

Errata to the Powys Renewable Energy Assessment 2017

In response to Action Point 5, the following changes have been made:

Deletions are shown ~~thus~~

Additions are shown thus

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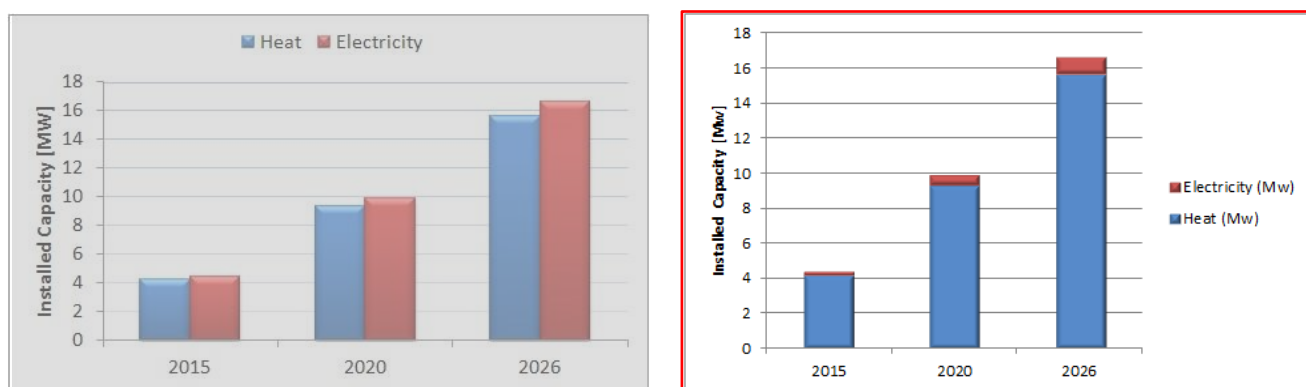
9 Building Integrated Renewable Energy Uptake

9.3 Calculation method

The calculation method includes consideration of the uptake of non-renewable micro-generation in order to account for those buildings which choose to take a non-renewable option, but these are excluded from the contribution.

9.4.2 Results - BIR uptake in existing buildings

Figure 6: BIR uptake (cumulative) in existing buildings



AECOM Comment:

The current REA Figure 6 (above left) incorrectly labels the red columns as “electricity” whilst representing values that are actually for both heat and electricity combined. The chart is replaced by the chart (above right) to show the extent of electricity BIR uptake and cumulative uptake (heat and electricity) in MegaWatts.

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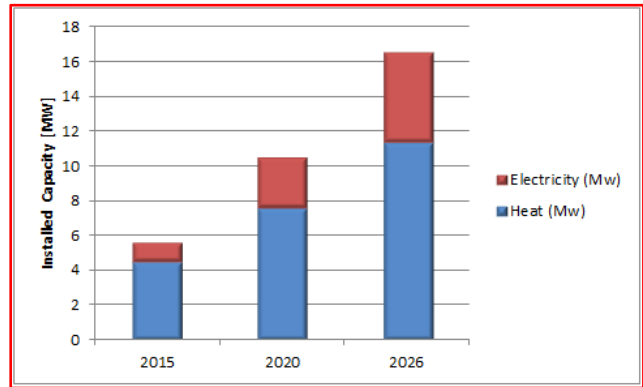
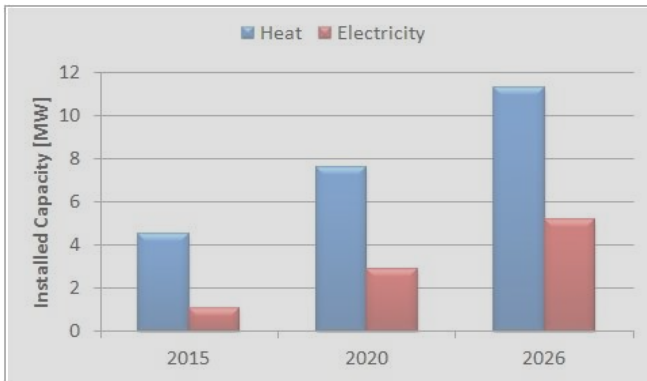
9.5 Future new buildings

9.5.1 Results – BIR uptake in future new buildings

The results of the assessment show that by 2026, the uptake of BIR in new buildings in the Powys LPA area could equate to ~~24.9~~ 16.5MW, which consists of ~~5.8~~ 11.3MW from renewable heat and ~~6.1~~ 5.2MW from renewable electricity.

