P270 IWA Attachment B: Illustrative Example

In order to illustrate the effect of the P270 solution and how it would work at a high level, this section sets out an example of a simple arrangement of an offshore generator connected to the Transmission System via a Distribution System, and compares the outcomes under different circumstances. The example is considered under:

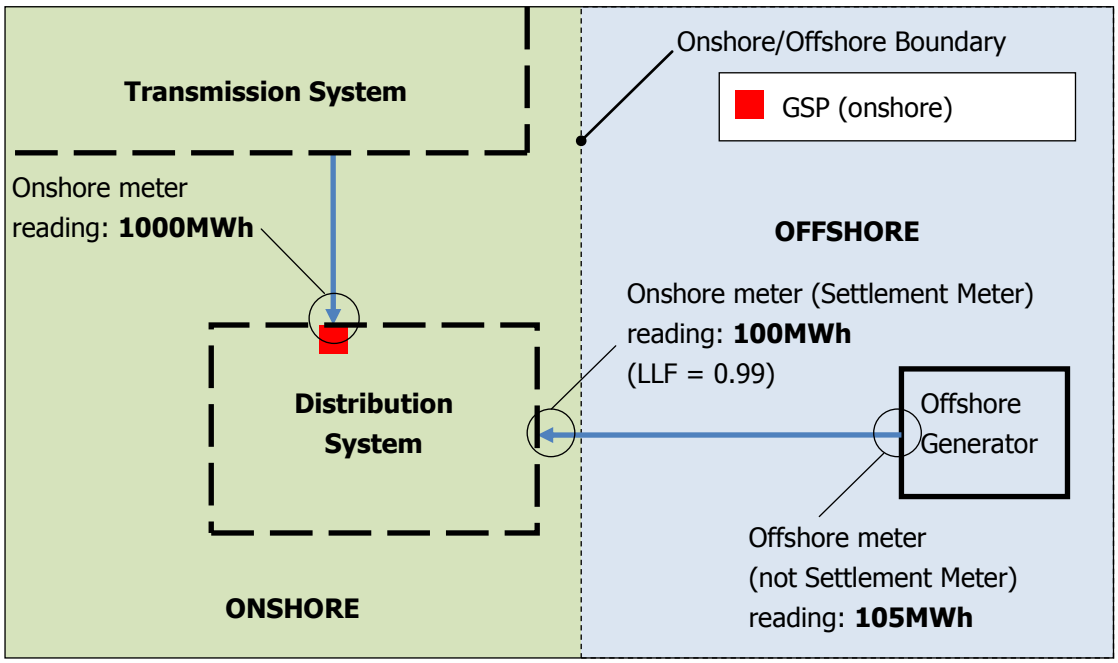
- The current baseline arrangements;
- The situation prior to introduction of the OFTO arrangements; and
- The P270 arrangements.

Note that this is a simplified example and the volumes of energy and other quantities are not intended to be realistic or representative of the actual materiality of the issue. The arrangement is also simple, and for instance does not represent the particular issue identified by the Proposer of several offshore generators whose LLFs are (or were previously) determined on an interconnected basis. Furthermore, the example shows the situation with an LLF of less than one applied, whereas application of LLFs greater than one is possible and would affect the practical implications for the relevant participants.

This example is therefore intended only to demonstrate that the OFTO arrangements and the assignment, or not, of LLFs to GSPs whose connection to the Transmission is relatively remote (e.g. an Offshore Transmission Connection Point) can marginally affect overall Transmission Losses and more materially impact GSP Group take (and other sites' LLFs).

Pre-OFTO Arrangements

Prior to the introduction of the OFTO arrangements, the offshore/onshore connection in the example is the responsibility of the offshore generator, and the Settlement Metering was located onshore. For Settlement purposes, the generators output was its net output (output at the offshore platform minus losses over the offshore/onshore connection) multiplied by the LLF determined by the Distribution System Operator. In this example the LLF is less than one, meaning the generator causes losses on the Distribution System, so its output is scaled down to take this into account.

