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Patrick Walsh
Utilities Commissioner
Utilities Commission
GPO BOX 915
DARWIN NT 0801

Dear Dr Walsh

RE: System Controller comment on Generation License Application – Batchelor Solar Farm

This submission by Power and Water Corporation (PWC) relates to the Generation License Application (GLA) made by Batchelor Solar Farm Pty Ltd on 5 May 2018 and is pursuant to PWC's role as the System Controller and Market Operator under the Electricity Reform Act.

The GLA by Batchelor Solar Farm specifies a generating facility in the Darwin-Katherine Power System comprising of one 10MW AC solar photovoltaic (PV) system connected to Batchelor 132/22kV Zone Substation. The GLA by Batchelor Solar Farm 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 Batchelor Solar Farm in mid-2017. These discussions touched on the system security requirements set out in the System Control Technical Code (SCTC) and the particular characteristics only related to the proposed Batchelor Solar Farm generation facilities.

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 10MW site located at Bachelor Zone Substation would be certain to require mitigation measures to be applied if the proposed developments can be expected to be dispatch to their capability.

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and the Network Technical Code (NTC) primarily relate to the management of dispatchable synchronous generation and are outdated in terms of the rules required to ensure system security and reliability for a context that includes higher levels of intermittent renewable energy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

System Control has submitted drafts of the GPS to license applications in December 2017, February 2018 and April 2018. The draft of the GPS attached as Attachment A is the same as provided in April 2018 with an update on the preamble to relate to attachment B, which provides further information on one of the requirements set out in the GPS including how a proponent may meet these requirements. It is proposed the GPS will be issued for industry consultation in the next few months prior to the GPS being issued as finalised near the end of the 2018 calendar year.

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 and existing 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.

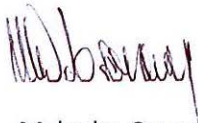
PWC SC will consult with system participants and the Utilities Commission on the further development of the regulatory mechanism for procurement of ancillary services in 2018 and updates to the technical requirements.

It would be appreciated if you could give this comment on the Batchelor Solar Farm Pty Ltd Generator License Application your consideration.

System Control would like to thank the Utilities Commission for the granting of an extension of one week to finish the preparation of additional documents (attachments B and C). Attachment B provides further information regarding the requirements set out in section 23 of the draft Generator Performance Standards (Inertia and fast contingency FCAS raise). Attachment C provides information regarding the generation constraint for C-FCAS services on the load flow over the 132kV transmission line from Channel Island to Katherine.

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

Yours sincerely



Malcolm Conway

General Manager System Control

13 July 2018

ATTACHED:

ATTACHMENT A – Draft Generator Performance Standards (v0.8)

ATTACHMENT B – C-FCAS Fast, Slow and Delayed Raise/Lower services

ATTACHMENT C – 132kV Channel Island to Katherine Line Constraint