



DER Register overview & Victorian DNSP implementation

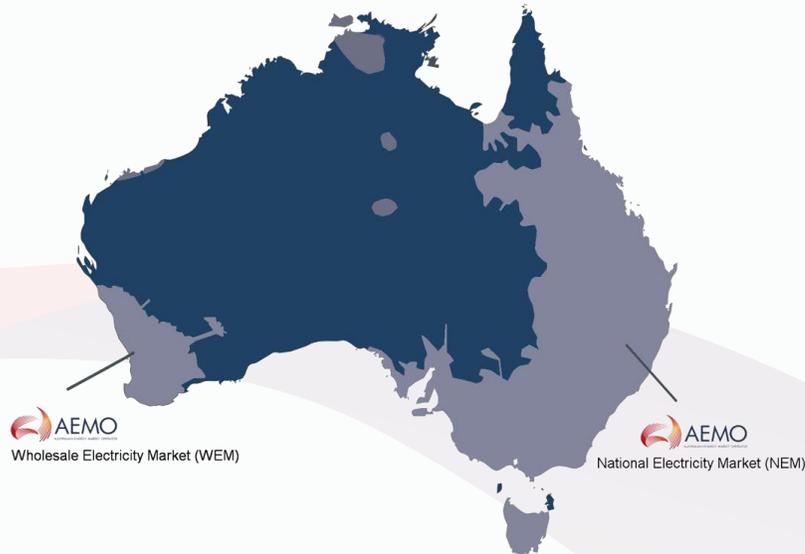
Victorian installers seminars | 12 & 13 November 2019

Agenda

Timing	Topic	Speaker
5:00pm	Welcome and introductions	CEC and NECA
5:15pm	AEMO DER Register overview	Australian Energy Market Operator
5:30pm	Distribution Network overview	Distribution Networks
6:00pm	Panel Q&A session	All
6:20pm	Networking	All
7:00pm	Close	

