

# ESB Governance of DER Standards Consultation Paper

## Enphase Energy Aust. Pty Ltd. Submission

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Authors	David Minchin & Ryan Turner
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## 1.0 Introduction

Enphase Energy would like to thank the ESB for the opportunity to provide feedback on the proposal in the DER Standards governance paper.

The rapidly changing architecture of the Australian Energy system presents new challenges to manage the safe and smart utilisation of new technology being deployed in DER. Whilst the rapid advancement has similarities in other countries, Australia's appetite for alternative energy is second to none requiring a governance framework that is also able to respond at this same pace. This is not currently the case.

Enphase Energy work with standards and regulatory bodies to provide technology products for better DER integration using technologies such as software based micro inverters and online control systems. We have significant investment in Australia and New Zealand with over 100 employees in research, design, and product compliance testing. We present the following feedback on the question points raised in the ESB paper.

## 2.0 Responses to the questions raised in the consultation paper

### **Question 1: Do you support the proposal to establish a DER Standards Governance Committee under the National Electricity Rules?**

Enphase Energy fully supports the proposal to establish a DER Standards Governance Committee as per option 3 in the ESB consultation paper.

As has been found in other countries, the rapid growth of DER is beyond the ability of technical committees and regulatory bodies to effectively respond. The creation of a single body to coordinate these activities to an agreed plan has been found to be advantageous in our experience for both direction and technology development.

### **Question 2: Do you support the DER Standards Governance Committee being advisory or determining?**

We see that the role of the Committee would be both determining and advisory.

- With the current absence of a holistic plan to coordinate all DER stakeholders, the Committee would develop and be responsible for the "road map" for DER.
- The Committee would coordinate and monitor the achievement of road map milestones and the handling of roadblocks with DER stakeholders.
- The Committee would have an impartial technical advisory group to assist with the development of practical and economical ways to go forward with new DER challenges as they present.
- The Committee would provide a focal point for existing technical workgroups and standards committees to expedite some processes.

**Question 3: Do you have any feedback on the proposed functions of the DER Standards Governance Committee?**

Following on from our points in Question 2 we see a number of areas where the Committee could oversee the rules and regulations that DER stakeholders deal with.

- The current DER equipment standards being developed in Australia are in line with those currently being implemented in other countries, and the availability of DER equipment to meet emerging requirements is generally not an issue. The Committee would provide oversight of these standards and propose update projects on a regular basis to keep pace with development.
- Regulatory compliance with technical standards is not consistent across various jurisdictions in Australia. The Committee would be well placed to be the central point for interpretation of standards and help direct stakeholders to a common determination.
- Consistency of DER integration requirements across various DNSP's and states would be a key function of the Committee. Voltage management in LV networks that DER connects to continues to be a daily issue faced by DER stakeholders.
- The Committee can place a focus on fast tracking DER control systems following those implemented in other countries i.e. IEEE 2030.5 (USA) or JET GR0002-1-11 (Japan Echonet).
- Almost all technical Committees are run on a voluntary basis and hence suffer from timeline creep due to the un-availability of key members. The Committee should have a budget to pay for the time spent by its members so the work can be given the highest priority.

**Question 4: Do you have any feedback about the Committee determining standards in a subsidiary instrument under the rules?**

The determination of DER standards and connection rules should be done in an open environment with all stakeholders represented. Given the emerging impact of DER, any technical standards should be incorporated into the National Energy Rules and not a subsidiary instrument.

**Question 5: Do you have any feedback on the development of new compliance and enforcement arrangements for DER technical standards?**

We see that the proposed Committee would eventually become the central point for compliance to technical standards that is currently administered by the Clean Energy Regulator (CER) under the SRES scheme.

- In recent times, various state regulators have become more active in compliance as various regional schemes have been introduced.
- As enforcement of the CER inspections relies on state regulators, we see the Committee as having an active role in coordinating consistency with state regulators.

**Question 6: Do you support the proposed composition of the membership and nature of chair of the Committee?**

We see the appointment of an independent DER expert as chair as a sound basis for the Committee.

- The Committee should have a wider scope including a DER OEM representative and a DER controls technologist.
- Other network functions such as VPP's and market aggregators should also be represented.

**Question 7: Do you support the proposed terms and selection arrangements?**

It is important that persons who are proposed and appointed to the Committee can represent the interests and common opinion of the group they represent. Balance is essential for any committee so that decision making and voting process is beyond reproach.

**Question 8: Do you have any feedback on the other elements of the proposed operation of the Committee?**

Whilst it is important that the DER Technical Standards Committee have a broad base of DER industry representation, it is also important the member count of the Committee be capped to keep it effective. Regular review of and the fixed term of members is important to keep the committee actively engaged and relevant.

