



**APSE Scottish Building, Housing & Renewables
Seminar
Dunblane Hydro**

22nd February 2018

EESSH1 & EESSH2

**Stirling Council – Solar PV &
Battery Storage**

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Scottish Government EESSH Review Group

- Four meetings held between March & June 2017;
- Final Phase 1 meeting to be held October 2017;
- Expected to sign-off recommendation that current EESSH Standards remain unchanged for 2020;
- Agree areas of EESSH to be reviewed post 2020 including compliance methodology, “reasonable measures”, new technology not currently reflected in RdSAP 2012, raising the current EESSH standards post 2020?

Factors that will influence EESSH2 Post 2020

- **Decarbonising the Heat Network;**
(Consultation on Heat & Energy Efficiency Strategies, and Regulation of District Heating – January 2017)
- **Local Supply & Consumption of Energy;**
(Draft Scottish Energy Strategy: The Future of Energy in Scotland – January 2017)
- **Proposed Warm Homes Bill – new statutory fuel poverty target;**
- **SAP 2016 / RdSAP 2016 – Consultation closed in January 2017 – Awaiting BEIS announcement;**
- **Above may result in higher EESSH Standards Post 2020 and/or Environmental Impact Standards to be met.**

EESSH1 Progress To Date

2016/17 EESSH Returns

- 187 Social Landlords with 594,477 units in scope of EESSH;
- 441,252 units meet EESSH (74.23%) but only 331,389 units have an EPC (55.74%) so still heavy reliance on cloning;
- Only 37 social landlords have EPC's for 90+% of their stock;
- Traditional Construction properties are very difficult to clone due to variances in exposed wall ratio to floor areas between archetype styles.

Stirling Council's Housing Stock

Stock by age – SHQS Self-Contained Units Only:-

Age Banding	No. of Units	%
Pre 1919	76	1.34%
1919 - 1944	1,345	23.75%
1945 - 1964	2,917	51.52%
1965 - 1982	888	15.68%
1983 - 2002	143	2.53%
Post 2002	<u>293</u>	<u>5.17%</u>
Total	5,662	100.00%

Stirling Council's Housing Stock

Stock by Construction Type:-

Construction Type	No. of Units	%	Construction Type	No. of Units	%
Atholl Steel	19	0.34%	Lawrence	11	0.19%
British Iron & Steel Fed.	36	0.64%	Single Storey Orlit	3	0.05%
Blackburn Mark 3	31	0.55%	Single Storey Dorran	17	0.30%
Blackburn Mark 4	7	0.12%	Steel Frame	1	0.02%
Cruden	16	0.28%	Timber Kit	244	4.31%
Double Storey Dorran	12	0.21%	TimCon	22	0.39%
Double Storey Orlit	183	3.23%	Traditional	4,149	73.28%
Hilcon Ex	20	0.35%	Weir Timber	157	2.77%
Hilcon Hills Presweld	5	0.09%	Wimpey No Fine	718	12.68%
K-Lathe	11	0.19%	Total	5,662	100.00%

'Hard to Treat' requiring External Wall Insulation – 1,179 units (20.82%) – 1,168 now have EWI

'Hard to Treat' requiring Internal Wall Insulation – 202 units (3.57%) – 95 now have IWI

Starting the Journey in 2008 for SHQS

- Comprehensive database of all CWI, EWI, IWI and loft insulation data to date;
- Heating type by fuel type, make and model of heating system;
- Stock within gas network areas and potential for expanding gas networks;
- Ongoing upgrade of gas boilers to 'A' Rated combi condensing boilers (97.7% completion).

Journey 2008 to 2015

Stock by Fuel Type & Access to Gas Network

	Units	%
Stock With Access to Gas Network	5,257	92.85%
(Stock With Gas Heating)	(5,077)	(96.58%)
Stock With No Access to Gas Network	<u>405</u>	<u>7.15%</u>
	5,645	100.00%

Fuel Type	Units	%
Gas	5,077	89.67%
Electric	487	8.60%
Solid Fuel	83	1.47%
Oil	14	0.25%
LPG	<u>1</u>	<u>0.02%</u>
	5,662	100.00%

Journey 2009

Stock broken down in to sub-groups based on:-

- Construction type;
- Property type;
- Primary fuel;
- Heating type;
- Access to gas network;
- Wall type e.g. is it cavity filled, 'hard to treat' etc;
- Presence of Cavity Wall Insulation / External Wall Insulation / Internal Wall Insulation;
- Renewables & Battery Storage

The above results in stock falling within one of 438 sub-groups.

