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Patrick Walsh
Utilities Commissioner
Utilities Commission
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Dear Dr Walsh

RE: System Controller comment on Application for License Exemption – Origin Energy Retail No.2 Pty Ltd

This submission by Power and Water Corporation (PWC) relates to the Application for License Exemption (ALE) made by Origin Energy Retail No.2 Pty Ltd on 20 July 2018 and is pursuant to PWC's role as the System Controller and Market Operator under the Electricity Reform Act.

The ALE by Origin Energy specifies two generating facilities; one in the Darwin-Katherine Power System comprising of one 1.1 MW solar photovoltaic (PV) system and the other in the Alice Springs Power System comprising of one 325 KW solar PV system. Both systems are located at Charles Darwin University Campuses behind the meter. The ALE by Origin Energy does not specify any equipment or infrastructure for the management of intermittent power output by the PV generating facility.

System Security and Reliability

In the Darwin-Katherine system there is approximately a total capacity of 45 MW solar PV systems that are unlicensed (exempt), behind the meter installations. 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) for these large scale connections. These studies are directly applicable to the combined installations of exempt solar PV. The proposed 1.1MW site does not independently require mitigation measures to be applied, but as a contributor to the total quantity of unlicensed, behind the meter installations, it does necessitate that some mitigation measures are undertaken.

PWC System Control has an obligation to maintain system security and system reliability as laid out under the System Control Technical Code (SCTC). As indicated above the proposed installations would contribute to system security and reliability issues. It is necessary that the connection assessment considers if a level of curtailment is required or what engineering solution is technically sufficient to mitigate the impacts of variable, uncontrolled output for solar PV. If a license exemption is granted, it is crucial that regardless of the license exemption both the installations meet the requirements in the proposed Generator Performance Standards to maintain system security and reliability requirements.

The quantity of exempt solar PV installations has contributed to a weakening of system security and reliability in the Darwin-Katherine Power System. This is more pronounced in the Alice Springs Power System. The Alice Springs Power System has a minimum load a tenth of that in the Darwin-Katherine System so the 325kW proposed installation is in Alice Springs is proportionally much larger. Alice Springs Power System is more severely impacted by PV already as it currently encounters stability issues of the generating plant when operating at the required levels of synchronous generation for system security during low load periods caused by high solar PV penetration.

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, April 2018 and July 2018. The draft of the GPS attached as Attachment A is the same as provided in July 2018 with the inclusion of Attachment B, which provides Origin Energy and other stakeholders a more substantial view of the type of technical requirements proposed for inclusion in the GPS. It is proposed the GPS will be issued for industry consultation in 2018 prior to the GPS being issued as finalised in the following months.

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.

Power and Water System Control thanks the Utilities Commission for considering this comment regarding the Origin Energy Pty Ltd Application for License Exemption.

Please refer to the attachments for further information: Attachment A contains the latest draft of the Generator Performance Standards and Attachment B provides further information regarding the requirements set out in section 23 (Inertia and fast contingency FCAS raise) of the draft Generator Performance Standards.

Yours sincerely

Malcolm Conway
General manager System Control

17 September 2018

ATTACHED:
ATTACHMENT A – Draft Generator Performance Standards (v0.8)
ATTACHMENT B – C-FCAS Fast, Slow and Delayed Raise/Lower services