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Patrick Walsh
Utilities Commissioner
Utilities Commission
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Dear Dr Walsh

RE: System Controller comment on Generation License Application – Airport Development Group Pty Ltd

This submission by Power and Water Corporation (PWC) relates to the Generation License Application (GLA) made by Airport Development Group Pty Ltd (Airports) on 28 November 2017 and is pursuant to PWC's role as the System Controller and Market Operator under the Electricity Reform Act.

The GLA by Airports specifies a generating facility in the Darwin-Katherine Power System comprising of a 40MW AC solar photovoltaic (PV) connected to either 66/11kV Casuarina or 66/11kV Berrimah Zone Substations, a 4MW AC solar PV and a 1.5MW AC Solar PV connected to existing metering points, and an approximate rooftop PV contribution of 7 MW. The GLA by Airports further specifies a generating facility in the Alice Springs Power System comprising of a 10MW AC solar photovoltaic (PV) connected to the 22kV Sadadeen - Brewer Tie Lines, and a generating facility in the Tennant Creek Power System comprising of a 5MW AC solar photovoltaic (PV) connected to the 22kV distribution network. The GLA by Airports does not specify any equipment or infrastructure for the management of intermittent power output by the PV generating facility.

PWC System Control (PWC SC) commenced discussions with Airports in late 2017. These discussions with Airports touched on the system security requirements set out in the System Control Technical Code (SCTC) and the particular characteristics only related to the proposed Darwin Airports generation facility.

System Security and Reliability

Studies into the operation of largescale (10MW+) PV installations in the Darwin-Katherine Power System have indicated frequency standards will likely be breached unless mitigation measures are applied (e.g. Ramp rates, Battery storage, output constraints). The proposed 50MW+ located at the Darwin Airport site would be certain to require mitigation measures to be applied if the proposed developments can be expected to be dispatch to their capability.

No such studies have yet been undertaken for the Alice Springs or Tennant Creek Power Systems. It is the view of System Control that PV installations of the capacity that is proposed in the GLA will require significant mitigation measures to enable dispatch.

PWC SC has an obligation to maintain system security and system reliability as laid out under the SCTC. As indicated above the proposed installations based on the information visible in the GLA would be significantly curtailed to ensure requirements for security and reliability are maintained. This would form a significant part of the preliminary connection assessment when that part of the process is undertaken, either to clarify the level of curtailment required or what engineering solution is technically sufficient.

The SCTC and the Network Technical Code (NTC) primarily relate to the management of dispatchable synchronous generation and are outdated in terms of the rules required to ensure system security and reliability for a context that includes higher levels of intermittent renewable energy generation. Aspects proposed for enhancement include:

Generator Performance Standards

Generator Performance Standards (GPS), akin to those incorporated in the National Electricity Rules but appropriate to NT context, are to be established to support system security and reliability in an environment where there is a mix of synchronous/non-synchronous and dispatchable/intermittent generation.

A draft of the GPS is attached as Attachment A to provide Airports and other stakeholders a framework of the type of technical requirements proposed for inclusion in the GPS. It is proposed the GPS will be issued for industry consultation in early-2018 prior to the GPS being issued as finalised in mid-2018.

The GPS will be incorporated into a regulatory instrument, yet to be determined. Once finalised, the updated regulatory instrument with the GPS will take precedence over relevant provisions in the existing Codes. It is proposed that these GPS will apply to all new synchronous/non-synchronous and dispatchable/intermittent generators on a technology-neutral basis.

Ancillary Service Requirements

In accordance with Section 5 of the SCTC, PWC SC has responsibility for determining the technical requirements for ancillary services and developing a regulatory mechanism for procurement and responsibility for ancillary services.

The current Secure System Guidelines (available on the PWC website) set out the ancillary service requirements for the status quo system and generation mix. These existing technical requirements will largely underpin the arrangements for procurement of ancillary services.

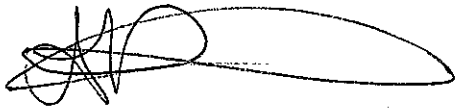
However, the proposed increase in non-synchronous generation contribution to energy supply will result in some changes to the Ancillary Service technical parameters and, for example, involve an increase in the Regulating Frequency Control Ancillary Service requirement and possible modifications of Inertia-Frequency Ancillary Services and introduction of Fast Frequency Raise for the Darwin-Katherine System.

PWC SC will consult with system participants and the Utilities Commission on the further development of the regulatory mechanism for procurement of ancillary services in 2018 and updates to the technical requirements.

It would be appreciated if you could give this comment on the Airport Development Group Pty Ltd Generator License Application your consideration.

Please don't hesitate to contact me on (08) 8924 6516 if you would like to discuss.

Yours sincerely



Amelia Farmilo
A/ General Manager System Control

02 February 2018

ATTACHED:
ATTACHMENT A –Draft Generator Performance Standards (v0.7)