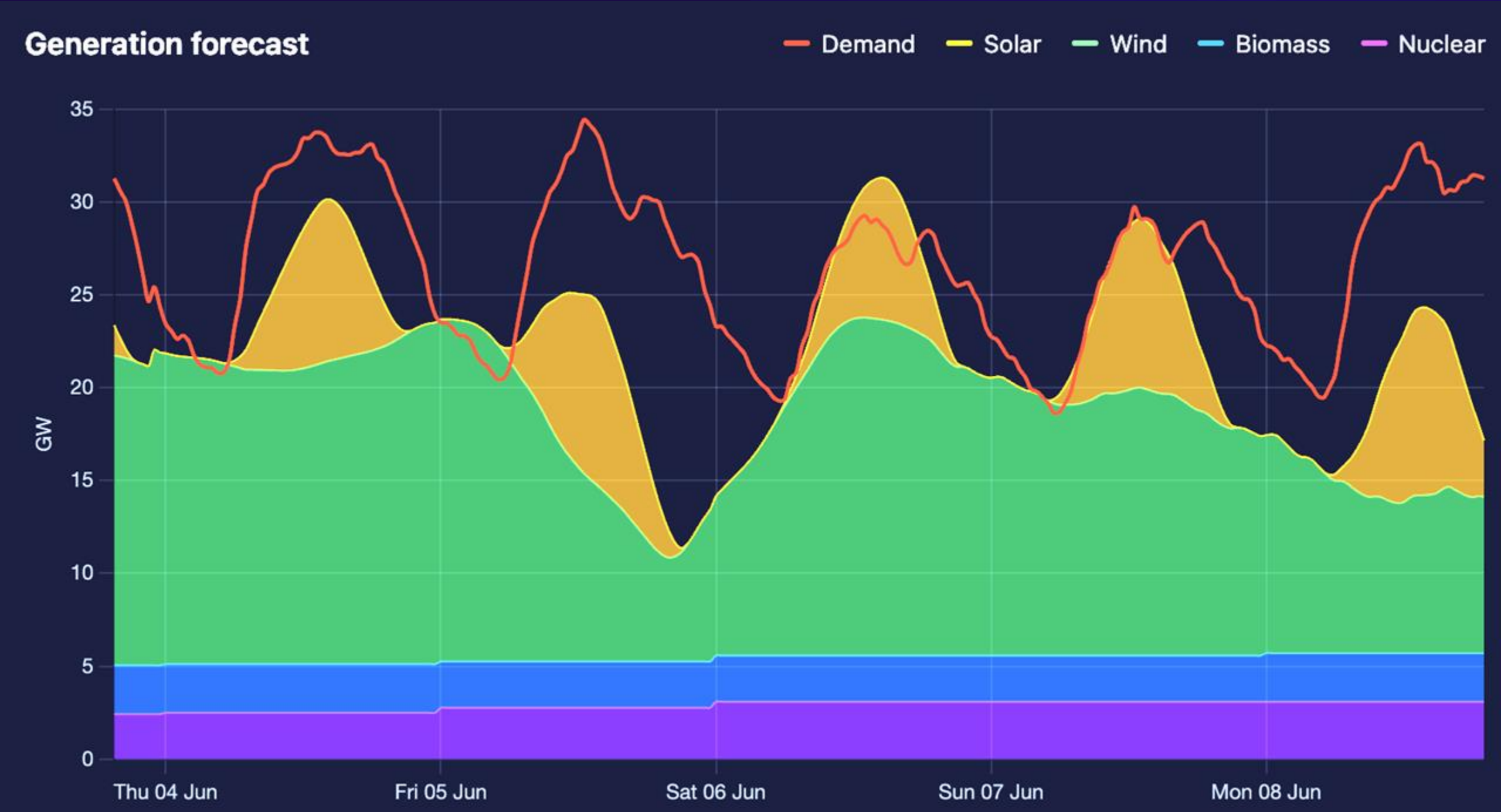
Volatile and decentralised generation and storage