Journey 2009 cont.

Rd SAP EPC's

- Target of 100% of stock within each sub-group to have an up to date EPC by 31st March 2018;
- An EPC is produced when a property is void if the property does not have an EPC and EPC's are produced / refreshed every time an energy efficiency measure is installed in a property;
- As at 21st February 2018, 5,517 (97.44%) of the stock has an up to date EPC.

Journey 2018

EPC Results To Date:-

EPC Band	Units	%
Band 'A' – 92+	356	6.45%
Band 'B' – 81 to 91	1,142	20.70%
Band 'C' – 69 to 80	3,118	56.52%
Band 'D' – 55 to 68	846	15.33%
Band 'E' – 39 to 54	47	0.85%
Band 'F' – 21 to 38	6	0.11%
Band 'G' – 1 to 20	<u>2</u>	<u>0.04%</u>
	5,517	100.00%
Average EPC Rating	=	76
Projected by 31/03/18	=	78
EESSE Pass to date	4,726	85.66%

Energy Performance Certificate (EPC)

Scotland

Dwellings

4 EDWARD AVENUE, RIVERSIDE, STIRLING, FK8 1XN

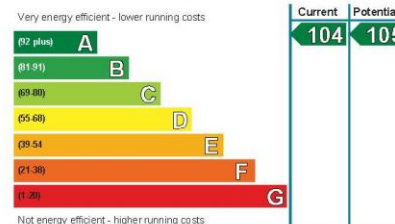
Dwelling type:	Mid-terrace bungalow	Reference number:	0192-2269-9463-9706-7981
Date of assessment:	01 June 2016	Type of assessment:	RdSAP, existing dwelling
Date of certificate:	18 June 2016	Approved Organisation:	Elmhurst
Total floor area:	53 m ²	Main heating and fuel:	Boiler and radiators, mains gas
Primary Energy Indicator:	-13 kWh/m ² /year		

You can use this document to:

- Compare current ratings of properties to see which are more energy efficient and environmentally friendly
- Find out how to save energy and money and also reduce CO₂ emissions by improving your home

Estimated energy costs for your home for 3 years*	£1,194	See your recommendations report for more information
Over 3 years you could save*	£84	

* based upon the cost of energy for heating, hot water, lighting and ventilation, calculated using standard assumptions

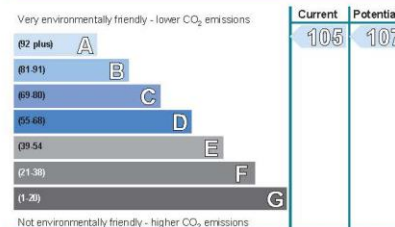


Energy Efficiency Rating

This graph shows the current efficiency of your home, taking into account both energy efficiency and fuel costs. The higher this rating, the lower your fuel bills are likely to be.

Your current rating is **band A (104)**. The average rating for EPCs in Scotland is **band D (61)**.

The potential rating shows the effect of undertaking all of the improvement measures listed within your recommendations report.



Environmental Impact (CO₂) Rating

This graph shows the effect of your home on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating, the less impact it has on the environment.

Your current rating is **band (105)**. The average rating for EPCs in Scotland is **band D (59)**.

The potential rating shows the effect of undertaking all of the improvement measures listed within your recommendations report.

Top actions you can take to save money and make your home more efficient

Recommended measures	Indicative cost	Typical savings over 3 years	Available with Green Deal
1 Solar water heating	£4,000 - £6,000	£84.00	✓

A full list of recommended improvement measures for your home, together with more information on potential cost and savings and advice to help you carry out improvements can be found in your recommendations report.



THIS PAGE IS THE ENERGY PERFORMANCE CERTIFICATE WHICH MUST BE AFFIXED TO THE DWELLING AND NOT BE REMOVED UNLESS IT IS REPLACED WITH AN UPDATED CERTIFICATE

Journey 2018 - Solar Photovoltaics (PV)



- April 2011 – Commitment to invest £16.1m on PV between 2011 to 2018.
- Re-invest surplus FIT income that will add a further £2m of PV investment by March 2019.

Journey 2018 cont.