Figure 7 and Table 22 summarise this uptake over the key years of 2020 and 2026 for a build out rate of 364 homes per year.

Figure 7: BIR uptake (cumulative) in future new buildings



AECOM Comment:

Whilst based on the same figures, original Figure 7 (above left) has been replaced to be consistent with the format and style of the new Figure 6 (above right).

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AECOM Comment:

Whilst the text correctly steers the reader to view Table 22 for the data that has been used to produce Figure 7, Tables 22 and 23 have swapped places (probably due to formatting) in the document. The actual Table 22 (Table 23 in the current report) is provided below.

Table 23: Total potential BIR uptake (cumulative across the Powys LPA area) **Table 22:** BIR uptake (cumulative) in future new buildings

Building	2015	2020	2026
Heat (MW)			
Residential	3.4	5.8	8.6
Non Residential	1.1	1.8	2.7
<i>Sub-total</i>	<i>4.5</i>	<i>7.6</i>	<i>11.3</i>
Electricity (MW)			
Residential	0.5	1.7	3.4
Non Residential	0.6	1.2	1.8
<i>Sub-total</i>	<i>1.1</i>	<i>2.9</i>	<i>5.2</i>
Total	5.6	10.5	16.5

9.5.2 Overall total for BIR uptake

This study has found that there is the potential to exploit a range of micro-generation technologies across the region. Based on the modelling assumptions used, the economically viable capacity for micro-generation technologies in the Powys LPA area is circa ~~15.8~~ 26.9MWh and ~~6.1~~ 6.2MWh. In most cases the potential is not spatially determined but is instead constrained by the size of the existing and future building stock.

AECOM Comment:

The current Tables 22 and 23 are correctly swapped over to their correct places in the report. Errors are identified in the new Table 23 as follows:

Table 22: BIR uptake (cumulative) in future new buildings **Table 23: Total potential BIR uptake (cumulative across the Powys LPA area)**

Building	2015	2020	2026
Heat (MW)			
Existing building	4.2	9.3	4.5 15.6
Future new building	4.5	7.6	11.3
<i>Sub-total</i>	8.7	16.9	15.8 26.9
Electricity (MW)			
Existing building	0.2	0.6	0.9 1.0
Future new building	1.1	2.9	5.2
<i>Sub-total</i>	1.3	3.5	6.1 6.2
Total	10.0	20.4	21.9 33.1

AECOM Comment:

The errors identified in the correct Table 23: *Total potential BIR uptake (cumulative) across the Powys LPA area* do not impact upon the maps or policies. Sections 9.1 to 9.5 establish the predicted increase in generation from BIR between the years 2015 to 2020 and from 2020 to 2026. It is explained in Section 9.6 that the baseline figures for BIR uptake predicted in the 2012 Powys update had already been exceeded at the time of the REA 2017 revision. A new baseline was therefore created, based on Feed-in-Tariff and Renewable Heat Incentive databases, and the 2012 predictions in uplift in MW added to the new baseline figure.

The Table below shows the new baselines and the MWs to be added, with revised totals.

Building	2015	2020	2026
Heat (MW)			
Existing building	-	5.1	6.3
Future new building	-	3.1	3.7
<i>Sub-total</i>	<i>68.8</i>	<i>77.0</i>	<i>87.0</i>
Electricity (MW)			
Existing building	-	0.4	0.4
Future new building	-	1.8	2.3
<i>Sub-total</i>	<i>10.1</i>	<i>12.3</i>	<i>15.0</i>
Total	78.9	89.3	102.0

For example, for electricity, instead of 1.3MW being the baseline, the reported FiT database figure of 10.1MW is now used. The previously reported increases from the 2012 assessment e.g. 4.9MW of electricity between 2015 and 2026 is then added to the new baseline (becoming 15.0MW).

