DER Register overview & Victorian DNSP implementation

Victorian installers seminars | 12 & 13 November 2019
## Agenda

<table>
<thead>
<tr>
<th>Timing</th>
<th>Topic</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:00pm</td>
<td>Welcome and introductions</td>
<td>CEC and NECA</td>
</tr>
<tr>
<td>5:15pm</td>
<td>AEMO DER Register overview</td>
<td>Australian Energy Market Operator</td>
</tr>
<tr>
<td>5:30pm</td>
<td>Distribution Network overview</td>
<td>Distribution Networks</td>
</tr>
<tr>
<td>6:00pm</td>
<td>Panel Q&amp;A session</td>
<td>All</td>
</tr>
<tr>
<td>6:20pm</td>
<td>Networking</td>
<td>All</td>
</tr>
<tr>
<td>7:00pm</td>
<td>Close</td>
<td></td>
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</table>
About AEMO

Shaping a better energy future for all Australians

We operate Australia’s National Electricity Market and power grid in Australia’s eastern and south-eastern seaboard, and the Wholesale Electricity Market and power grid in south-west WA.

Both markets supply more than 220 terawatt hours of electricity each year.

We also operate retail and wholesale gas markets across south-eastern Australia and Victoria’s gas pipeline grid.

Collectively traded more than A$20 billion in the last financial year.

Ownership

<table>
<thead>
<tr>
<th>Market participants</th>
<th>Governments of Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>40%</td>
<td>60%</td>
</tr>
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</table>
The growing level of consumer choice

Source: AEMO 2019 ISP Insights, neutral scenario
High rooftop PV in the operational domain

Source: OpenNEM
Reversing the distribution network

Forecast ‘reverse electricity flows’ across Australia’s distribution networks

Slow DER scenario

Fast DER scenario

Source: CSIRO 2019
AEMO’s DER Register
DER Register

Required to be implemented by the National Electricity Rules

A national database of DER assets to enable the realisation of consumer value and enhance power system reliability via DER installed in homes and businesses across Australia

Implemented and operational from 1 December 2019
What kinds of data?

<table>
<thead>
<tr>
<th>Level</th>
<th>Data types</th>
<th>Expected source of data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>Approved capacities, technologies and central control/protection (e.g.</td>
<td>Network: ✓</td>
</tr>
<tr>
<td></td>
<td>export limits)</td>
<td>Installer: ✗</td>
</tr>
<tr>
<td></td>
<td>Installer licence number / ID</td>
<td>Network: ✗</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Installer: ✓</td>
</tr>
<tr>
<td>AC interface</td>
<td>Inverter or generator manufacturer, model, serial number and capacities,</td>
<td>Network: ✗</td>
</tr>
<tr>
<td></td>
<td>and numbers of installed units</td>
<td>Installer: ✓</td>
</tr>
<tr>
<td></td>
<td>Inverter control modes and settings (e.g. volt-watt etc)</td>
<td>Network: ✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Installer: ✗</td>
</tr>
<tr>
<td></td>
<td>Non-inverter generation control modes, settings and protection</td>
<td>Network: ✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Installer: ✗</td>
</tr>
<tr>
<td>Device</td>
<td>Device (e.g. solar PV panels or battery) manufacturer, model and capacities, and numbers of installed units</td>
<td>Network: ✗</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Installer: ✓</td>
</tr>
</tbody>
</table>

**Data source**: ✓

**Review**: ✗
What changes?
Process overview

From 1 December 2019 a condition of connection to the network will include that DER installers and electrical contractors need to provide information for the DER Register for all small generator and battery installations.

As-approved information
- Network provides
  - Aligns to connection approval
  - Includes approved capacities, technologies and site protection and control information

As-installed information
- Installer provides
  - Includes information about the equipment installed, such as manufacturer, model and serial numbers
  - Installer asked to confirm protection and control settings

Confirmed DER Record
- Network submits data to AEMO

Step 1
Apply to the network for a connection and receive approval

Step 2
Customer agrees and installation goes ahead

Step 3
DER installer collects information about what is installed on site

Step 4
DER installer provides information to the approving DNSP

Step 5
Network submits data to AEMO
State-by-State AEMO-DB process overview

New South Wales

1. Customer chooses a DSR, like solar
2. Network connection approved
3. AEMO DER Register website or DER installer application
4. DER installation proceeds
5. Confirmation provided to installer
6. Happy customer
7. Confirmation provided to network
8. DER system in operation

Victoria and Tasmania

1. Customer chooses a DSR, like solar
2. Network connection approved
3. Network DER connection wildfire
4. Network DER installation proceeds
5. Confirmation provided to installer
6. Confirmation provided to network
7. DER system in operation
8. Happy customer
9. Confirmation provided to network