Solar PV - Specification Quality

- Global Market Leading Inverters - SMA Inverters;
- Tier 1 Panels – Canadian Solar;
- Highest Panel Efficiency & W/m² - Sunpower;
- Remote Monitoring & PPA Option;
- Battery Storage – Tesla Powerwall 2 & Sonnen Storage Units



EESSH1 and Beyond

Solar PV - Enhancements:-

- Developing PV façade solutions to maximise deployment;
- Solar PV Heaters – EHC PV Ready Radiators;
- Battery Storage – SMA Smart Energy, Sonnen & Tesla;
- Remote Monitoring Dual Element Generation Meters;
- Solar Diverters- Eddi;
- Energy Supply Company – Our Power
- Educate, Monitor & Save



Solutions

Façade Mounting Systems

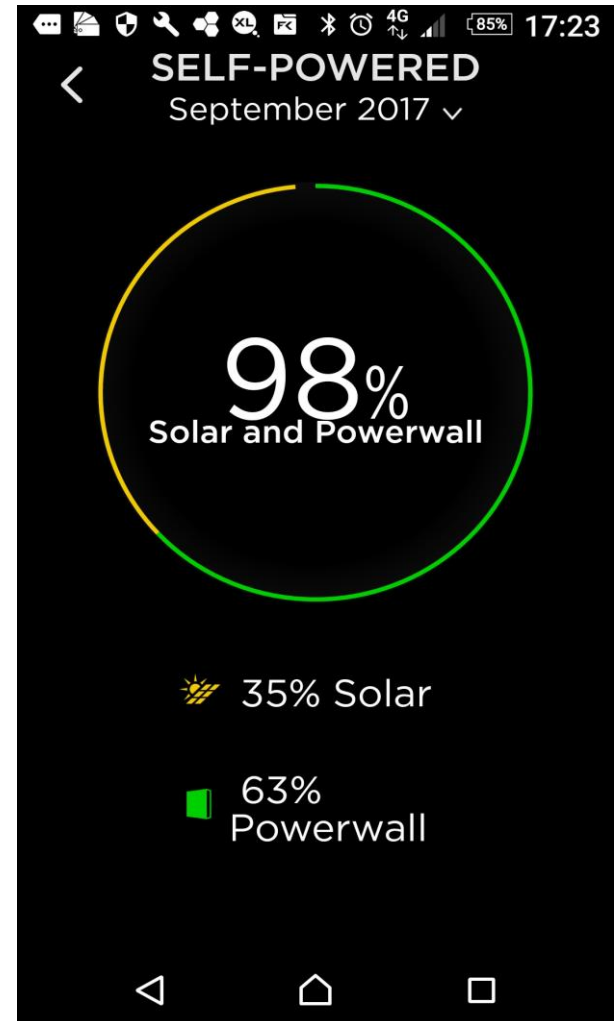


Battery Storage Solutions



=

Additional
Savings on
Electricity
Bills



Solar PV & Battery Storage Potential

94 Battery Storage Units installed to date
= 800kWh of storage.

Plan to install a further 200 units over 2018/20
that will provide a total of 3.5MWh of storage.

- Battery Storage – Aggregation = Income
- Blockchain – Peer to Peer Energy Trading
- Power Purchase Agreements for Export Units = Additional Income
- Are ½ Hourly Tariffs the future for domestic?

Summary

Roadmap to EESSH1 and futureproofing for EESSH2

- Maximise use of RdSAP EPC data to drive your future investment – preferably in-house DEA Surveyors for more accurate EPC's. Although crude, provides data that can be benchmarked – legal requirement for new tenancies anyway so ramp up;
- Solar PV up to a 4kWp system can add between 10 to 25RdSAP points to a property;
- Aim for as near a 4kWp specification – lowers £/kWp costs and maximises EPC Rating and annual generation for future battery storage and/or solar diverters. If going above 4kWp need to obtain G59 approval rather than G83-2 approval from DNO – cost implications if covered by Scottish Power DNO area;
- Cost of /kWp has fallen by up to 50% over past 6yrs but do not compromise on quality that saves on future maintenance costs;
- Current Feed-In-Tariff Scheme currently due to end on 31st March 2019;
- Solar PV Helps to meet EESSH1 and in many cases will futureproof stock in meeting EESSH2 to be met by 2032;
- New technologies will further reduce fuel poverty but do not currently enhance RdSAP EPC ratings e.g. Battery Storage etc.; and
- Social Landlords are energy efficiency leaders not followers.

Any Questions?

"I'd put my money on the sun and solar energy. What a source of power! I hope we don't have to wait until oil and coal run out before we tackle that. I wish I had more years left." Thomas Edison

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