Joint Industry Response to AEMO's Third ECM Consultation on Estimated Power

The following is a joint submission from the following list of contributors. It is largely based on discussions held in a meeting with industry representatives that include wind and solar farm (**Plant**) Operators and Original Equipment Manufacturers (**OEM**). The meeting was held on 13 Oct 2016.

Contributors

Operators:	Pacific Hydro, AGL, Infigen, Woolnorth, Tilt Renewables, Acciona
OEMs:	Suzlon, Vestas, Siemens, Goldwind, Senvion, GE, FirstSolar
Third party providers:	Hardsoftware, Ingeteam
Industry Association	Clean Energy Council
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Summary

1. All the Operators support the option of sending a new SCADA signal to AEMO that will provide "*an estimated active power output of the Plant at the connection point at the end of a 5-minute dispatch interval*" (**EP**)[1].
2. Majority of the OEMs are of the view that it is possible to provide EP.
3. OEMs' main concern centers on the degree of accuracy of EP and the allocation of risks associated with this estimate.
4. This discussion is considered as preliminary, more details on how EP can be and should be calculated will need to be explored, discussed and clarified further between the OEMs and the Operators.
5. Some OEMs suggest that it could be feasible to use the current capability of the Plants (with or without modifications) to provide EP depending on what an "acceptable" estimate is.
6. There is a general understanding that the provision of EP should be optional to give the Operators and OEMs some time to work through the details and arrangements.

Details of Discussions

1. It was noted that AEMO was keen for the industry to provide further guidance on the definition of EP as part of its deliberation on the inclusion of a new optional signal in the current Energy Conversion Model (**ECM**) consultation.
2. Operators expressed their support for the inclusion of EP in the ECM as follows:
    a. Improvements in the setting of dispatch targets will minimise their exposure to trading losses due to causer pay factor contributions, scheduling errors, avoided lost production and renewable energy certificates (RECs);
    b. Maturing of wind farm technology and operation offers the opportunity to operate the Plants closer to the mode of other types of generation technology;
    c. Provides an opportunity for Plants to participate in the provision of FCAS in the future;
    d. Offers a starting point for on-going improvement in the method of estimates over time as more and more Plants gain experience and feedback from the initial trials; and

[1] The purpose of this generic definition is to broaden the discussions with the aim of providing feedback to AEMO on issues that may impact on the definition of EP. It is consistent with AEMO's proposed definition in the consultation paper including the exclusion of limits imposed by networks and AEMO dispatch process.

e. Optional approach would allow operators/OEMs to choose when they are ready to commence pre-production trial period with AEMO to compare relative accuracies and establish suitable commercial arrangements for providing the new SCADA signal.

3. Some OEMs were generally comfortable with the idea of providing EP. However, they understandably expressed various concerns and sought clarifications, further considerations and consultations, which will take time.
4. Issues and questions raised and discussed by OEMs, Operators and industry representatives include:
    a. What would be the extent of variables or factors to be included in the estimates that could impact on the accuracy of EP? That is, "how far do we go"? An example would be whether the estimates would include the forecast of wind conditions, which would significantly increase the risk and complexity in providing such a calculation. One possible way of providing clarity and consistency, as an OEM suggested, is to confine the boundary of variables for EP to "operational look-ahead' of the wind turbines, taking account of the present and foreseeable changes in the operational states of the wind turbines.

        [Operators expressed the views that the initial stage of providing EP should be based on pragmatic considerations of what the current Plants capability could achieve and if it provides better estimates than those currently provided by AWEFS/ASEFS. Operators consider an effective approach to EP would be to start by focussing on variables that are within the control of the plant operation and control system. The Operators expect AEMO to provide a period of trial and investigations to validate the relative accuracies of the estimates before proceeding to dispatch production.]

    b. Some OEMs indicate that currently the Plants are able to take into account some variables that can have significant impact on the EP including individual turbine status that are aggregated at the connection point as instantaneous power[2]. One OEM suggests that instantaneous power would be pretty close to EP. However, the OEMs pointed out that this estimate does not specifically take into account possible changes to the conditions of the related variables over the following few minutes within the next 5-minute dispatch interval. Additionally, the OEMs also noted that the current estimate does not include other known factors that could have impact on the accuracy of the estimate, including externalities beyond the Plant operation and control system[3].

        [Operators expressed the views that the existing instantaneous power could be a proxy to EP as a start and may reasonably cover the necessary operating conditions at the Plants. Operators are cognisant of the fact that the refinement to include other possible factors and changes over the next few minutes could further improve accuracy. The Operators acknowledge that it would take some time to determine which of these possible refinements, if any, may be necessary to achieve an acceptable accuracy for the EP[4]. The Operators consider that for some Plants, some of the current estimates are

[2] This is variously termed "possible power", "expected power", "available power" and "capable power" by different OEMs which include turbines generating, turbines paused, may include high wind speed cut out, known delays, brake program, auto-reset, start up times etc.

[3] Factors like windfarm noise restrictions, wind sector management, wind turbulence are not included in current instantaneous power estimates

[4] It is highly improbable that some externalities should be included in EP like the prediction of wind speed and wind direction conditions.

more than likely to provide greater granularities in local variables than AWEFS, and hence potentially more accurate estimates.]

c. Some OEMs query if AWEFS/ASEFS (**EFS**) should be the tool to cover the EP and if an alternative would be for the Plants to provide all the required SCADA signals for AWEFS to process.

   [Operators expressed the views that AEMO is actively working on improving the accuracy of the current EFS including local limit, highly quality wind data and contemplating high wind cut out of turbines. Operators indicate that AEMO is required under the Rules to provide EFS as the forecasting tool and will continue to do so going forward. Operators consider that it is appropriate for EFS to provide longer time horizon forecast like MTPASA and STPASA. Operators consider that it is impractical for EFS to be the tool for a 5 minutes dispatch-able estimate without major changes, and that it would be better done at the Plant level. It would be too onerous and SCADA intensive for EFS to process and cover current and possible future variables. In addition, other scheduled generators are already providing similar "availability" estimates directly to AEMO in the dispatch time frame.

d. Some OEMs are concerned about how the risk associated with providing EP would be allocated. A related query is how the required accuracy of the EP may potentially be regulated. As suggested by an OEM, in a long run, a globally consistent standard could possibility developed by the International Electrotechnical Commission (IEC).

   [Operators expressed the view that generally, the registered market participants would be responsible to AEMO and the Australian Energy Regulator (AER) on providing the EP to the market system and taking on the consequential risk associated with the provision of such market data. Operators indicated that this is no different from current arrangements between AEMO, OEMs and Operators in providing a range of Plant data. Operators indicated that each Operator would have different commercial drivers in deciding to provide EP. Operators consider that each Operator would have discussion down the track with OEMs on possible impact of providing EP SCADA signal through contractual negotiations.

e. Some OEMs indicated that EP is not a feature that is already available in other countries although some are moving towards shorter time forecast in Europe. As subsidiaries in Australia, some of the OEMs indicated that they will need to involve their parent companies overseas on whether and how a EP can be provided.

   [Operators expressed their view that they appreciate that not every OEM has, or will have, the capability of providing EP. Operators indicated that the lack of a robust EP is however materially impacting on the operation and commercial outcome for Operators, which is exacerbated and amplified by significant and increasing penetration of asynchronous Plants in the National Electricity Market. Operators suggested that the provision of EP would need to start somewhere, and as an optional signal, would allow AEMO and Operators to work with some OEMs who are able or willing to provide the signal.]

Contact for this joint industry submission

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