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9.6 2015 BIR uptake review

Since undertaking this analysis in 2012, data extracted from Ofgem datasets relating to FiT and RHI has revealed uptake predictions to have been conservative. Uptake of renewable electricity up to the end March 2016 has been 10.1MW (compared with 1.3MW predicted for end 2015 *in the 2012 report*) and 68.8MW of renewable heat (compared with 8.7MW predicted *in the 2012 report*).

The full analysis has not been re-run but rather the following method applied. The FiT and RHI figures have been used instead of the 2015 'predicted' figure and then the modelled increases (*the actual increases in MW, not percentages* from the 2012 assessment) added to give a revised 2026 prediction.

AECOM Comment:

The previous cumulative total (Table 24) contained errors which are corrected as follows:

Table 24: 2016 Revision of total potential BIR uptake (cumulative) across the Powys LPA area

Building	2015	2020	2026
Heat [MW]			
Existing building	68.8	73.9	79.1 80.2
Future new building	-	2.4 3.1	3.7 6.8
<i>Sub-total</i>	68.8	76.0 77.0	82.8 87.0
Electricity [MW]			
Existing building	10.1	10.5	10.8 10.9
Future new building	-	1.8	4.1
<i>Sub-total</i>	10.1	12.3	14.9 15.0
Total	78.9	88.3 89.3	97.7 102.0

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10. Summary of Potential Renewable Energy Solutions

Potential uptake from building integrated renewable energy technologies could equate to a further ~~49~~ **18**MWt.

AECOM Comment:

Due to the revisions made to the BIR section, the following amendment is made to Table 25:

Table 25: Potential renewable energy resource in the Powys LPA area in 2026

Resource	Electricity (MWe)	Thermal (MWt)
Biomass (CHP)	39.8	79.6
Biomass Boilers	-	57.6
Energy from Waste with CHP (includes poultry litter)	7.8	15.5
Hydropower	10.3	-
Landfill Gas	-	-
Wind (in in excluding SSAs) [‡]	4.0	-
Solar PV Farms	220.0	-
Other (including sewage gas and AD with CHP)	1.6	2.3
Building Integrated	4.8 4.9	14.0 18.2
Total	288.3 288.4	169.0 173.2

[‡]This figure includes applications consented as of 31/03/2017 within the SSA plus the resource in the wider county.

11. Energy generated from existing renewable sources

The Capacity Factor for Solar PV Farms is added to Table 26

Table 26: Capacity factors for renewable and low and zero carbon technologies

Technology	Capacity Factor ²
Onshore wind	0.27
Biomass (electricity)	0.90
Biomass (heat)	0.50
Hydropower	0.37
Energy from Waste (electricity)	0.90
Energy from Waste (heat)	0.50
Landfill gas	0.60
Sewage gas	0.42
<u>Solar PV Farm</u>	<u>0.10</u>
BIR (electricity)	0.10
BIR (thermal)	0.20

⁶⁶ Capacity factors derived from the Planning for Renewable and Low Carbon Energy - A Toolkit for Planners (2015).

AECOM Comment

As a result of amendment to the BIR section, the following changes have been made to Table 29:

Table 29: Existing and potential renewable electricity generated in the Powys LPA area in 2026

Resource	Electrical Capacity (MWe)	MWh generated
Wind	316.7	749,059
Biomass CHP	42.3	333,493
Energy from Waste with CHP (includes poultry litter)	7.8	61,495
Hydro	19.1	61,907
Landfill Gas	2.1	11,038
Solar PV Farms	220.0	192,720
Other (Fuelled; Sewage Gas; AD with CHP)	2.1	7,726
Building Integrated	14.9 15.0	13,052 13,140
Total	625.0 625.1	1,430,490 1,430,578

AECOM Comment:

The following changes have been made to Table 30:

Table 30: Existing and potential renewable heat generated in the Powys LPA area in 2026

Resource	Thermal Capacity (MWt)	MWh generated
Biomass CHP	85.3	373,614
Biomass Boilers	57.6	252,288
Energy from Waste with CHP (includes poultry litter)	15.4	67,452
AD with CHP	2.5 2.3	10,950 10,074
Building Integrated	82.8 87.0	145,066 152,424
Total	243.6 247.6	849,370 855,852

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AECOM Comment:

Errors in the above tables do not alter the Overall % Contributions set out in the Resource Tables.

