FEEDBACK REPORT

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QUALITY CONTROL		
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1. Expert Meeting 27.11.2014

TenneT addressed this as an need to know requirement for the design process. Parties recognized this and would address this in a separate consultation with the Ministry of Economic Affairs.

2. Expert Meeting 29.01.2015

TenneT will inform the OWF of the increased loading possibilities of the export cable, which can be used in the business case by the OWF. Also the capacity of the array cabling was mentioned as point of attention.

3. Expert Meeting 18.03.2015

N.A.

4. Expert Meeting 15&16.04.2015

Summary of concerns based on feedback during the Expert Meeting

- Specifications on wind regime, cable and cable route are needed for project developer in order to make their own calculations. After that the developers will have to evaluate the financials and risk level.
- The wording of this topic should not be overplanting but dynamic loading.
- If reactive power takes precedence to active power this should be quantified.

Feedback from the meeting attendees

Is it possible to share the assumptions for the calculations made by TenneT? For instance wind data used. We would like to compare notes and get more insight on the wind climate data and cable specifications in order to execute our own calculations.

In Zeeland there are special clay layers; clay around cable can dry up and increase thermal resistance enormously – keep into account thermal resistance.

Incorporate overplanting would depend on design of platform. Design of platform would depend on wishes of Developer. EZ gave number 5-10%. TenneT sees this is technically possible. Does this provide information on making the choice to add overplanting?

We have to be able to evaluate the economic value and risk.

This all depends on the tenders we receive- prices of wind turbines and foundation and the expected outcome in yield. We always consider overplanting but in the end this is a commercial decision.

We need to make our own model and need input on export capacity and the likelihood that we will be asked to restrict production. Additionally we would need the cable specs and cable route.

Is the additional overplanting fixed per platform or per windfarm? If this is spread between two windfarms and 10% is spread over 700MW this could be interesting.

Could you explain what is common practise amongst developers?
Often the development of a wind turbine continues after buying the wind turbine and therefore results in additional yield. From our current experience an additional 5-10% additional yield is realistic.

The wording of this topic is incorrect. This is not overplanting but more dynamic loading.

5. TenneT stakeholder consultation website March

(…)

6. TenneT stakeholder consultation website April

Export cables are the limiting factor, where the design will be based on 700MW continues power per platform.10% additional active power might be possible in an optimized cable system, but not guarantied. TenneT needs to provide parameters and calculation used to define the "optimized design". 10% additional power should be possible to give the developers the possibility to optimize the operation.

Please submit the specs of the 220 kV cables that will be used.
Thermal resistance of the soil could be higher on some cable routes which are presented in the NRD – MER procedure, because of the presence of so-called ''Boomse klei''. If so, the overplanting capacity could be lower. Please check.

It has become clear that TenneT are not actually talking about overplanting, but rather the fact that TenneT design their cable for 350MW continuous rating and 380MW dynamic rating. Overplanting is a wrong word as this normally would mean a permanent curtailment to 350MW.

We agree with the principle of exploiting the dynamic rating of the export cable and we believe there is a practice for doing this in the industry as well as a Cigré recommendation on the topic.

For information, in the Danish projects the TSO use dynamic rating in their design of the export cables as well, however, they actually take the risk and guarantee the power transfer capability.

With the current set-up TenneT should make their assessment of the dynamic rating available to the bidders,

so that each can make his own assessment of curtailment risk.

We appreciate that operational limits of sea and land cables will be monitored continuously by temperature sensing systems.

The calculation is made assuming the wind farm operates close to unity power factor, tan-phi max. 0.1. From the preliminary RfG circulated by TenneT generators are required to be able to operate at tan-phi from -0.4 to +0.35. This would add +7% to the max. current in POC. Assuming that this capacity should be transferred through the export system this would increase the current. We understand that this inherently confirms that full high reactive capability will only be exploited during contingencies and seldom during normal operation.

Please clarify how reactive response would be prioritized if the dynamic rating is exploited fully.
If reactive power takes precedence to active power this should be quantified.

7. TenneT stakeholder consultation website June

The choices of windfarm B connected to the OSS should not influence the risks or financials of Windfarm A and vice versa. Therefore, at the time of the bid it should be clear that in case of cable failure 50% of this cable capacity should be available for both wind farms (350/2).

Guaranteed transportation capacity for 350 MW is available; above that capacity transportation capacity depends on the behaviour of the export cable. This means that, when exceeding the 350MW,
TenneT will have to give a certain set point for maximum output. WFO will have to take this into account in the WF design.
OWF: That shouldn't be a problem. This limit can be entered in the SCADA system as being maximum production.

In case of default of one of the export cables, two WF will have to curtail and transport over one export cable. This will also be done by means of set points and shouldn't be a problem. SCADA system can be set to a maximum output. In line of this we do have to make an agreement with regards to the communication with the SCADA system.
OWF: This is also not a problem, refer to previous point. Agreements should be made with respect to communication on adapting the set points.

8. Bi-lateral meetings

We (OWF) understand that further work is required to determine if overplant is an option, both from a regulatory and design perspective. We (OWF) look forward to engaging with this further work.

9. Other

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