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

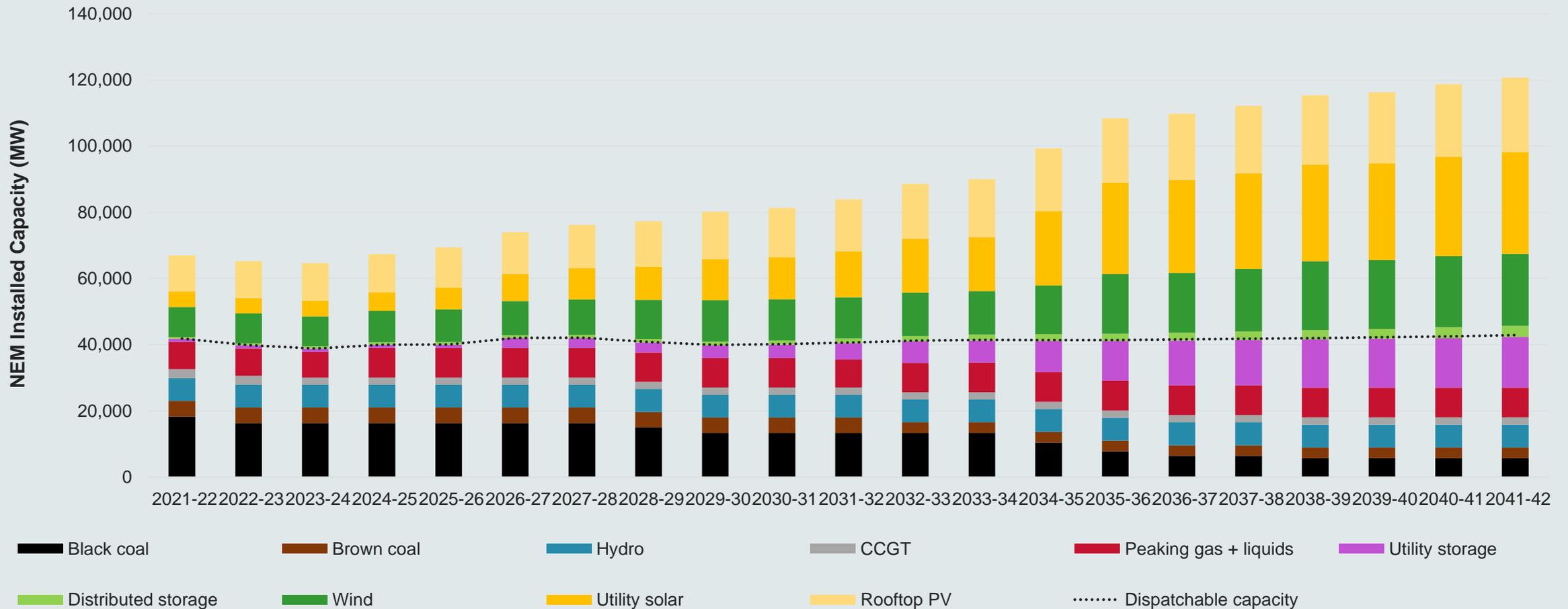
40%

Market participants

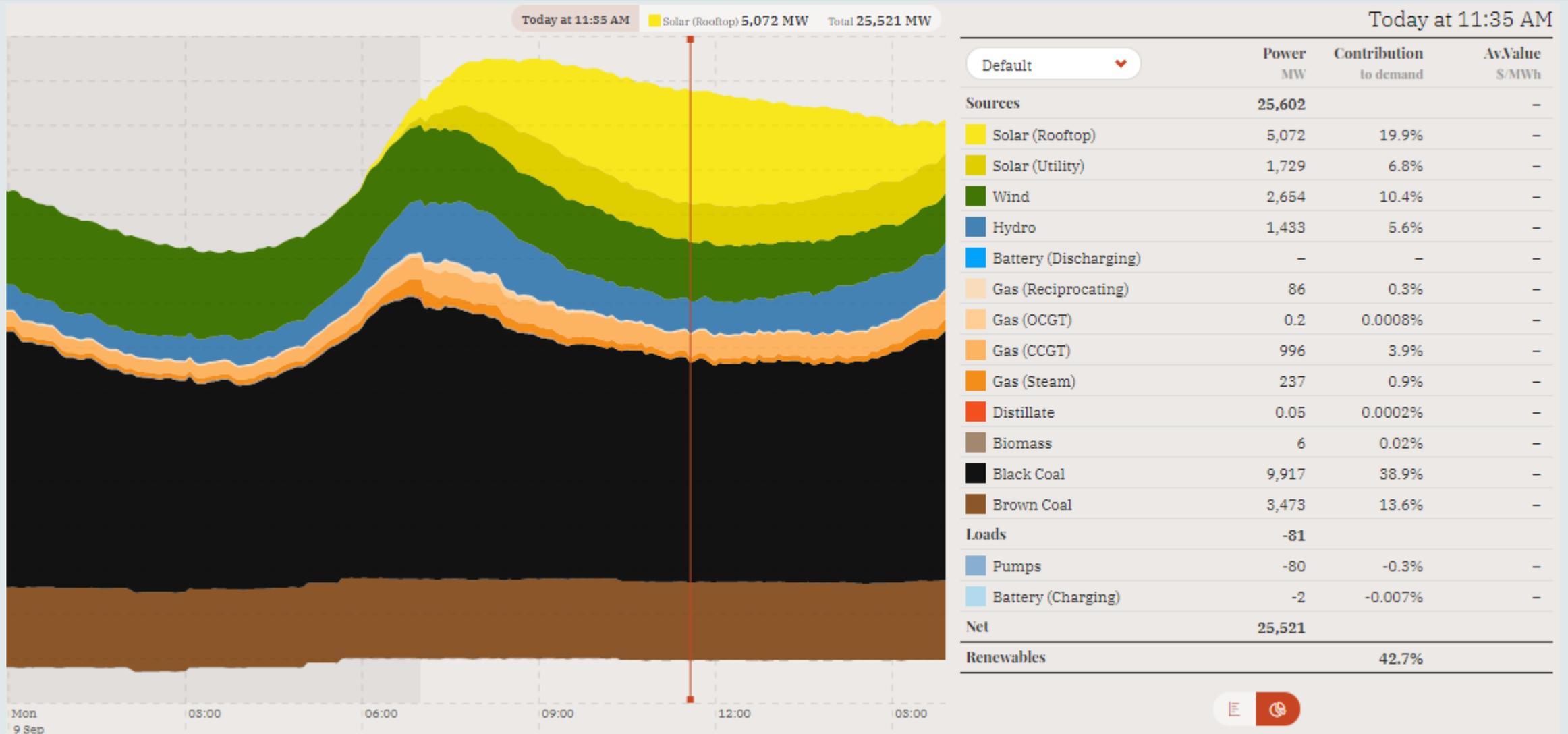
60%