Optimised system operations & network energy flows



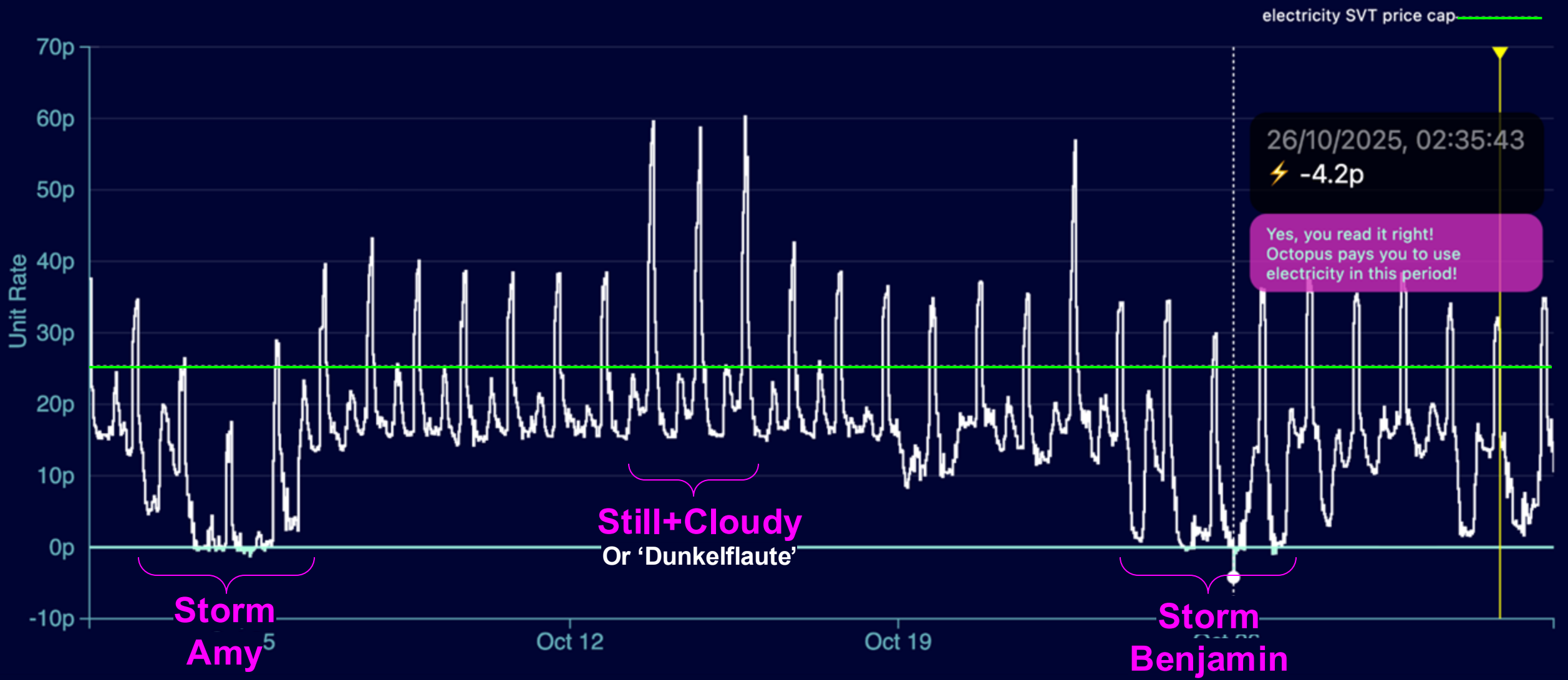
Unlock flexible, dispatchable home demand

Offer customers **next-generation tariffs** & energy products



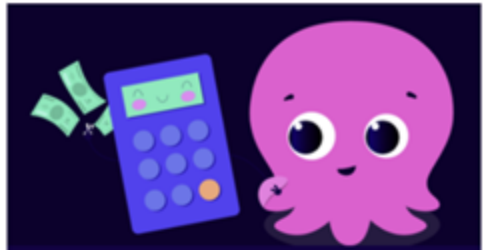
Source: https://www.x2r.uk/agile/

How the price of electricity changed through October 2025



Agile Octopus

Perfect for anyone who can shift their electricity use outside of peak times



Octopus Tracker

Britain's first tariff to truly follow the wholesale price of energy

Octopus Go

No Intelligent-compatible car or charger? Get four hours of cheap electricity a night for your home and car.

