

Project outline

There is growing demand from Commercial and Industrial (C&I) customers to install Solar PV systems between 30kW and 100kW. Many of these systems are being installed with zero-export limits* (non-export systems) as a result of current Distributed Network Service Provider (DNSP) connection assessment test requirements and high PV penetrations on distribution networks.

The Energex Cleveland Depot was identified as an ideal site for demonstrating the potential of dynamic export limits for Solar PV systems >100kW through a Dynamic Operating Envelope (DOE) platform on a commercially available 50kW solar inverter.

Customer demand and industry experience indicates that these types of C&I PV installations may provide significant reductions in site energy costs and the capability to transition from a Demand tariff (SAC-D) back to an Energy Only tariff (SAC-Non D) based upon an annual energy consumption of below 100MWh.

The objective of this trial is to demonstrate the benefits to customers and the Energex network of moving from zero-export or partial-export limits to dynamic export limits. This proposal is aligned with Stream 1 of the Future Grid Roadmap - Managing two-way energy flows, specifically around Customer Distributed Energy Resources (DER) Active Management.

Several research collaborations including the Solar Enablement Initiative (SEI), Queensland Integrated Power Platform (QIPP), Advance Queensland Platform Technology Program and the Evolve DER Project, are developing techniques for more active DER management. This trial will provide a valuable test bed and learning opportunity supporting these initiatives.

We hope to demonstrate a simple broadcast dynamic export limit that requires modest communications between the DNSP and DER system or aggregator, minimising implementation costs and cyber-security risks.

This trial will involve the installation of a PV system and an internet connection to access the regularly updated dynamic export limit via an ArcGIS webpage for one-way communication only.

The project objectives are focused on gaining a better understanding of the customer value proposition when installing Solar PV with active DER management capability.

*This PV system does not earn a feed-in tariff.

Project outcomes / findings

Key project findings are:

- DOE was successfully implemented at the Cleveland trial site on a 50kW PV system.
- The DOE reacted to network demand changes and implemented active inverter export control (5 sec response).
- Two-way communication to the DOE platform to allow inverter response status would be required to facilitate widespread deployment.
- DNSP Network connection agreements will have to be developed to allow the connection of a dynamic export Solar PV system.

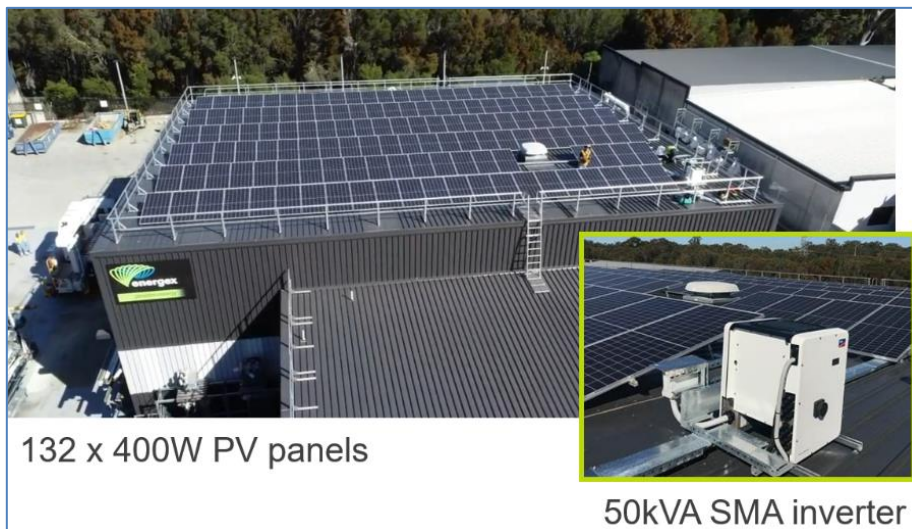


Figure 1: Cleveland Depot rooftop solar installation.



Figure 2: Demonstration of Dynamic Operating Envelope (purple line) used to manage reverse power flow through the local distribution transformer (green line)

Next steps

Energex and Ergon Energy Network are continuing this work through a successive DMIA project “Phase 1 Commercial DOE”. This follow-on project extends the DOE concept to four additional commercial and industrial trial sites and will test two-way interoperability which will be necessary for a broader customer implementation. The project will also incorporate aspects of the Expanded Network Visibility Initiative (ENVI), in particular enhanced network visibility and DER optimisation methods, to improve network hosting

of customer owned DER on the distribution network at both medium and low voltages.

More information

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