Governments of Australia

The growing level of consumer choice

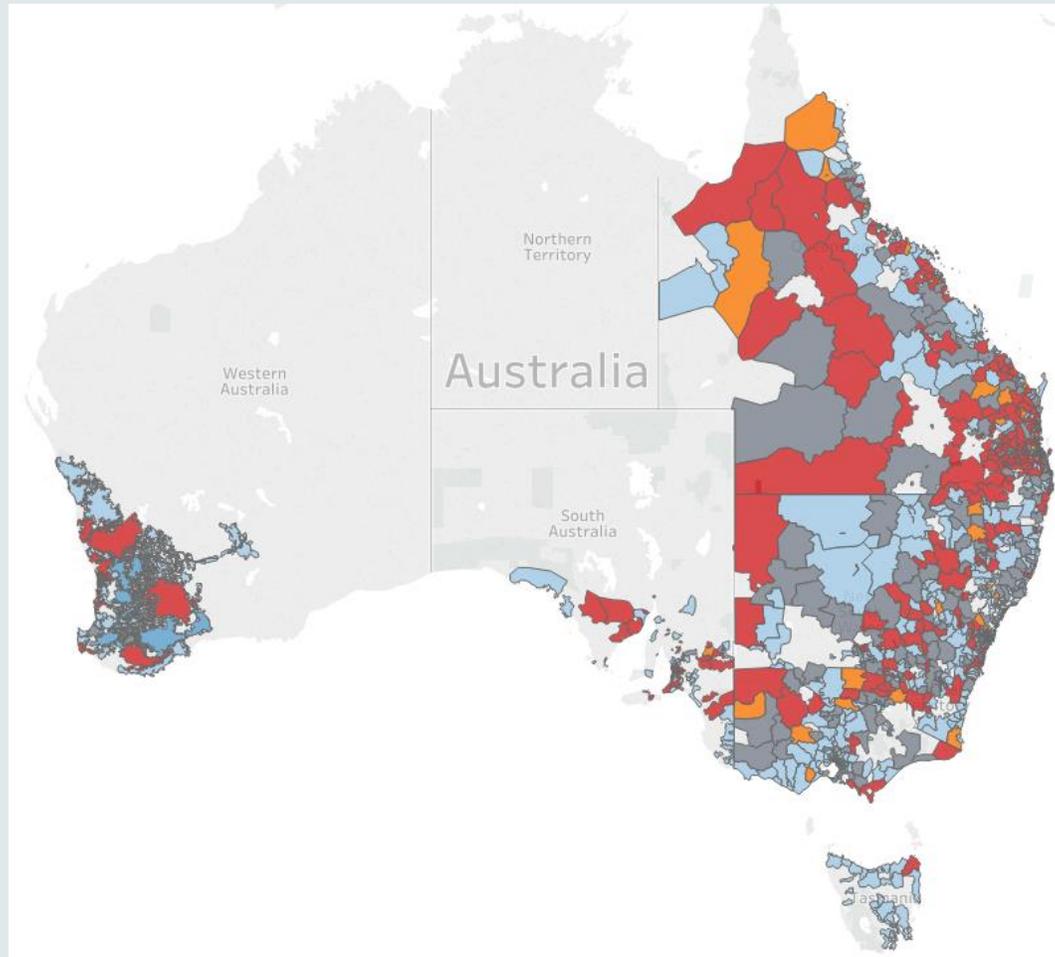


High rooftop PV in the operational domain

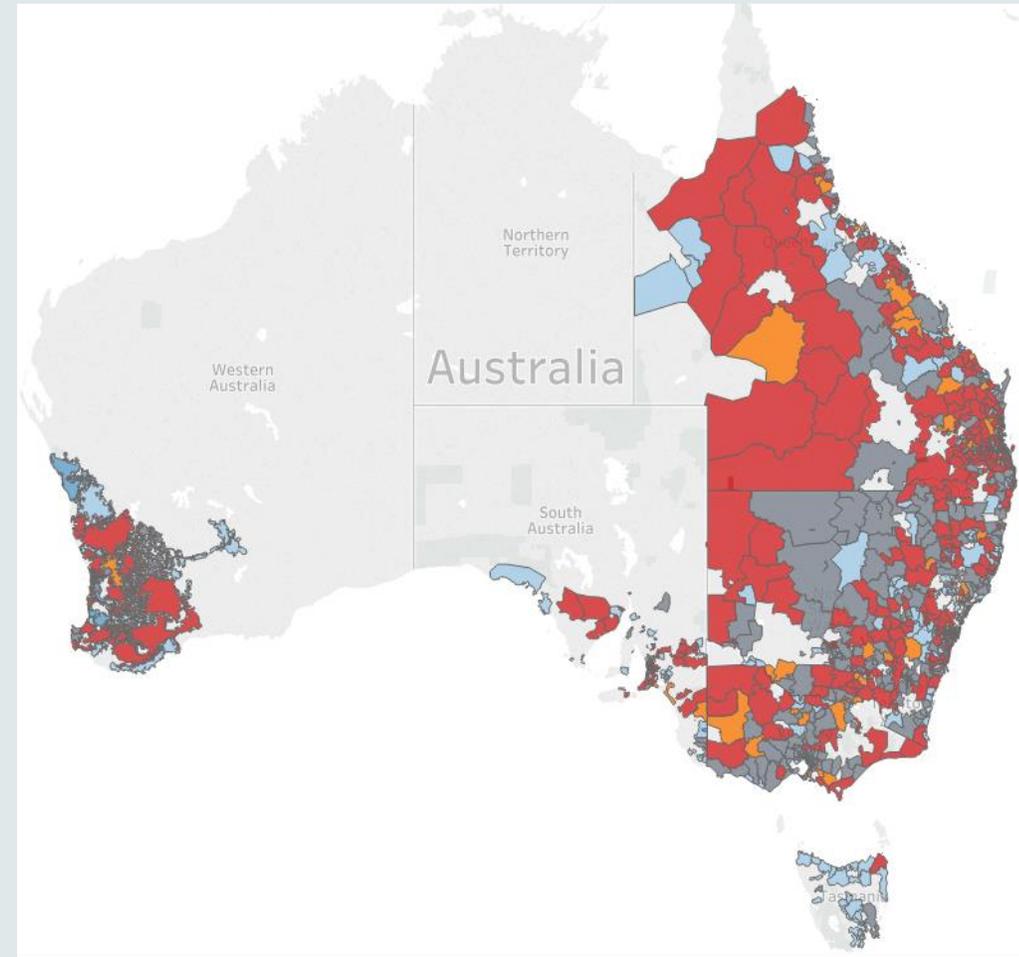