Octopus Outgoing

Check out our fixed and agile tariffs perfect for exporting energy to the grid.

octopus
FAN CLUB

Octopus Flux

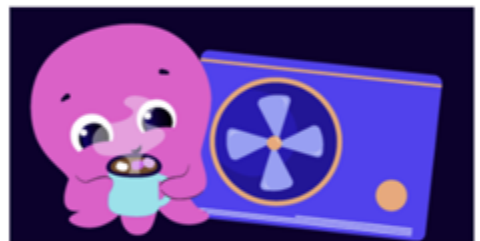
An import and export tariff giving you the best rates for consuming and selling your energy.

Snug Octopus

The Intelligent tariff for storage heaters. We charge your storage heaters at the cheapest and greenest times of the day, whilst supporting the grid.

Intelligent Octopus Go for electric cars

Super cheap EV smart charging and six hours of cheap home electricity a night



Cosy Octopus

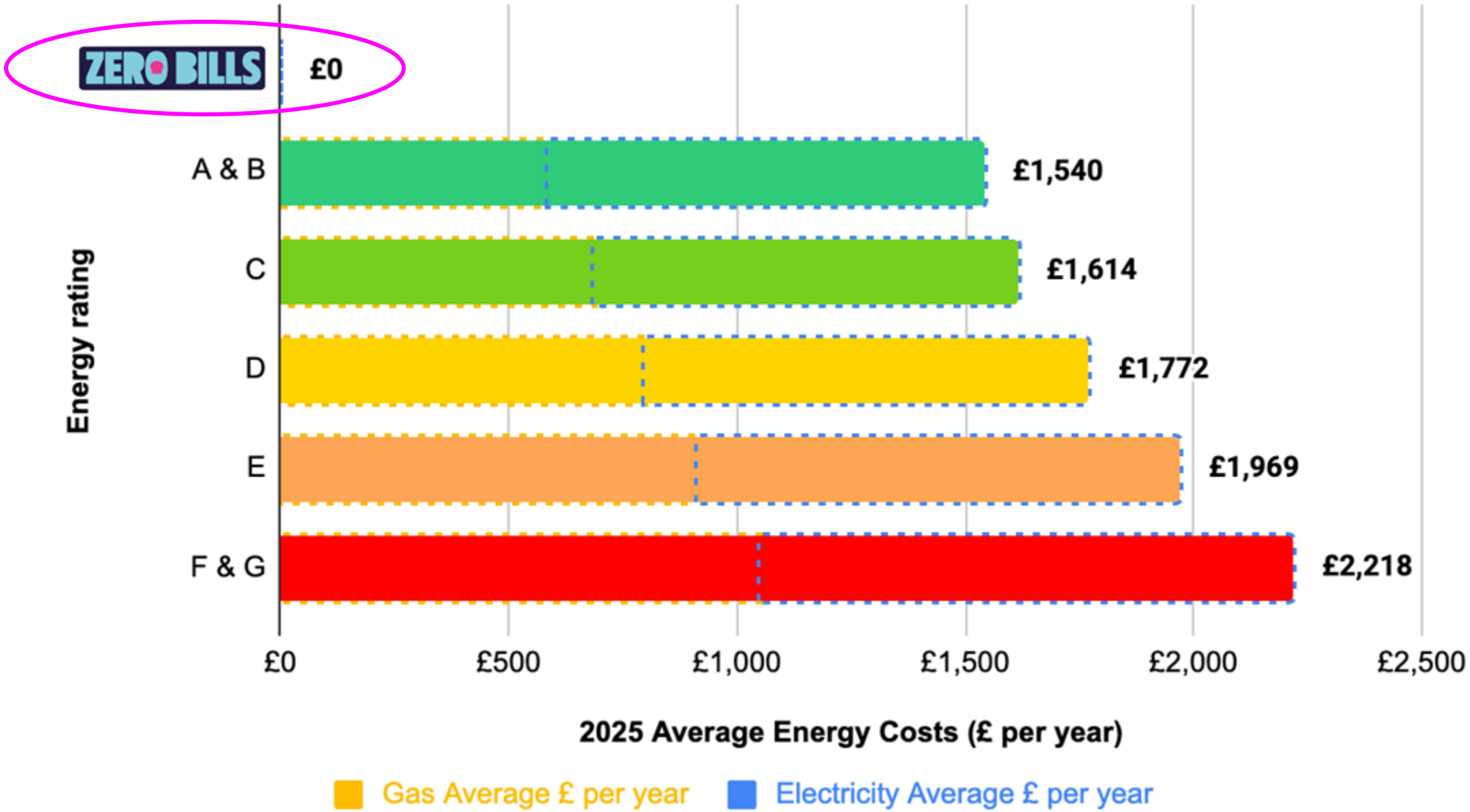
The smart electricity tariff designed to keep heat-pump homes toasty and energy bills cheaper.

