

Minimum system load (MSL)

Australia's electricity grids were originally designed to handle one-way distribution of power from large-scale generators to homes and businesses.

Today, unused electricity from millions of rooftop solar systems flow back into the power system.

This will provide a growing opportunity for consumers to participate in the energy market with their solar, batteries and electric vehicles, to improve electricity reliability and grid security.

However, in certain conditions high volumes of rooftop solar can reduce the need for electricity from grid-scale generation, known as minimum system demand or load events, which can pose risks to grid security.



What are the power system risks when demand is low?

AEMO can operate the power system with high levels of rooftop solar most of the time.

However, power systems require electricity demand at safe levels and essential system services, which are provided by large power stations with spinning turbines, to maintain a safe and resilient electricity system during normal operating conditions, but also respond to issues that can impact grid security.

On sunny, mild-temperature days, typically in autumn and spring, large volumes of electricity from rooftop solar can reduce the need for electricity from grid-scale generators via the transmission network, limiting access to essential system services.

When low demand (minimum system load) periods occur at the same time as a network issue, such as a transmission outage, AEMO as the power system operator may need to take actions to keep the grid secure, mitigating the risk of critical infrastructure damage and widespread or prolonged blackouts.




How does AEMO manage these risks?

AEMO alerts market participants through minimum system load market notices to the risks and actions being taken before rooftop solar management programs are activated as a last resort.

This process is similar to when AEMO communicates forecast low electricity reserve conditions, such as when heatwaves are causing high electricity use.

While a process with industry and governments has been established to manage these low demand conditions, AEMO is contributing to trials, research and reforms to enable more benefits from consumer energy resources, like rooftop solar, which will benefit all energy users.

Market notices are categorised over three tiers:


<p>MSL 1</p> 	<p>MSL 2</p> 	<p>MSL 3</p> 
<p>Advance notice</p> <p>AEMO provides advance notice of a possible minimum system event.</p> <p>The notice will generally be issued in advance, such as a day, to provide the market time to prepare and respond. However, it could be issued quite quickly if an unexpected condition arises.</p>	<p>Grid-scale actions needed</p> <p>This notice is issued if the risk remains. It states AEMO is taking available steps to maintain system security. These steps can include:</p> <ul style="list-style-type: none"> • Recalling planned transmission outages. • Reducing grid-scale generation. • Increasing electricity demand by large users. 	<p>Solar management activated</p> <p>If actions taken by AEMO with industry have not sufficiently reduced the risk, AEMO would notify the relevant state transmission network service provider to maintain demand at the required threshold.</p> <p>This may trigger the need to dial down or disconnect rooftop solar systems temporarily through solar management programs run by state governments and distribution network service providers, owners of the low voltage powerlines.</p>

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Where will this happen?

Rooftop solar management programs are active in [South Australia](#), [Queensland](#), [Victoria](#) and [Western Australia](#).

Only systems installed or upgraded from the start of these programs will be temporarily remotely dialled down or prevented from exporting into the grid.



About us: AEMO is the independent energy market and system operator and system planner for the National Electricity Market (NEM) and Western Australia's Wholesale Electricity Market (WEM). We are a not-for-profit company, with a membership of state and federal governments (60%) and energy industry members (40%).

More info: aemo.com.au/about/who-we-are