Reversing the distribution network

Forecast 'reverse electricity flows' across Australia's distribution networks



Slow DER scenario



Fast DER scenario

Source: CSIRO 2019

Years

- <=2025
- <=2030
- <=2040
- <=2050
- >2050

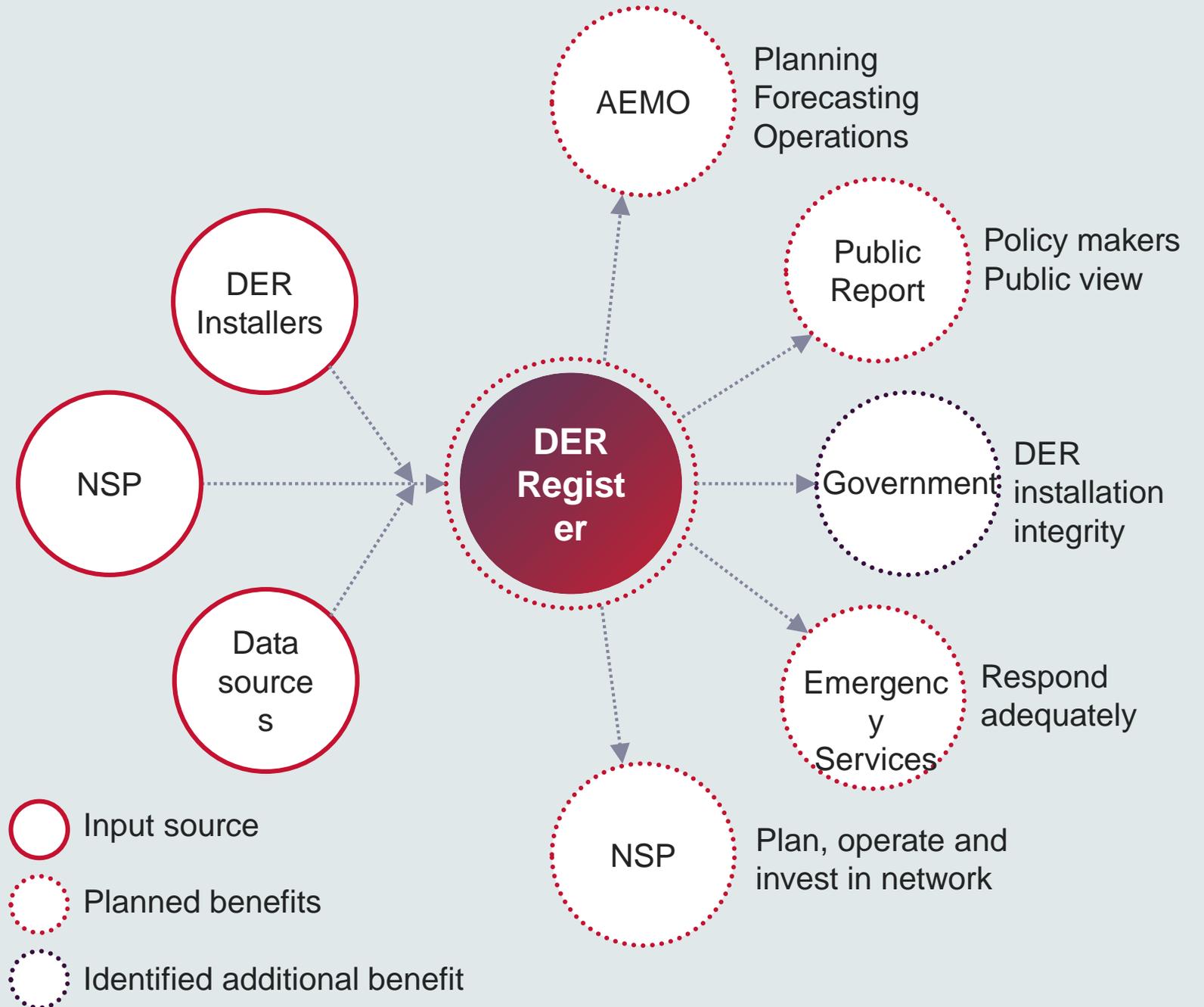
AEMO's DER Register

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?

