

# Minimum operational demand

Australia continues to invest in rooftop solar\* and other consumer energy resources (also referred to as distributed energy resources) at world-leading levels, with more than one-third of homes across the country now hosting rooftop solar systems.

Electricity output (also known as generation) from these systems continues to set new records in the National Electricity Market (NEM) on Australia's east coast and the Wholesale Electricity Market (WEM) in Western Australia.

The rapid uptake of rooftop solar is changing the core technical attributes of Australia's power systems, including the reliance on electricity from the grid.

\*Also referred to as distributed photovoltaic (DPV)



## What is minimum operational demand?

Operational demand is the electricity demand of the power system, which needs to be met by grid-scale generators such as wind, solar, gas and coal. Operational demand goes down when consumers use less electricity and when they generate more of their own electricity through devices like rooftop solar.

When rooftop solar electricity generation is high and consumption from the grid is low, this can create a minimum operational demand scenario.

## The challenge

When rooftop solar generation is high and temperatures are mild, the need for electricity from the power system plummets and displaces large gas and coal-fired generators, which not only provide electricity, but critical system security services. When this rare situation arises, the surplus rooftop solar energy needs to be managed to ensure the grid continues operating reliably, securely and safely.

But during minimum operational demand periods, these large coal and gas fired generators may no longer be operating. This means the essential system services need to come from elsewhere – either from the rooftop solar itself, or from new sources.

If AEMO cannot source these critical system security services from elsewhere, then it must intervene to keep the grid in a secure operating state.

## The solution

AEMO is collaborating with governments and industry to modernise Australia's power grids so they will be able to handle 100% instantaneous renewable generation at times.

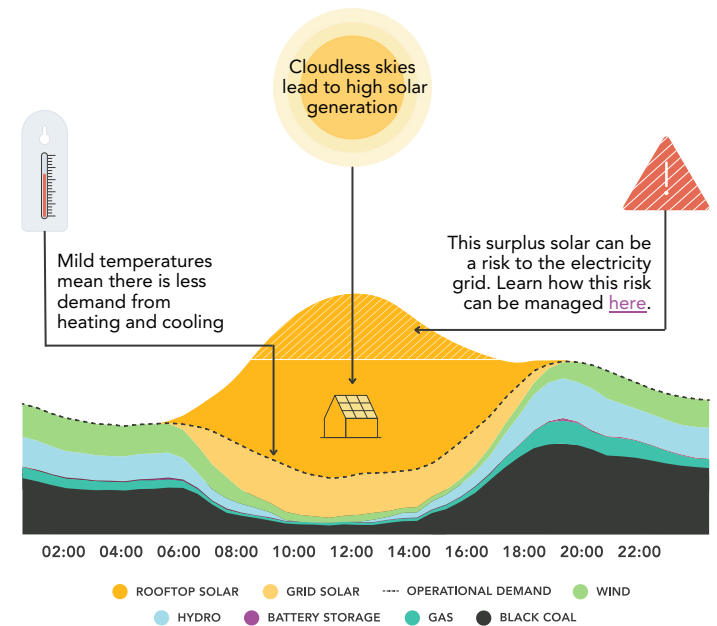
In the meantime, AEMO has processes in place to ensure the grid continues to operate securely and reliably during periods of minimal demand.

If demand falls below minimum thresholds, AEMO can make directions to maintain system security.

These directions can include recalling transmission outages and directing generators or large electricity consumers to operate in a certain way or deliver system security services.

Additionally, there are several state-based solar management programs that can be implemented as a last resort.

## The ingredients for a high rooftop solar day:



[South Australian](#), [Western Australian](#), [Victorian](#) and [Queensland](#) governments have implemented individual solar management programs that enable some rooftop solar systems to be dialled down or disconnected when all other options have been exhausted.

These emergency rooftop solar management programs are available to protect grid stability and minimise the likelihood of state-wide blackouts.

When this happens, AEMO will communicate the process and operating framework with industry. Read more on the Contingency and Minimum System Load framework on [AEMO's website](#).

Work is underway to unlock the full potential of integrating consumer energy resources. This work is expected to reduce the need for emergency rooftop solar management over time.

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](https://aemo.com.au/about/who-we-are)