Shape Shifters: Trio

Unlock 21 hours of cheaper electricity - every single day

Join hundreds of businesses making big savings with Trio.

Unlocking bills savings well beyond “EPC A” rated homes



Zero Bills: Example Installation:

ZERO BILLS
NO ENERGY BILLS FOR 10 YEARS

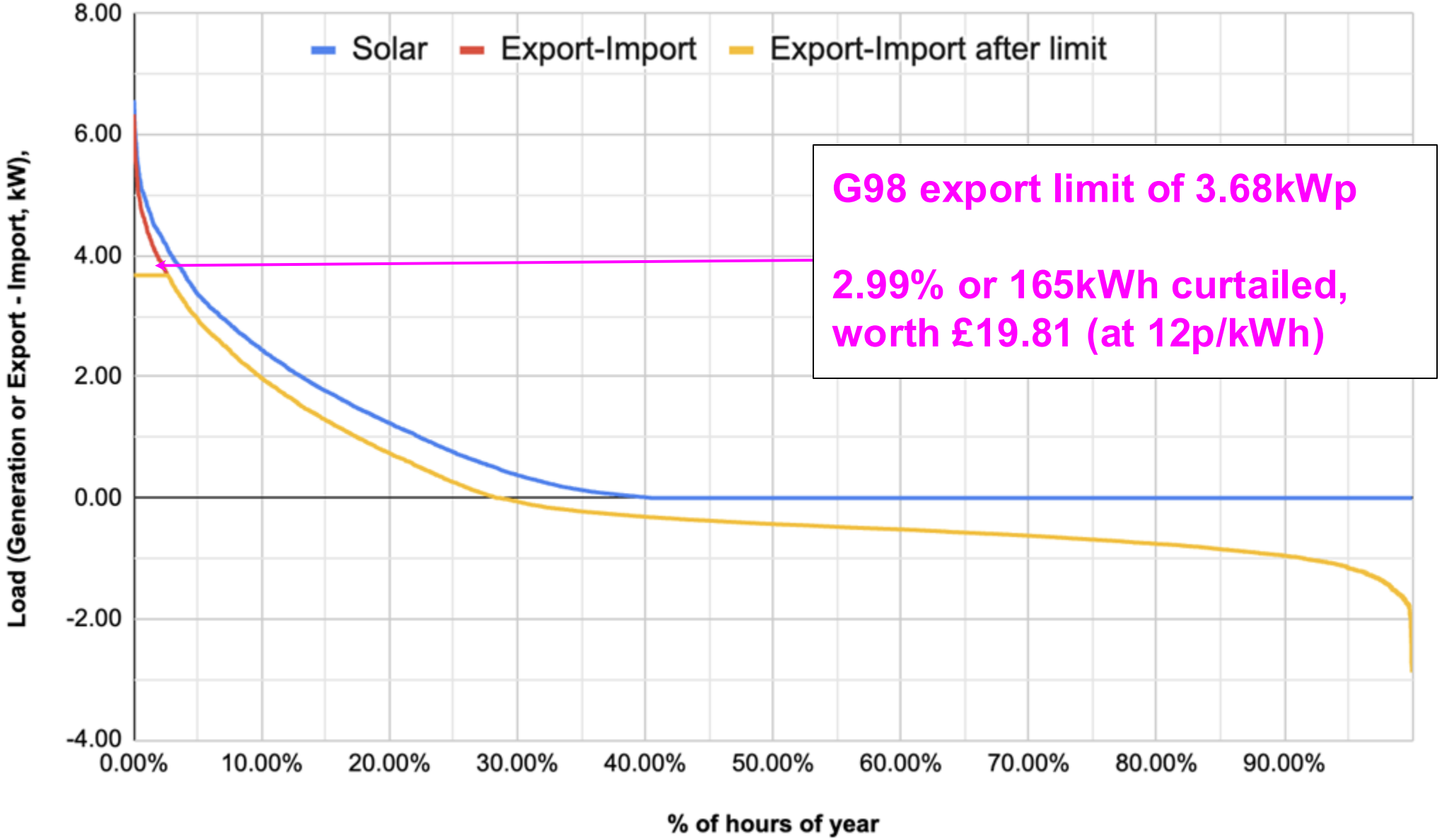
+ Home Battery

+ EV charger

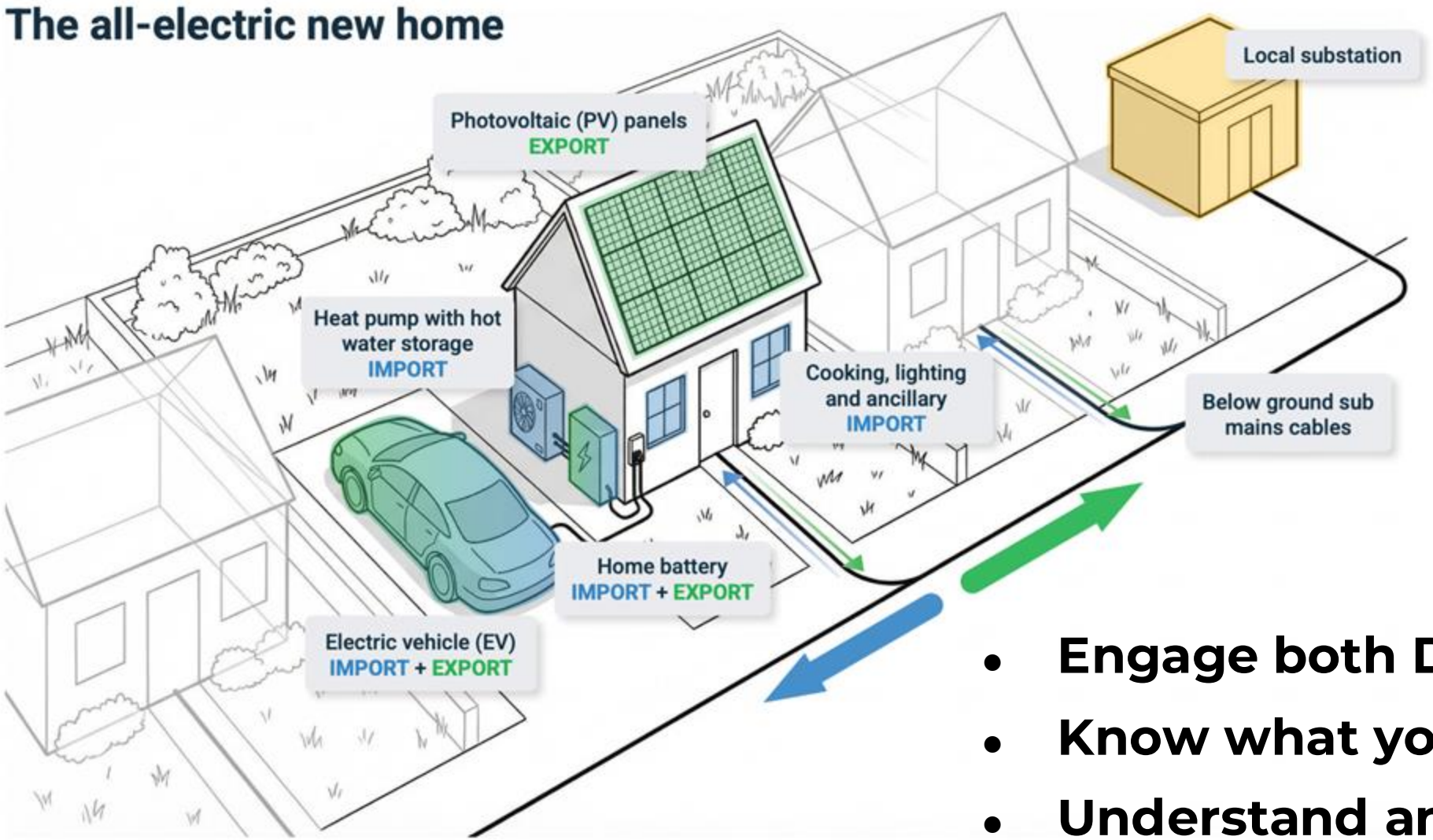
+ Heat Pump!