**3.0 General Comments**

Should the ESB wish any clarifications or further information on our responses please contact our project officer as follows

Name: David Minchin  
Title: Standards and Homologation Engineer  
Email: [dminchin@enphaseenergy.com](mailto:dminchin@enphaseenergy.com)  
Phone: +61 409567318

## A.1 About Enphase Energy

Enphase Australia Pty Ltd is a member company of Enphase Energy, Inc. based in Silicon Valley, California, USA.

Enphase is a provider of energy management hardware and software solutions. It is engaged in designing, developing, manufacturing, and selling microinverter systems for the solar photovoltaic and battery storage industry. Enphase invented semiconductor-based microinverters in 2008 to convert direct current (DC) electricity to alternating current (AC) electricity directly at the PV module (solar panel). Enphase is now the world's largest manufacturer of microinverters, the USA is the largest market where Enphase is installed in ~41% of all systems (2019).

In Australia, Enphase is based in Melbourne with staff located in all mainland states. Enphase runs an online technical support centre in Melbourne that is linked into other global centres to provide 24/7 support. Enphase New Zealand is the global hardware design and testing hub for Enphase employing of 75 Engineers and technicians in Christchurch.

An Enphase AC coupled microinverter system differs from the classic DC coupled string inverter systems found in most installations. An Enphase system consists of several parts rather than a single inverter: Enphase microinverters at each solar panel, an Envoy gateway and Enlighten cloud-based software. Optionally an Enphase battery system can be installed to form a single platform of solar and battery storage that can be controlled remotely.

Enphase microinverters provide power conversion at the individual solar module level by a digital architecture that incorporates custom application specific integrated circuits (ASIC), specialized power electronics devices, and an embedded software subsystem. Envoy bi-directional communications gateway collects and sends data to Enlighten software. Enlighten cloud-based software provides the capabilities to remotely monitor, manage, and maintain an individual system or a fleet of systems.

AC coupled Enphase systems provide significant safety advantages over classic DC coupled systems. Rather than running dangerous high DC voltages (up to 600 Volts) to a remote inverter that requires special protection from DC arcs that can lead to fire, Enphase directly converts low voltage DC to normal AC right at the panel. Enphase invented the rapid shutdown system that is now mandatory in the USA. This system enables first responders to shut the entire system from one switch in a meter board so they can conduct search and rescue safely without fear of contact from high voltage DC from an unstable roof.

## **B.1 Enphase Energy Australian Engineering and Technical Support**

### **Andrew Mitchell – Product Line Manager**

*With 12 years of experience in the solar industry Andrew has managed projects and products that have delivered pioneering solutions from 300W portable power packs, to multi megawatt micro grid solutions. His work throughout the APAC region has allowed him to develop perspective from all stakeholders such as consumers, installers, designers, manufacturers, and network operators.*

### **David Minchin: Standards & Homologation Engineer**

*David is based in Adelaide and provides standards support and product homologation for Enphase Energy in the Asia/Pacific region. He is an active member of EL005 Storage, EL042 Alternative Energy and EL064 Microgrid Standards Committees. Most recently David was engaged to formulate the test reports in the new AS/NZS4777.2 standard for new requirements. David also provides active support of IEC standards in Europe and the UK. Prior work includes managing Clean Energy Regulator (CER) inspections across Australia as well as residual risk analysis for the CER on SRES inspections. David has 30+ years of experience in solar/storage in both commercial and engineering roles.*

### **Duncan Macgregor - APAC Product Trainer & Field Applications Engineer**

*As a CEC accredited solar designer installer, and active member of the renewable energy industry for over 18 years, Duncan Macgregor brings a wealth of industry knowledge to his role as Enphase Energy Product Trainer and Field Applications Engineer for the Asia-Pacific region. Duncan's in-depth field experience in design and installation supports the installation community in both large and small scale solar, and on and off grid battery storage systems.*

### **Ryan Turner: Field Applications Engineer**

*Ryan provides pre and post installation support for all Enphase projects in the APAC region. He is a fully accredited CEC design engineer. Ryan specialises in supporting the larger, more complex commercial and industrial projects, as well as storage integration. Prior work includes technical support/advisor for Fronius Australia and Building Energy consultant at Arup. Ryan also has an undergraduate degree in Mechanical Engineering and a master's degree in Renewable Energy and sustainability from the University of Nottingham, UK.*

### **Wilf Johnston: General Manager APAC**

*Wilf has worked in the Australian solar industry for over 11 years, beginning with leadership of the engineering and commercial project team with SunPower Corporation, then later as the General Manager of Energy Matters and Flex. At Flex he introduced an innovative IOT platform focused on delivering energy insights and control to end customers. Wilf holds degrees in Engineering and Commerce from the University of Western Australia and has been a key contributor to industry associations including the Smart Energy Council. At the Clean Energy Council, Wilf was a founding member of both the Utility Solar Directorate and the Distributed Energy Leadership Forum, which provides policy direction to the organisation.*