

Cost benefit analysis of options to collect and share information about small scale battery storage consultation paper

9 June 2017

Overview

Energy Networks Australia welcomes the initiative of the COAG Energy Council Energy Market Transformation Project Team (EMTPT) to commission Jacobs to undertake a cost benefit analysis (CBA) of options to collect and share information about small-scale battery storage.

Energy Networks Australia supports the development of an energy storage register in Australia, which is likely to be required for a diverse range of uses including emergency response, management of any environmental risks (such as inappropriate disposal of batteries), network planning, and operations; and National Electricity Market planning and operations.

Context of the Current Review

Energy Networks Australia notes the current review is occurring in the context of wider activities related to information collection and management, including but not limited to:

- Changing information system requirements and operations by Distribution Network Service Providers, the Australian Energy Market Operator and other parties;
- The Commonwealth funding of the CSIRO to develop the Energy Use Data Model (EUDM) capability;
- The *Independent Review into the Future Security of the National Electricity Market* assessment of related issues.

Specifically, the *Final Report of the Independent Review into the Future Security of the National Electricity Market* (the Finkel report) released on 9 June 2017 highlights that the need for distributed energy resources (DER) visibility for power system management purposes will overlap with the need of DNSPs for DER visibility for other reasons. The approach to data collection will need to be co-optimised for these purposes (p.64).

The current COAG Energy Council Review may wish to recognise that Recommendation 2.6 of the Finkel Report recommends the COAG Energy Council developing a data collection framework encompassing static and real-time data for all forms of distribution energy by mid-2018.

These related activities could be better evaluated in the finalisation of the CBA which the Draft Report indicates will now occur. As noted below, the current CBA should expand its analysis of both Options 1 and 3.

Technologies included on the register

Many of the improved planning and operational functions that will be enabled by the existence of an energy storage register are likely to be equally reliant on information from other distributed energy resources, such as embedded generation, presence of electric vehicles, load switching or demand responses services.

In section 5.1 of the Draft CBA Jacobs identifies that the register will initially capture information about:

- battery storage systems;
- PV systems;
- inverters used to convert current from DC to AC in either or both of the above systems; and
- charging stations for electric vehicles where batteries from these vehicles are able to export to the grid.

The CBA states that the register will be adaptable to capture information on further technology advancements as the need arises. Energy Networks Australia suggests that other technologies that may be considered for inclusion in the register include load switching or demand responses services.

Information collection powers

Energy Networks Australia members report that the current information collection powers and processes in relation to distributed energy and the installation of storage technologies require strengthening. The current distribution connections agreement process is only capturing approximately 30 per cent of battery installations. Our member companies report that this rate can vary between 5 and 50 per cent for different distribution network service providers (DNSPs).

It seems likely that the best way of improving this rate of reporting is through a review of the compliance framework, including strengthened obligations at the time of installation including an appropriate penalty framework for non-compliance. Energy Networks Australia supports Stage 2 of the CBA including undertaking more detailed analysis to establish the costs of developing and implementing uniform enforcement mechanisms for current jurisdictional connection agreement arrangements.

Possible options to improve compliance with current connection agreement requirements include:

- requiring a compulsory accreditation process for all battery installers;
- regulatory changes to relevant jurisdictional energy safety or energy licensing legislation providing penalty provisions for failure to follow the mandated connections agreement process; or
- amendments to the National Electricity Law (NEL), National Electricity Rules (NER), the National Energy Retail Law (NERL) or the National Energy Retail Rules (NERR) providing penalty provisions for failure to follow the mandated connections agreement process.

Energy Networks Australia has no preferred view on which of a number of alternative legislative reform options should be effected. We note only that any reforms to State-based legislation should be uniform across all jurisdictions. The COAG Energy Council may choose to obtain legal advice from the Australian Government Solicitor about the best way to achieve nationally consistent regulatory requirements in this area. Such advice should inform further evaluations in the next stage of the CBA.

