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Australian Energy Regulator

Submitted via email: AERinquiry@aer.gov.au

Dear Mr Arek Gulbenkoglu,

AER Consultation Paper

Assessing DER integration expenditure

PLUS ES welcomes the opportunity to provide feedback to Australian Energy Regulator's (AER) consultation paper, *Assessing DER integration expenditure*.

Introduction

It is recognised that this paper focuses on how DER could impact the regulated funding model for the Distributor Network Service Provider (DNSP). On this basis, there could be a question on why or how a metering service provider such as PLUS ES could contribute to the discussion, being outside of this funding arrangement.

PLUS ES feels that it can contribute to this discussion by identifying the metering services that are, or can be, available to the DNSP that could enable DER. This can have an impact on modelling or determining the DER integration expenditure because, without considering the services that can and will be available through smart metering, the expenditure model may be inflated by the DNSP considering investing in its own instrumentation infrastructure. The impact of this would be twofold:

- The DNSP CAPEX and OPEX investment may need to be higher (if the services from Metering Providers is not considered) and
- A non-alignment with the NEO may result - "to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to: price, quality, safety and reliability and security of supply of electricity."

One objective of the AER's DER consultation process is to define a framework for identifying options, assessing consumer benefits and considering appropriate project timing – in its consideration of an Expenditure Forecast Assessment Guideline. On this basis, PLUS ES's response is focused on identifying the options that are available through metering services.

PLUS ES will not address the posed question individually, but instead, take the option of supplying 'other feedback' as has been suggested. This feedback is cognisant of the overall questions being posed.

Enabling DER through smart metering

In distributed energy resources, smart metering can play a significant role as an enabler for the DNSP to better manage and utilise resources such as solar PV, storage and electric vehicles. The location of metering at the periphery of the network is significant as it is where the larger impacts of DER exist.

Smart metering can contribute a number of overall benefits associated with DER including:

- Measuring electricity demand, voltage and current conditions at individual customers, including power factor and the presence of harmonic distortion in voltage and current waveforms.
- Using instantaneous voltage and current measurements, calculating estimates of loop impedance that could be used to help determine the condition of the network's neutral conductors and thus target effective reactive maintenance of the network
- Through communications to all smart meters, it makes available to the Network dynamic near real time load control, which can be used to reduce demand or absorb excess generation that might otherwise cause over-voltage situations.
- Reporting on the network conditions on the low voltage (230/400V) part of the network where network services are being delivered to the individual customer
- Assessing the condition of the low voltage network as a whole – through the analysis of the samples of metering distributed across the low voltage network – such data not typically available through DNSP SCADA systems
- Assessing the network conditions of individual high voltage customer connections

Electricity consumption demand - or generation - in the form of kW or kVA can be made available through individual meters to assess the individual contribution to the supply situation for that part of the network. The electricity demand is typically available with the integration period of the trading interval (presently 30 minute). However, alternative configurations for the smart meters can also be set up (shorter integration periods or instantaneous) that could better enable DER initiatives.

Similarly, the voltage status of the network – especially steady-state voltages in areas of high

solar PV penetration – can also be determined and communicated to the DNSP to help determine compliance levels for power quality and monitor any mitigations that may apply to over-voltage circumstances. Again, the integration period for measurement of steady state voltages can be varied to meet DNSP requirements. The important characteristic of the voltage measurement is that it does not rely on 100% smart meter penetration to determine the voltage profile of the low voltage network under assessment. A similar principle can apply for individual HV customers, where the meter is measuring, via the VT, the voltage of the HV network at that point, where, beyond the zone substation, typically there is little dedicated DNSP instrumentation.

Through the already established remote communications, monitoring can extend to circumstances of alarming in near-real-time, abnormal conditions such as over or under voltage. This could enable DER responses to such abnormal conditions such as switching in or out storage to help stabilise the network. As an expansion, other measurements and alarms could also be introduced, including reporting phase current (and associated harmonic distortion) and loop impedance measurements (detailed earlier) to track the integrity of the network's neutral. Temperature alarms could also be introduced to anticipate and eliminate damage from high resistance joints before they escalate to switchboard damage.

The benefit of the consideration is the avoidance of any requirements for the Network to install bespoke monitoring equipment and, instead, taking advantage of the smart meter that is already in place, as the network's remote monitoring device – but without the burden of additional capital investment by the Network.

Consideration of the Investment Decisions for DER

The immediate objective and market benefit from the utilisation of smart metering is already gleaned from the requirement for revenue billing and market settlement.

Therefore, the incremental cost of expanding the metering and instrumentation services available to the DNSP, would generally be lower than the costs of the DNSP directly installing and maintaining additional, bespoke instrumentation under the guise of dedicated network devices.

Such an approach also avoids the complexities that arise from limited real-estate on a customer's meter board. A smart meter needs to be in place to support market settlement and customer billing and therefore has priority at a customer's switchboard. The requirement to accommodate an additional (network) device is eliminated, if equivalent functionality can be

extracted from the smart meter. Further, ongoing maintenance is also simplified.

Other options may include the fast-tracking of smart metering infrastructure with such a circumstance justifiable through the combination of encouraging tariff reform and the enabling of the DER initiative.

Standards

Options for consideration on the aspects of common standards (questions 9 and 10) should include the matured and maturing processes established in the National Electricity Market such as B2B, which support messaging between parties in a defined way, but abstracted above the level of hardware standards. Abstracting at a higher level simplifies interactions between organisations, without limiting or creating barriers to innovation. It makes available to the marketplace the services, independently from the evolution of the technology.

This approach benefits the industry by making available the advantages of services from innovative service providers who utilise newer technology without being hamstrung with the lower-level definitions of communications protocols. A new technology, coupled with an interface standard to B2B or similar, can be more easily introduced to the market.

Conclusion

PLUS ES position is that while we cannot directly comment on the form of the Expenditure Forecast Assessment Guideline, we will say that the investment decisions of the DNSP's must consider the existing and growing smart meter infrastructure as an option for instrumentation that enable DER. The reason for its serious consideration is because, in alignment with the NEO, it offers the opportunity of an efficient use of the infrastructure. The instrumentation requirements of the DNSP's would be achieved without the roll-out and maintenance of any bespoke network equipment, therefore achieving the objective with efficiency and at a lower cost.

There is an opportunity for the DNSPs to collaborate with metering service providers to unlock the additional capabilities of smart meters, offering similar services anticipated by the DNSP but at a small marginal cost; much less than the cost of installing separate network devices for DER purposes.

PLUS ES would welcome any further discussion in relation to this submission. If you have any questions or wish for further discussion, please contact Helen Vassos on [redacted] or at [redacted]

Sincerely,

[redacted]

Darren Ferdinands
Head of Metering - PLUS ES