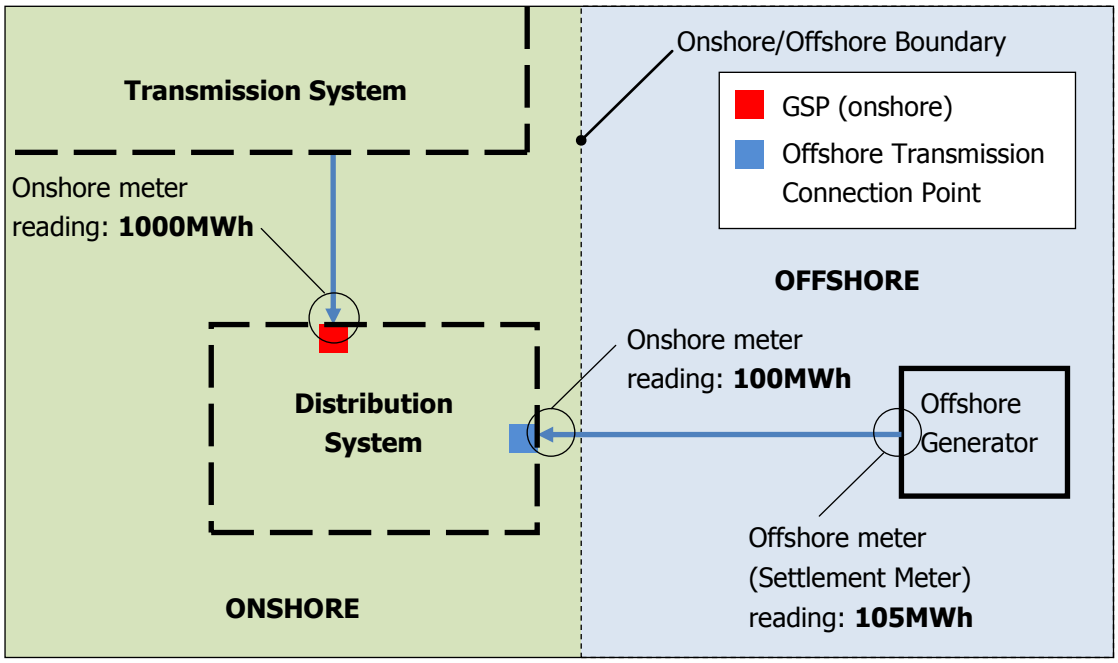


No losses are contributed to Transmission Losses. In physical energy terms, the Distribution System receives 1100 MWh, made up of 1000 MWh from the Transmission system via a normal onshore GSP and 100 MWh from the offshore generator. However, the generator's energy is subject to its assigned LLF, in this case 0.99. The GSP Group take is therefore 1099 MWh.

Current Arrangements

The current baseline includes the OFTO arrangements (though they are not yet applied in all relevant situations) which means that the connection between the offshore generator and the onshore Distribution System is part of the Offshore Transmission System and as such is the responsibility of National Grid (as NETSO). The point where the Offshore Transmission System connects to the Distribution System is Offshore Transmission Connection Point, which is a GSP and therefore not given an LLF.

The Settlement Meter for the offshore generator is located at the offshore platform (unless a dispensation is in place enabling it to be located elsewhere) and the generator's full output at that point is assigned to it for the purposes of Settlement.



The energy lost between the offshore generator and the onshore meter at the Offshore Transmission Connection Point contributes to the national total Transmission Losses (as with losses on any other part of the Transmission System). The onshore reading at the Offshore Transmission Connection Point is not adjusted by the application of an LLF.

