SRAG03/01 – WORK AREA 3 – MODELLING EXPORT SPILL, DECC CONSULTATION RESPONSE AND PV2025

MEETING NAME	SRAG 03

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Purpose of paper	Information
Classification	Public
Summary	At SRAG02 it was agreed to bring Work Area 3 forwards and respond to the DECC consultation on changes to the Feed-in-Tariffs (FiTs) for micro-generation. This paper presents the modelled spill and and the response provided to DECC.

1. Background

1.1 The unmetered Export from micro-generation is having a significant impact on Suppliers' ability to forecast and purchase energy accurately. The 'unmetered' exports re-allocated to Suppliers operating within a Grid Supply Point Group (GSPG) via the GSPG Correction process, potentially causing cross-subsidies. However, it is not clear to whom the spill actually belongs. It could be deemed that it belongs to the provider of the FiTs Payments, which is usually the Import supplier (although on Change of Supplier the original Supplier can be retained as the FiTs payee), or an Export Supplier contracted by the customer.

2. Work Area 3: Impact on Settlement of unmetered export from distributed generation

2.1 Work Area 3 of the Terms of Reference states that 'the SRAG shall estimate the current and forward looking volumes of unmetered Export affecting Settlement calculations. The SRAG will look at actions to mitigate the impacts of Export spill and any issues that should be referred to Ofgem, DECC or other parties as appropriate'.

3. The Export Spill Model

3.1 ELEXON has built a simple model to estimate the level of Export spill onto the Distribution Networks:

- It uses the Ofgem FiT register data from June 2015;
- It models Photo-Voltaic (PV) spill where Export is expressed as deemed in the FiT register; and
- The PV export profile shape is derived from British Electrotechnical and Allied Manufacturers' Association (BEAMA) trial data from 2007/08.

Model Assumptions

i) The short code[1] in the Fit Register is accurate;

ii) That PV systems will generate 858 kWh per unit of capacity[2]; That export spill will be a factor of between 0.4 and 0.6 of generation;

[1] *The Short Code defines the Distribution Network Operator (note that Independent Network Operators (IDNOs) can operate in several GSPGs)*
[2] See: http://www.solsticeenergy.co.uk/photovoltaics.htm

iii) That the PV export profile will approximate to maximum monthly spill shape regardless of monthly day-type (it has not been calendar matched).

3.2 The model (with instructions) can be found in Attachment A to this paper. It should be noted the model does not look at the impact on Group Correction Factors (GCFs) caused by on-site consumption of generation and profiling, which may be of a similar order.

4. Results for PV Export Spill in 2015

4.1 The model provides the following results for the un-profiled PV Export Spill in Giga Watt hours (GWh):

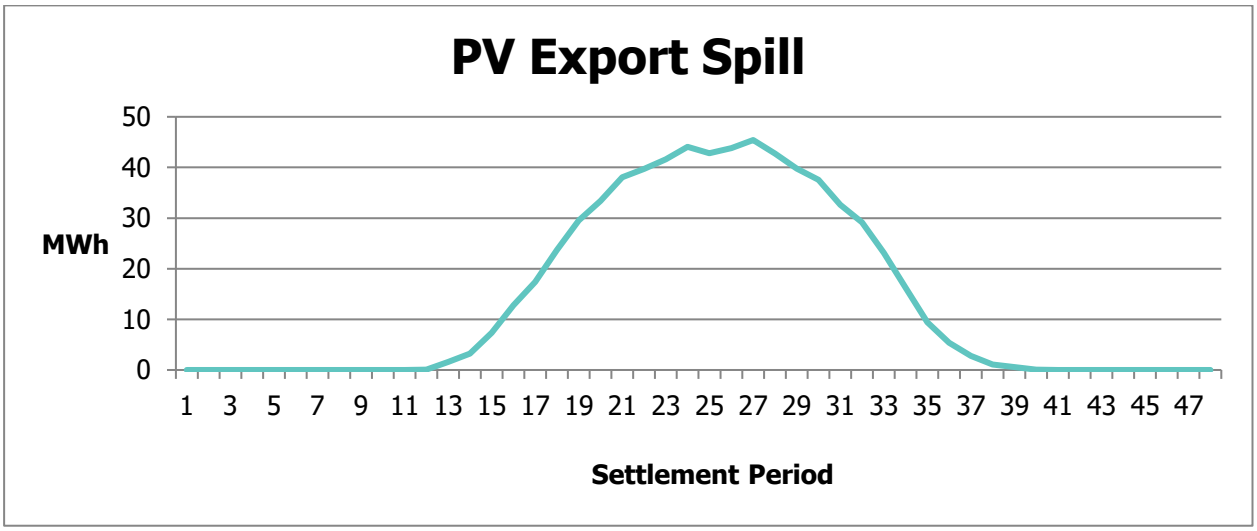
	GSP Group	spill at 0.5 export factor	0.4	0.6
Eastern England	**_A**	111.8	89.4	134.1
East Midlands	**_B**	102.3	81.9	122.8
London	**_C**	10.4	8.3	12.5
Merseyside and Northern Wales	**_D**	41.2	33.0	49.5
West Midlands	**_E**	72.1	57.7	86.5
North Eastern England	**_F**	54.8	43.8	65.8
North Western England	**_G**	58.8	47.1	70.6
Northern Scotland	**_P**	24.1	19.3	28.9
Southern Scotland	**_N**	35.6	28.4	42.7
South Eastern England	**_J**	52.2	41.7	62.6
Southern England	**_H**	90.0	72.0	108.0
Southern Wales	**_K**	38.0	30.4	45.6
South Western England	**_L**	88.3	70.7	106.0
Yorkshire	**_M**	76.6	61.3	92.0