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

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

Step 1

Apply to the network for a connection and receive approval

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

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

Confirmed DER Record

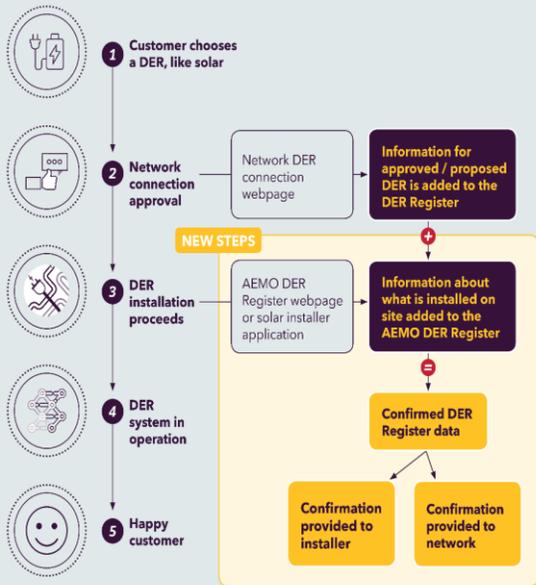
- Network submits data to AEMO

Step 5

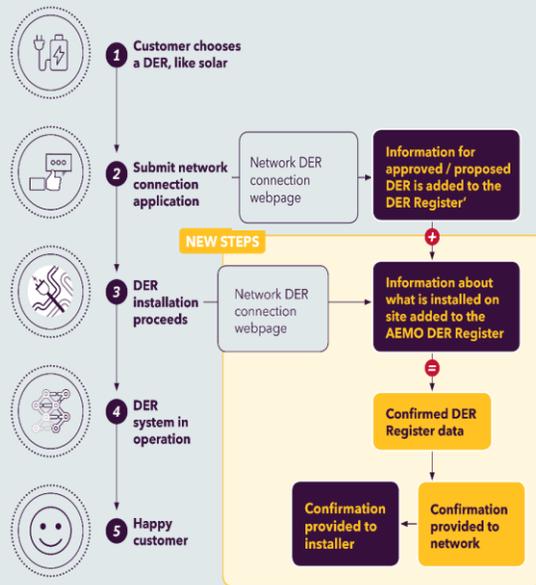
Network submits data to AEMO

State-by-State AEMO-DB process overview

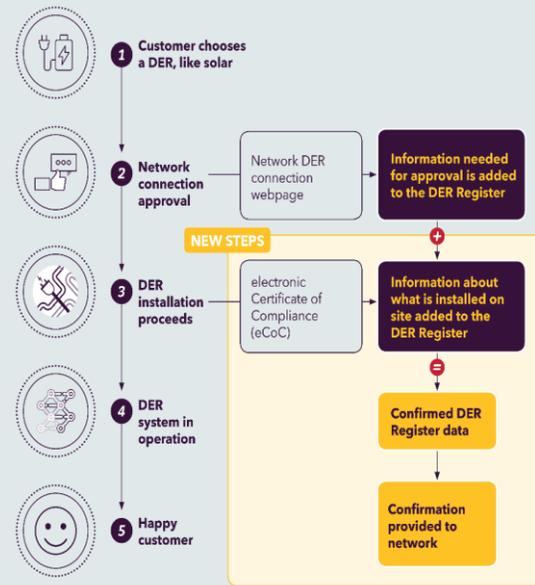
New South Wales



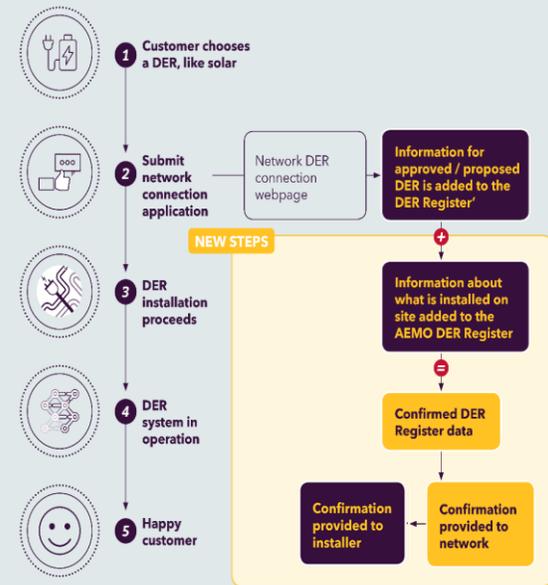
Victoria and Tasmania



South Australia



Queensland



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

What is AEMO's DER Register? Fact Sheet

New Rules require a register to be created

The Australian Energy Market Operator (AEMO) is on track to launch Australia's first database of distributed energy resources (DER) at the start of December 2019.

AEMO is responsible for operating Australia's energy market and power system, including the delivery of affordable, secure and reliable energy to consumers, whilst pursuing new data-driven solutions to help shape a better energy future for all Australians.

In late 2018, the Australian Energy Market Commission (AEMC) amended the National Electricity Rules enabling AEMO to establish a DER Register to improve visibility and access to essential device information across Australia.

AEMO has worked with stakeholders across the electricity sector to design the DER Register, agree on DER data sets and data collection processes into the register.

The comprehensive DER data held securely in the DER Register database will enable AEMO to:

- Forecast, plan and operate the grid more efficiently, ensuring the system and market can deliver energy at an efficient price for all customers.
- Be more prepared for major disruptions to the system with a greater understanding of how DER assets will behave during these events.
- Prepare the grid for major innovations with DER such as virtual power plants, and enabling customers to consider and participate in new markets with their DER, and
- Allow networks to make better informed decisions about network investment options in the future as demand changes and DER increases.

* Generation or facilities that are only used as standby or back-up power, and generators or storage that register with AEMO for market participation are exempt.

© AEMO 2019. What is AEMO's DER Register?

