Summarised by one word. Uncertainty.

Energy supply. Geopolitics. AI. Technology. Demand. New opportunities — and new threats.

ONE THING IS CERTAIN

We must reimagine the grid.

3 GWp

solar deployment target

100%

electric passenger vehicles by 2040

6 GW

of clean energy imports

Whatever the future energy system looks like, we must reimagine the grid that supports it.

THE NEW GRID

Four megatrends. Four signals. One certainty.

Define the environment — not one predicted end state.

THE NEW GRID

Eight forces. Not eight technologies.

01	Harnessing energy for resilience	resource security without a fuel chain
02	The grid is quietly changing its DNA	power electronics everywhere
03	The end of inertia	lost stability
04	The customer becomes the grid	a customer inside the system
05	The grid is the enabler	how the grid responds
06	The last mile becomes the frontier	how the grid responds
07	Assets that talk	how the grid responds
08	The new carbon arithmetic	

MEGATREND

01

Harnessing energy for resilience

Traditional generation produces from fuel. Solar harnesses what is there.

The sun sends no invoice.

No imported fuel requirement.
No pipeline to keep open.
No long international supply chain.

No tanker. No pipeline. No fuel supply chain.

MEGATREND 1

The right comparison is not generation cost. The true cost must include the resilience cost.

Storage, flexibility, stronger networks and low-carbon imports may be costly. But so are spare generation, fuel redundancy and duplicated infrastructure.

MEGATREND

01

Harnessing energy for resilience

MEGATREND

02

The grid is quietly changing its DNA

Most people have never heard of power electronics. But increasingly, it is everywhere.

MEGATREND 2

Nobody sees it. Yet it is embedded everywhere.

	Solar farm	connects through inverters
	Battery	an inverter with storage behind it
	HVDC link	two converter stations and a cable
	Wind turbine	a full-converter machine
	EV charger	a converter
	Data centre	a building full of rectifiers and UPS
11	**STATCOM / SVC**	the grid's own stability tools — also power electronics

MEGATREND 2

80%

of electricity will pass through a converter by 2030.

Industry estimates. The grid is becoming a fleet of controlled semiconductors.

MEGATREND 2

A physical machine follows the laws of physics. A converter follows code.

Fault response. Ride-through. Voltage support. Frequency response. Increasingly, these are control settings.

MEGATREND

03

Stability is no longer free

The old system gave us inertia and fault current as by-products of generation. The New Grid must engineer them explicitly.

INERTIA CONTRIBUTION

We built generators for energy. Stability came with them.

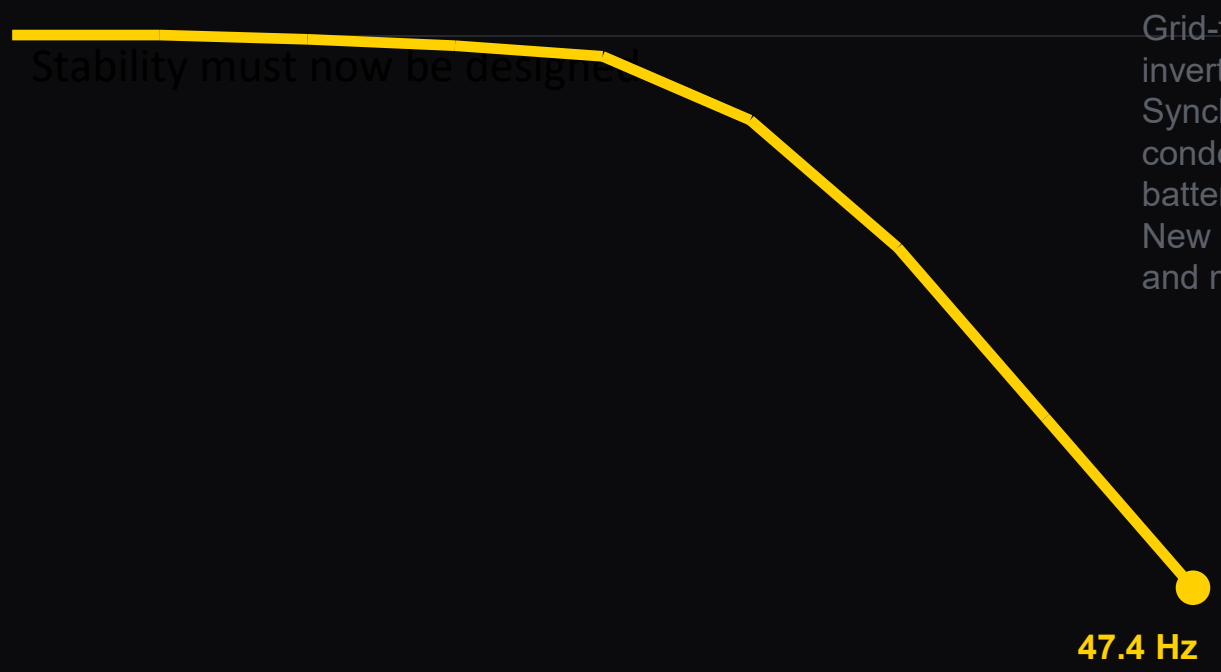
Spinning Steel

Balances the grid and maintains frequency and voltage.

Need to design Stability in the New Grid

28 APRIL 2025 · 12:33

The Iberian blackout.



System frequency, first seconds

Grid-forming inverters. Synchronous condensers. Fast battery response. New protection and modelling.

15 GW

lost in five seconds — about 60% of everything running on the Spanish system.

MEGATREND 3

Energy may become cheaper.
Stability may become more valuable.

01	Grid-forming inverters	
02	Synchronous condensers	
03	Fast frequency response from batteries	
04	Protection redesigned around voltage and impedance	not raw current

MEGATREND

04

The customer becomes the grid

Solar, batteries, EVs and flexible loads turn passive consumers into active system participants.

AUSTRALIA · ROOFTOP SOLAR

22.5 GW

the entire coal fleet

The customer can now

28.3 GW

rooftop solar — 4.3 million systems, one home in three

Customer-owned generation is now larger than the country's coal fleet.

MEGATREND 4

The same asset can create a problem — or solve one.

The asset has not changed. The intelligence around the asset has.

The customer used to sit at the end of the grid. Now the customer is inside it.

Generator, store, flexible load and voltage problem — at one meter. Our tariffs, connection standards, control systems and culture were all built for the old customer. That is the work.

FOUR MORE SIGNALS

Eight forces, moving at once.

01 The grid becomes the enabler

02 The last hundred metres becomes the frontier

03 Our assets need to start talking

04 The carbon arithmetic gets harder

22

22

CLOSING

The twentieth-century grid was built for predictability. The New Grid must be built for change.

Our job is not to predict the perfect end state. It is to build a grid capable of responding to whatever end state emerges.

If we want the energy transition,
the AI economy and resilience,
we need a grid that can carry all three.

The grid cannot remain the last conversation. It must become the first.

The grid is the largest machine is the mankind has ever built.
It is running.
And it is ours to rebuild…

NOW

Thank you.