South Australia

1. Customer chooses a DSR, like solar
2. Network connection approved
3. Network DER connection wildfire
4. Information about what is installed on site added to the AEMO DER Register
5. Confirmation provided to installer
6. Confirmation provided to network
7. DER system in operation
8. Happy customer
9. Confirmation provided to network

Queensland

1. Customer chooses a DSR, like solar
2. Network connection approved
3. Network DER connection wildfire
4. Network DER installation proceeds
5. Confirmation provided to installer
6. Confirmation provided to network
7. DER system in operation
8. Happy customer
9. Confirmation provided to network

Note: In all cases the local network service provider is the first contact for a connection approval, as with current process.
Readiness
Readiness

- Installers and electrical contractors should progress DER connection approvals with their local network as per current processes.
- AEMO high level Fact Sheets are high level.
- Your local distribution network will provide information on steps that are needed within their connection processes.

Victorian DNSP overview

Introducing coming changes to implement the DER Register and changes to inverter requirements
## DER Register - What’s Changing for Installers / RECs for each DNSP?

<table>
<thead>
<tr>
<th>DNSP</th>
<th>From 1 December, Installers/ RECs must...</th>
</tr>
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</table>
| Jemena                | • Complete all Embedded Generation applications (Residential and Household) via the Jemena Portal – mobile friendly  
• Provide additional Embedded Generation data required for the DER Register  
• Pass the Embedded Generation application number (along with the EWR & CES) to the customer once installation complete                                                                                                                                                                                                                                                                                                                                 |
| AusNet Services       | • Minor changes to the current online Pre-Approval tool  
• New online Post Installation tool replacing current Embedded Generation (EG) form – the tool will prompt you for additional information required for DER Register  
• New automated email notifications regarding the status of your application                                                                                                                                                                                                                                                                                                                                                                                                  |
| CitiPower/ Powercor   | • Minor changes to the eConnect portal which will prompt you for additional required information for DER Register                                                                                                                                                                                                                                                                                                                                                                                                                     |
| United Energy         | • New paper-based DER Register form for completion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

Note – there are also important considerations during the transition period from 1 Dec.  
Talk to the DNSPs you work with to confirm these details...
In alignment with the DER Register changes, Victorian DNSPs are also introducing changes to our Model Standing Offer (MSO), i.e. our terms and conditions for connecting DER to the network.

All Vic DNSPs require inverters to have the following power quality response mode settings applied:

- ‘volt-var’ settings to manage the impact of increasing voltages from solar exports
- ‘volt-watt’ settings to gradually reduce power export once specified voltage limits are reached
Our solar communities are driving a rapid change in distribution of power. We are seeing whole communities generating more power than they and their neighbours consume.
Why New Inverter Power Quality Response Mode Settings?

We are doing everything we can to get the power to where it is needed without pushing the voltage too high...or too low

New inverter control schemes will deliver enhanced benefits to our customers

**Volt- Var**
- will absorb or produce reactive power to decrease or increase voltage as needed

**Volt- Watt**
- will help to avoid a complete shutdown of the inverter by temporarily curtailing output

*All Victorian Distribution Network Service Providers have agreed to common settings for inverters*
What do these changes mean for you?

• From 1 December:
  • You **will not be approved** to install inverters that do not have the required power quality response mode capability
  • You must also **ensure that the settings are applied at the time of installation**
  • We are working with Inverter manufacturers to request they update their user guides etc
For more information regarding the DER Register or MSO changes:

<table>
<thead>
<tr>
<th>Victorian DNSP</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>AusNetServices</td>
<td>Email: <a href="mailto:preapprovals@ausnetservices.com.au">preapprovals@ausnetservices.com.au</a></td>
</tr>
<tr>
<td>CitiPower Powercor</td>
<td><a href="http://www.powercor.com.au">www.powercor.com.au</a></td>
</tr>
<tr>
<td>Jemena</td>
<td>Email: <a href="mailto:network.connections@jemena.com.au">network.connections@jemena.com.au</a></td>
</tr>
<tr>
<td>United Energy</td>
<td><a href="http://www.unitedenergy.com.au">www.unitedenergy.com.au</a> or email <a href="mailto:ueconnections@ue.com.au">ueconnections@ue.com.au</a></td>
</tr>
<tr>
<td>Australian Energy Market Operator (AEMO)</td>
<td>Email: <a href="mailto:DERRegister@aemo.com.au">DERRegister@aemo.com.au</a></td>
</tr>
</tbody>
</table>