What is AEMO's DER Register? Fact Sheet

The DER Register system is designed to draw information from available data sets, such as the Clean Energy Council's approved product databases, to streamline data provision. Installers will be mostly be asked to confirm information, rather than enter it.

With better knowledge and visibility of DER, AEMO can better manage the grid and ensure that consumer-led energy investments can deliver their expected value to consumers and the energy system.

What is happening in the lead up to and after 1 December?

OCT	NOV	DEC
<p>System implementation:</p> <p>Present → 31 October System build</p>	<p>4 November → 29 November System testing</p>	<p>1 December onwards Go live Operate and refine</p>
<p>Key dates for Networks:</p> <p>Present → 29 November Prepare systems and processes for DER implementation</p>	<p>4 November → 29 November Industry testing available Final data for existing DER to be uploaded to AEMO systems</p> <p>17 November User guides available</p>	<p>Key dates for DER Installers:</p> <p>4 November onwards DER Register account system and training material available</p> <p>1 December onwards New rules to provide information to networks supply</p>

Want more information?
For more information and resources, visit [AEMO's website \(https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/DER-program/DER-Register-Implementation\)](https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/DER-program/DER-Register-Implementation)
Email questions to: DERregister@aemo.com.au

DER Register: Information for Installers in Victoria and Tasmania Fact Sheet

How can DER installers access information about the new requirements?

Before 1 December 2019, AEMO is having with stakeholders and will have information available on the AEMO website to ensure a seamless transition to the new requirements. Networks will be able to link their DER connection webpages to the AEMO information, and AEMO will make training material available in advance.

How does the new system change the DER connection process?

The connection process will remain unchanged for customers, and the local network service provider should always be the first place to go to get connected. But the local network will be required to provide information into the DER Register, and will ask qualified electrical contractors and/or DER installers to provide information about what is installed on site into the DER Register.

AEMO will generate a confirmation receipt once the DER installation is registered in the DER Register. This confirmation receipt will be issued to the network within 20 business days of the installation being turned on.

Legend

- Networks under construction
- DER Register
- AEMO system

Want more information?
Ask your local network service provider, or check the [DER Register website](https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/DER-program/DER-Register-Implementation) for more information.
You can also email us at DERregister@aemo.com.au

AEMO DER Register launching in December

Small generators, like rooftop solar, have been so successful that AEMO needs visibility of these devices to operate the grid securely for all Australians.

Consultation and information sessions are ongoing with networks, installers and other key stakeholders across Australia.

Electrical contractors and solar installers should ask their local network operator for details of changes required to provide data to the DER Register.

Stakeholders can also check out AEMO's project site for FAQs and more information <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/DER-program/DER-Register-Implementation>

The world's first DER Register will launch on 1 December 2019, giving AEMO visibility over small-scale solar, storage and other energy generation across Australia.

Where can I find more information? Check the [AEMO website](https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/DER-program/DER-Register-Implementation) for more background on the DER Register or email your query to: DERregister@aemo.com.au

- <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/DER-program/DER-Register-Implementation>

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?