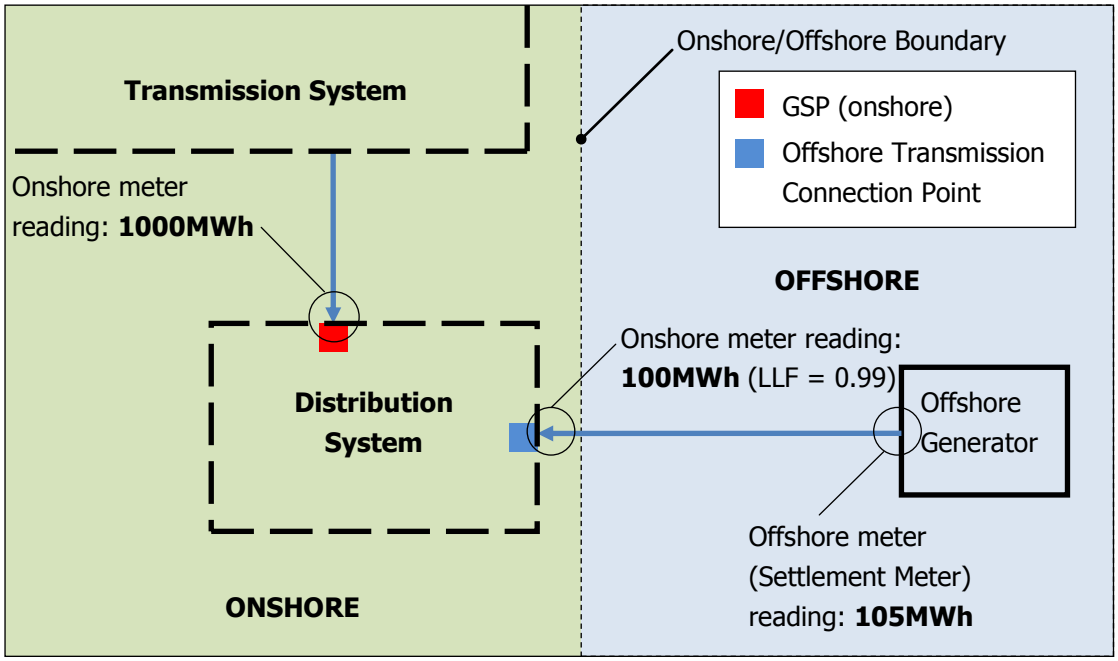
Physically, the Distribution System still receives 1100 MWh, made up of 1000 MWh from the Transmission system via a normal onshore GSP and 100 MWh from the Offshore Transmission Connection Point. Neither is subject to loss adjustment by an LLF, so the GSP Group take is 1100 MWh.

P270 Solution

Under P270 an LLF would be assigned to the Offshore Transmission Connection Point. Since it is based on the same network characteristic and losses it would be the same as that applied to the offshore generator's delivered volumes under the pre-OFTO arrangements, i.e. 0.99.

P270 would include in the total Transmission Losses the increase (in this example) of Distribution Losses caused by the energy flowing onto the Distribution System from the OFTO network. Because the energy metered onshore is adjusted down by the LLF of 0.99 the calculated Transmission Losses across the onshore/offshore connection is increased compared with that under the baseline (from 105 – 100 = 5MWh to 105 – 99 = 6MWh).

The status of the offshore generator is not affected at all. Its metered volume remains the same as under the current baseline, and it would not be allocated any distribution losses. Its treatment remains equivalent to that of other directly connected generators.



The only effect which would in any way impact the generator is that (like all BM Units) their TLM values would change slightly due to the very small difference in the national total of Transmission Losses (in this example the additional 1MWh).

Comparison

The effects described above are tabulated below. It can be seen that across the three scenarios the energy physically delivered to the Distribution System does not change.

Example parameters under various arrangements			
	Pre-OFTO	**Baseline[1]**	**P270 Proposed**
Import from Transmission System	1000 MWh	1000 MWh	1000 MWh
Import from offshore generator	100 MWh	100 MWh	100 MWh
Total energy delivered to Distribution System	1100 MWh	1100 MWh	1100 MWh
LLF applied to offshore/onshore connection	0.99	Zero	0.99
OFTO system contribution to Transmission Losses	Zero	5 MWh	6 MWh
Generator's Settlement Meter reading	99 MWh	105 MWh	105 MWh
GSP Group Take	1099 MWh[2]	1100 MWh	1099 MWh

The transition to the baseline, with the OFTO arrangements, means the generator is not subject to the losses over the onshore/offshore connection, with is part of the Transmission System, and its metered volume for Settlement is increased accordingly.

However, it is also apparent that the introduction of the OFTO arrangements into the baseline affects the GSP Group Take. In this example this would have a diluted affect on all sites in the Distribution System, but in different circumstances this could be focused on a few particular sites, via their assigned LLFs.

Under the P270 Proposed solution the offshore generator's metered volume remains the same as under the baseline but the GSP Group Take is restored to its previous value by the application of an LLF to the onshore/offshore connection. The contribution of the OFTO system to Transmission Losses is conversely affected, in this example increasing.

The Proposer believes that these effects are justified by the characteristics of the network arrangements and reflect a cost reflective allocation of energy volumes to the participants involved.

[1] Baseline is post-OFTO and pre-P270.
[2] Assuming (for the purposes of this example) that the Generator is CVA-registered.