Embedded	**undefined**	5.2	4.1	6.2
	Total Export Spill (GWh)	849.1	689.1	1,033.7

4.2 The Model suggests that currently PV Export Spill is between 0.7 to 1 TWh annually.

5. Modelled monthly maximum export spill

5.1 The model also allows you to look at the maximum potential monthly Export spill[3] at different Export Factors (0.4, 0.5 or 0.6 i.e 40-60% of deemed generation). This allows a view of the impacts within Settlement Period. So for the South West (GSP_L) in June the model gives peak spill estimates of over 40 MWh:



6. Forward looking estimates

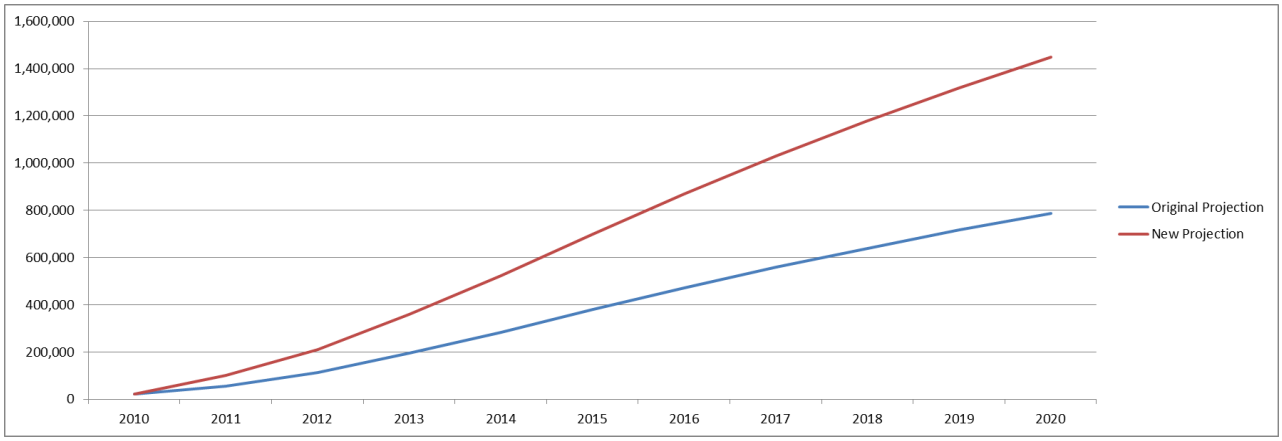
6.1 The previous model provided a revised potential projection of the future uptake of micro-generation installations:

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Original Projection	20,308	54,833	113,533	194,240	282,860	379,949	471,822	558,394	639,511	715,841	786,582
New Projection	20,308	101,047	209,220	357,947	521,257	700,173	869,477	1,029,013	1,178,496	1,319,157	1,449,519

6.2 The model built in 2013 suggested that in 2015 the number of installations would be circa 700K. The modelled count of deemed PV export was 600K installations based on the FiTs data which is closer to the newer projection that ELEXON estimated for the Profiling and Settlement Review Group (PSRG) (n.b. the

[3] *This has been calculated by profiling the total spill per GSPG*

700K figure includes other type of micro-generation and metered sites). It is likely that the true future estimate will fall somewhere between the two lines on the following graph:



6.3 If it's believed that the projection in the table still holds true then you can calculate a forward looking estimate by dividing by estimated spill 600K and multiplying by the number of installations in the table for the year you require (or in ratio to the change if you want to model by GSP Group). However, the recent changes announced by DECC on the reduction in the FiTs subsidies suggest that this would be a worst case scenario.

7. DECC Consultation response

7.1 ELEXON have used the information in the model in our response to the DECC Consultation. The response can be found in Attachment B.

8. PV2025

8.1 ELEXON has been partnering the PV2025 project (see link for project details) that is looking at areas related to PV installations. We attended a recent project meeting at Loughborough University which discussed some of the findings below. Although some presentations were not pertinent to this issue, some useful information was presented. For example the project has estimated that:

- Generation is at <5% for 1/3 of the year;
- It can be at 80% at the 200 peak hours from April to July;
- The peak generation occurs at 14:00 hrs; and
- In some areas >100% of load is met by PV generation.

8.2 Further detail can be found in the slides in Attachment C which was presented by Imperial College London. The presenter is currently working with DECC in this area.

9. SRAG view

9.1 We invite the SRAG to consider the impact of Export spill estimated in the model and note the response to the DECC Consultation in Attachment B. Furthermore you are invited to identify the next steps required for Work Area 3.

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10. Recommendations

10.1 We invite you to:

a) **NOTE** that the model estimates that potentially over 1 TWh of PV export is being spilt onto the Distribution Networks; and

b) **AGREE** if any further work be undertaken for Work Area 3.

Attachments

Attachment A – PV_2015_Model1

Attachment B – DECC Response

Attachment C – Imperial College presentation

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