Response Energy Payment



BSSG 5th June 2013 - Andy Walden, National Grid

Response Energy Payment

- Current CUSC provision
 - Low Frequency energy delivered (MWhr) x Market Index Price x 1.25 – paid by National Grid to generator
 - High Frequency energy reduction (MWhr) x Market Index Price x 0.75 – paid by generator to National Grid
- Over time Response Energy volume tends towards zero, however each individual settlement period will likely have a +ve or -ve energy volume
- Designed to reflect fuel cost incurred or saved in relation to response energy – does not work for renewable generation.

Response Energy Payment

- Option 1 Short term No Change to REP, Generator mitigates exposure to REP by factoring into holding Prices.
- Option 2
 - Low Frequency energy delivered (MWhr) x Market Index Price x 0.75 – paid by generator to National Grid
 - High Frequency energy reduction (MWhr) x Market Index Price x 1.25 – paid by National Grid to generator
- Not reflective of true costs of renewables response energy as this is linked to ROC payments

Response Energy Payment

Option 3

- Low Frequency energy delivered (MWhr) x ROC (relevant to generation type) paid by generator to National Grid
- High Frequency energy reduction (MWhr) x ROC (relevant to generator type) – paid by National Grid to generator
- Only works for non-fuel based renewable generation.
- Combination of existing REP and Option 2 or Option 3 for fuel based renewables.



Response Energy Payment

Worked Examples

Response Energy Payment

- The following assumptions have been applied to all the following worked examples.
 - Frequency Response capability of 10MW for 0.5Hz frequency deviation
 - Frequency Deviations of +0.05Hz and -0.05Hz average over ½hr settlement period = response energy volume of 1MW for ½hr = 0.5MWhr
 - Market Index price of £100/MWhr
 - ROC price of £45/MWhr
 - Normal holding prices have been ignored as constant for all examples.

For Option 1 - Holding price adjustments are ± 27.20 /MWhr for High Response capability as per the pricing guidance and ± 20 /MWhr for Primary and Secondary Response capability.

Holding prices are paid for Primary, Secondary and High capability for the duration that the Generator is instructed to provide response irrespective of the actual frequency deviation or volume of energy delivered.

Response Energy Payment

Option 1

Low Frequency -0.1Hz average

REP to Generator = 0.5MW x £100/MWhr x 1.25 =£62.50 Additional ROC payment = 0.5MW x £45/MWhr = £22.50 Income from holding price adjust. = 10MW x 7.20/MWhr x 0.5 =£36.00 Net income to Generator = £121.00

High Frequency +0.1Hz average REP from Generator = 0.5MW x £100/MWhr x 0.75 = £37.50Reduced ROC payment = 1MW x £45/MWhr = £22.50 Total Cost to Generator = £60 Income from holding price adjust. = 10MW x 7.20/MWhr x 0.5 = £36.00Net cost to Generator = £24.00

Response Energy Payment

Option 2

Low Frequency -0.1Hz average

REP from Generator = 0.5MW x £100/MWhr x 0.75 = £37.50Additional ROC payment = 0.5MW x £45/MWhr = £22.50 Net cost to Generator = £15.00

High Frequency +0.1Hz average REP to Generator = 0.5MW x £100/MWhr x 1.25 = £62.50 Reduced ROC payment = 1MW x £45/MWhr = £22.50 Net income to Generator = £40.00

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Option 3

Low Frequency -0.1Hz average

REP from Generator = 0.5MW x £45/MWhr = £22.50 Additional ROC payment = 0.5MW x £45/MWhr = £22.50 Net cost/income to Generator = £0.00

<u>High Frequency +0.1Hz average</u> REP to Generator = 0.5MW x £45/MWhr = £22.50 Reduced ROC payment = 1MW x £45/MWhr = £22.50 Net income/cost to Generator = £0.00