octopus energy

Semi-D house, 10kWp solar (split N&S), Leeds 2017 solar profile, new build spec, ASHP, No EV load profile (averaged), No BESS



FHH Guidance on Grid connections for



- **Engage both DNO & iDNOs early**
- **Know what you are asking for**
- **Understand any constraints**
- **Mitigations exist & can be implemented with enough time**

LOVE & POWER

nigel.banks@octoenergy.com
07837 516349

Powering up

Neil Fitzsimons

Managing Director

Power On

POWER ON

Future Homes Standard

Technical Conference - Powering up

Tuesday 9 June, Leeds Beckett University

Electricity Water Wastewater Fibre Heat Gas

All Utilities. One Provider.

BUUK Infrastructure Group: B2B Brands

POWER ON

BUUK infrastructure

POWER ON

Multi-utility infrastructure solutions for high-rise residential, commercial, retail and industrial sectors.

gtc

Multi-utility infrastructure for low density housing developments.

The Brands Behind the Group: Asset & Retail

POWER ON

Electricity, Network Company

Asset ownership, maintenance of electricity networks

Independent Water Networks Ltd

Retail brand, asset ownership, maintenance and support of water and wastewater networks

Metropolitan

Asset ownership, maintenance and support of heat and cooling networks

Open Fibre Networks Ltd

Asset ownership, maintenance and support of fibre networks

Gas Pipelines Limited

Asset ownership, maintenance of gas networks

Offer consumers access to energy flexibility markets – a key enabler for energy Net Zero

Offer consumers products that increase efficiency of heating, cooling, Battery and EV charging systems

Evolution of Electricity Connections Market

POWER ON

Connections Market Competition

2000/04

Utilities Act 2000

- Ofgem consult on arrangements for IDNOs & first licences granted to IDNOs in 2004

2008/09

2008 First GSOP standards in place for IDNOs/ICPs

- Competition Test progress reviewed under DPCR5
- Incorporated Rights (land rights) starts to be rolled out
- Boundary metering decision from Ofgem

2013

Competition Test assessment by Ofgem

- To determine if further action was need to open the market

2015/->

Competition in Connections Code Of Practice

- Self-determination of points of connection & design approval
- Self-connect processes in place for LV and HV connections.
- Self-serve processes start to be implemented around DNOs

POWER ON

Future Homes Standard – Implications for Housebuilders (Power)

Future Homes Standard – Implications for Housebuilders (Power)

- **Higher demand per home**
  Electrification (heat pumps, EVs) → **higher loads (ADMD)** → fewer plots per substation
- **More infrastructure required**
  More/larger substations and network upgrades → **land, cost and design implications**
- **Greater connection risk**
  Higher likelihood of **reinforcement and longer connection lead times**
- **Two-way networks emerging**
  Solar + EVs → networks must handle **both import and export peaks**
- **Peak-driven design challenges**
  Winter heating & summer export → **capacity driven by extreme peak scenarios**
- **Smarter energy solutions needed**
  Growing role for **flexibility, active networks and battery storage**

KEY TAKEAWAY

Power capacity and timing becoming a critical constraint
Early, integrated energy planning is **essential to avoid delays and cost escalation**
Your heat strategy matters - Alternative lower electricity demand heating solutions are available

Richard Lankshear

Programme Director

Future Homes Hub

The Future Homes Standard Essentials

Seven actions to de-risk delivery today

1. Lead early, learn fast, share lessons
2. Prioritise grid availability
3. Own the customer journey
4. Evolve your design
5. Get heating design right
6. Build as designed
7. Commission with care

www.futurehomes.org.uk/future-homes-standard-ready

Google: FHS Essentials

User specific guidance - published

Get FHS Ready Webinars and Podcasts

Fridays 1-2pm

Available in Hub members area

Future Homes Standard Reflections

Lead early, learn fast, share lessons

Delivering homes with heat pumps

Ventilation in New Homes

Build as designed

Prioritize grid availability

Getting heating design right (part 1)	19 June
Getting heating design right (part 2)	3 July
Commission with care	10 July
Own the customer journey	17 July
Evolve your design	September

Future Homes Hub

Future Homes Standard READY

Sponsored by e.on next

Thank you

Save the date

Future Homes Annual Conference on 2nd December

Be sure to share your experience on LinkedIn using #FHSready