Preferred host

The CBA initially proposes four options:

- Option 1: A national register administered by the Australian Energy Market Operator (AEMO) with system data collected from installers;
- Option 2: A national register administered by the Clean Energy Regulator (CER) with system data collected from installers;
- Option 3: Enhancing existing systems where DNSPs continue to collect data and transfer this information to AEMO; or
- Option 4: Base Case (status quo) option.

Energy Networks Australia members concur that AEMO is the preferred storage register host. However, before a final decision is taken, network businesses consider that a more thorough appraisal of Option 3 should be undertaken and provided.

Option 3 may appear to be a more expensive option than Option 1, given that it would require the upgrade of multiple DNSP data collection systems. However, DNSPs are likely to continue to collect and maintain their own databases for their own network planning purposes. In the future, DNSPs will require information on, not only the location and capacity of these energy technologies, but also information on real time operational flows, which will inform system management and planning. Consequently, for those DNSPs, the battery register may be an interim solution, rather than obviate the need for future DNSP system enhancements. We recommend that both Option 1 and 3 be further evaluated in an expanded CBA assessment.

Energy Networks Australia responds to the Jacobs discussion points in more detail below.

Background

Energy Networks Australia is the national industry body representing businesses operating Australia's electricity transmission and distribution and gas distribution networks. Member businesses of Energy Networks Australia provide energy to virtually every household and business in Australia.

Energy Networks Australia welcomes this opportunity to make a submission in response to Jacobs *Cost benefit analysis (CBA) of options to collect and share information about small-scale battery storage consultation paper*.

Response to Jacobs's discussion points

Which of the advantages and challenges listed in Table 1 and Table 2 provide the most compelling reasons for choice of host?

Energy Networks Australia agrees with the majority of the advantages listed in Table 1 of the consultation paper. Regarding the challenges listed, we agree that DNSPs are likely to need to maintain their own databases for operational reasons and that this may lead to duplication of costs. It is likely that DNSPs will need to both draw on and contribute to the national register and would check the results of the national register against their own records as a quality assurance measure. As mentioned previously, Energy Networks Australia recommends a more thorough appraisal of both Options 1 and Option 3 in the next stage of the CBA.

We note that a change in AEMO's current powers would be required to allow AEMO to collect information, instead of relying on the networks to collect data, as is currently the case.

Energy Networks Australia agrees with both the advantages and challenges listed for Option 2. Energy Networks Australia is particularly concerned by the second and third challenges listed i.e.

- uncertainty around the CER's long term ongoing existence and
- the CER's lower capacity (relative to AEMO) to manage technology based or other market based changes that might be required for AEMO or DNSPs on an ongoing basis.

For this reason, Energy Networks Australia supports AEMO as the preferred register host.

Can stakeholders identify any other challenges or advantages for each option?

Energy Networks Australia did not identify any other challenges or advantages; however, we would prefer that a more thorough appraisal of both Options 1 and 3 be undertaken.

Option 3 may appear to be a more expensive option than Option 1, given that it would require the upgrade of multiple DNSP data collection systems. However, DNSPs may need to collect and maintain their own databases for their own network planning purposes. We consider Options 1 and 3 to be the options that are important to evaluate more fully with the final decision ultimately informed by the CBA.

Energy Networks Australia considers that the second stage of the CBA should investigate Option 3 more empirically by providing detailed information on existing data collection systems for each DNSP and estimates of the costs of upgrading these platforms. The Draft CBA states that the costs of Option 3 would be more than double the costs of Options 1 or 2, however no data is provided to support this statement. Stage 2 of the CBA should also state whether existing systems are able to link to

existing or proposed AEMO databases.

In regards to DNSP systems, the Electricity Network Transformation Roadmap identifies a number of important actions that DNSPs need to take over the next decade. The CBA should consider whether these DNSP platforms may need to be upgraded in any case due to the increased penetration of batteries into the system.

Similarly, the updated CBA should also list the applications (apps) which are currently in use by solar PV installers and provide some estimated costs of updating these apps to include all the fields which would be required for the new battery storage register (irrespective of whether it is hosted by AEMO or the CER). It may be that one of these existing apps can be upgraded to include all necessary data fields and this would save on the costs of developing a new app. To reduce duplication, the CBA should also consider including DNSP connection applications as part of the new app.