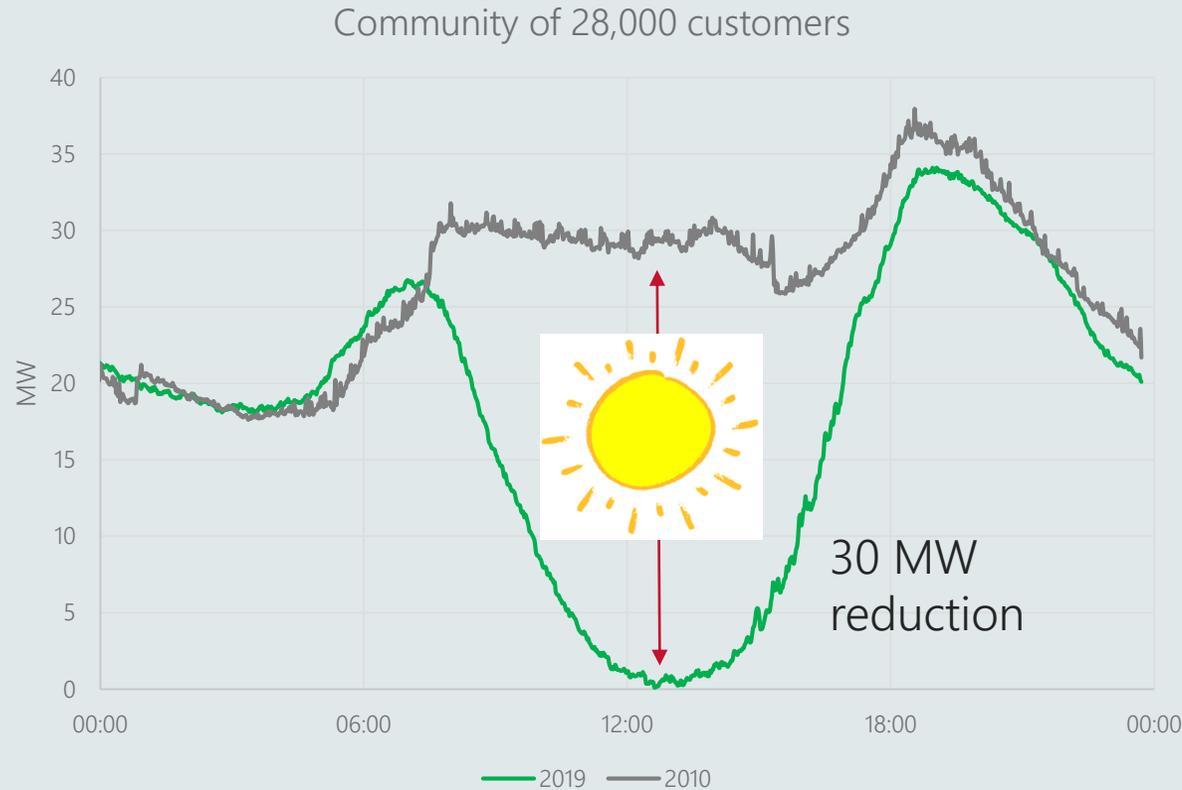
DNSP	From 1 December, Installers/ RECs must...
Jemena	<ul style="list-style-type: none">• Complete all Embedded Generation applications (Residential and Household) via the Jemena Portal – mobile friendly• Provide additional Embedded Generation data required for the DER Register• Pass the Embedded Generation application number (along with the EWR & CES) to the customer once installation complete
AusNet Services	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Minor changes to the eConnect portal which will prompt you for additional required information for DER Register
United Energy	<ul style="list-style-type: none">• New paper-based DER Register form for completion

New Inverter Power Quality Response Mode Settings - Model Standing Offer (MSO) changes

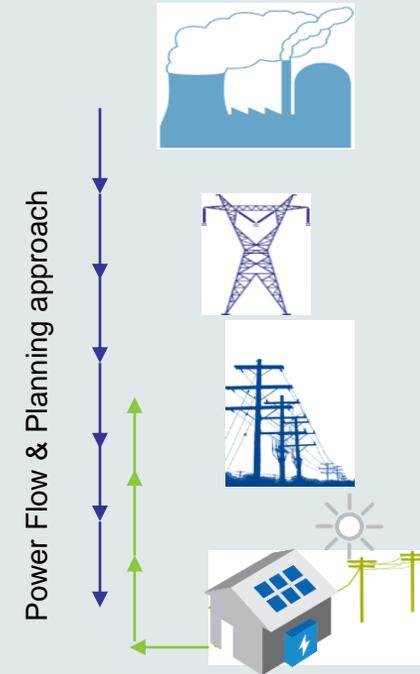
- In alignment with the DER Register changes, Victorian DNSPs are also introducing changes to our Model Standing Offer (MSO), i.e. our terms and conditions for connecting DER to the network
- All Vic DNSPs require inverters to have the following power quality response mode settings applied:
 - 'volt-var' 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

Why New Inverter Power Quality Response Mode Settings?

Our solar communities are driving a rapid change in distribution of power



Today's Network



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

Contact points

For more information regarding the DER Register or MSO changes:

Victorian DNSP	Contact
AusNetServices	Email: preapprovals@ausnetservices.com.au
CitiPower Powercor	www.powercor.com.au
Jemena	Email: network.connections@jemena.com.au
United Energy	www.unitedenergy.com.au or email ueconnections@ue.com.au
Australian Energy Market Operator (AEMO)	Email: DERRegister@aemo.com.au www.aemo.com.au/Electricity/National-Electricity-Market-NEM/DER-program/DER-Register-Implementation