However, for accuracy, some amendments to the Resource Tables should be made as follows:

Table 31 Electricity Column 5, Line 9 – BIR Additional Potential Installed Capacity (MW) changes from 4.8 to 4.9. However, this does not impact upon the Contribution as set out in Column 7, Line 9 - Additional Potential Capacity Delivered by 2026, which remains at 1.2MW. This does not impact the overall & contribution.

Table 32 Heat- Column 5, Line 6 – BIR Additional Potential Installed Capacity (MW) changes from 14.0 to 18.2. This does not impact the overall % contribution but **does impact upon the technology contribution** as set out in Column 7, Line 6 - Additional Potential Capacity Delivered by 2026, which changes from 3.5 to 4.5MW.

The revised Tables 31 and 32 are provided overleaf

Table 31: Resource summary table for renewable electricity in 2026

Energy Technology	Capacity Factor Assumed	Existing Installed Capacity (MW)	Existing Energy Generated (MWh)	Additional Potential Installed Capacity (MW)	Additional Potential Energy Generated (MWh)	Additional Potential Capacity Delivered by 2026	Additional Potential Energy Delivered by 2026 (MWh)	Total Installed Capacity in 2026	Total Energy Generated in 2026 (MWh)
Biomass (CHP)	0.90	2.5	19,710	39.8	313,783	-	-	2.5	19,710
Energy from Waste with CHP (includes poultry litter)	0.90	-	-	7.8	61,495	-	-	-	-
Hydropower	0.37	8.8	28,523	10.3	33,384	10.3	33,384	19.1	61,907
Landfill Gas	0.60	2.1	11,038	-	-	-	-	2.1	11,038
Wind Power (existing includes SSAs)	0.27	312.7	739,598	4.0	9,461	4.0	9,461	316.7	749,059
Solar PV Farms	0.10	-	-	220.0	192,720	45.0	39,420	45.0	39,420
Other (fuelled; sewage gas; AD with CHP)	0.42	0.5	1,840	1.6	5,887	1.2	4,415	1.7	6,255
BIR	0.10	10.1	8,848	4.8 4.9	4,205 4,292	1.2	1,051	11.3	9,899
Total	-	336.7	809,557	288.3 289.3	620,935 621,022	61.7	87,731	398.4	897,288
Projected electrical energy demand in 2026									497,000
Percentage electricity demand in 2026 potentially met by renewable energy resource									181%

Table 32: Resource summary table for renewable heat in 2026

Energy Technology	Capacity Factor Assumed	Existing Installed Capacity (MW)	Existing Energy Generated (MWh)	Additional Potential Installed Capacity (MW)	Additional Potential Energy Generated (MWh)	Additional Potential Capacity Delivered by 2026	Additional Potential Energy Delivered by 2026 (MWh)	Total Installed Capacity in 2026 (MW)	Total Energy Generated in 2026 (MWh)
Biomass (CHP)	0.50	5.7	24,966	79.6	348,648	-	-	5.7	24,966
Biomass Boilers	0.50	-	-	57.6	252,288	1.8	7,884	1.8	7,884
Energy from Waste with CHP – includes poultry litter	0.50	-	-	15.4	67,452	-	-	-	-
AD (with CHP)	0.50	-	-	2.3	10,074	1.7	7,446	1.7	7,446
BIR	0.20	68.8	120,538	14.0 18.2	24,528 31,816	3.5 4.5	6,132 7,884	72.3 73.3	126,670 128,422
Total	-	74.5	145,504	168.9 173.1	702,990 710,278	7.0 8.0	21,462 23,214	18.0 82.5	166,966 168,718
Projected thermal energy demand in 2026 (MWh)									1,221,000
Percentage thermal energy demand in 2026 potentially met by renewable energy resource									14%

S. Hartley
Regional Director
AECOM Limited
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