The provision of more detailed quotes on the development of a new app would also be of value, perhaps by undertaking an indicative tender process with appropriate app developers.

Do stakeholders see a more efficient approach for collecting information from this wider set of equipment categories?

At this time, Energy Networks Australia members do not see a more efficient approach for collecting information from this wider set of equipment categories. For emergency services use, the storage register would not just be required for systems capable of exporting to the grid. Emergency services needs would also require this information for off grid installations.

In regards to the information needed as set out in Table 3 of Jacobs' CBA, Energy Networks Australia proposes:

- 'NMI identifier (or postcode)' be changed to 'NMI identifier and postcode'. The postcode location of a battery installation is not useful to distributors that need to manage load flows and technical constraints on individual feeders and transformers; and
- to add 'short-term peak output (if applicable)' to 'Capacity (continuous kW, and storage kWh)'. Understanding short-term peak output capabilities will better allow distributors to contract with battery owners and operators to alleviate network constraints.

Do stakeholders agree on the required degree of information needed and the need for various stakeholders to access the data shown?

Energy Networks Australia agrees with the portal users identified in Table 3 including the granularity of data and the purpose of access. It would also be useful to be able to access the following datasets:

- NMI identifier delete "(or postcode)"
- Capacity (kVA of inverter)

- Demand response modes
- Power quality response modes
- pf/VAR range

Are there any other regulations that would require amendment? Is it possible to quantify the cost of a single regulatory change?

One of Energy Networks Australia's primary concerns is that the current connections agreement process is only capturing approximately 30 per cent of battery installations. Our member companies report that this rate can vary between 5 and 50 per cent for different DNSPs.

It seems likely that the best way of improving this rate of reporting is through a review of the compliance framework, including strengthened obligations at the time of installation, including an appropriate penalty framework for non-compliance. Compliance levels with current mandatory arrangements are very low.

Discussions with the CEC confirmed the existing accreditation process for solar PV installations. Accreditation by the CEC allows solar PV installations to become eligible for government incentives such as Small-scale Technology Certificates (STCs) and feed-in tariffs. Therefore, there is a financial incentive for customers to employ CEC accredited installers and for installers to maintain their accreditation by completing the required documentation and submitting it to the CER.

The CEC also accredits individuals who install grid-connected battery storage. To apply for the CEC Storage endorsement, the installer must complete training modules on grid-connected battery storage design and installation.

The draft training codes for these units are:

- UEERE4002A Install, maintain and fault find battery storage systems for grid-connected photovoltaic systems
- UEERE5001A Design battery storage systems for grid-connected photovoltaic systems

These training codes could be further strengthened to educate installers about the importance of the completion of the grid connection process.

Possible options to improve compliance with current connection agreement requirements include:

- legislative amendments requiring accreditation of all battery installers;
- legislative amendments to relevant jurisdictional energy safety or energy licensing legislation providing penalty provisions for failure to follow the mandated connections agreement process; or
- amendments to the National Electricity Law (NEL), National Electricity Rules (NER), the National Energy Retail Law (NERL) or the National Energy Retail Rules

(NERR) providing penalty provisions for failure to follow the mandated connections agreement process.

Energy Networks Australia has no preferred view on which of a number of alternative legislative reform options should be effected. We note only that any reforms to State-based legislation should be uniform across all jurisdictions. It may be appropriate for Jacobs to request the Commonwealth to approach the Australian Government Solicitor to obtain legal advice, on behalf of the COAG Energy Council, about the best way to achieve nationally consistent regulatory requirements in this area. This advice should be provided to Jacobs and the Australian Government Solicitor's preferred legislative amendment process should be costed in the next stage of the CBA.

Are there any issues with changing these regulations to capture batteries?

Energy Networks Australia considers that jurisdictional governments are best placed to respond to this question.

Do the time estimates and other assumptions in Table 6 seem to be reasonable? If not, are you able to provide evidence to more appropriate estimates?

Energy Networks Australia considers the estimates and assumptions in Table 6 appear to be reasonable.

Are any of the quantitative benefits or the assumptions or approach underlying their evaluation questionable? If so, why?

No comment.