

Immediate actions on electricity grids are the missing piece of the puzzle in responding to the energy shock

Introduction

Below are recommendations about what governments can do right now to unlock grid solutions to the current crisis. Please consider integrating these discussion points into your media work and meetings with policymakers in the way that works best for you.

This document was prepared by Global Grids Catalyst as part of evolving work with allies. A more detailed 10 point plan will be published during London Climate Action Week in June.

The unpredictable long tail of Hormuz

- Even if peace is agreed the energy shock will persist due to [uncertainty over safety](#) in the Strait of Hormuz, delays in fuel shipments and [damage to fossil fuel infrastructure](#).
- Short-term actions on grids are necessary to both alleviate current pressures and enhance energy security now and in the future.

Burning through taxpayers money

- Governments have responded to oil & gas volatility through a range of [measures](#), often using precious public funds to bring down skyrocketing prices for consumers.
- But the IMF [warns](#) fuel subsidies are “costly, poorly targeted and difficult to reverse”.

Promising alternatives while ignoring grids

- Several governments have promised to accelerate the use of solar and wind energy, as well as electrifying transport, heating, cooling, and cooking.
- But they have mostly ignored how any of this will succeed with grids that were designed and are operated with outdated rules, procedures and technologies. Grid capacity constraints need addressing.

What needs to happen

Three weeks into the energy crisis the IEA set out 10 short-term [recommendations](#) to reduce oil use. But the energy shock highlights the need for governments to take broader action. This is about building an energy system that is more secure and maximises cheap domestic renewable energy sources.

Governments need to fully integrate near term measures on electricity grids into the energy crisis response to immediately reduce vulnerability to oil & gas shortages and price rises. They can do this through policy reform, investments, subsidies and incentive payments.

1. **Increase capacity:** Increase the ability of the existing grid to carry more power.
2. **Fill that capacity:** Proactively allow more power into the grid from a variety of sources including batteries and electric vehicles.
3. **Flex demand from consumers:** Smooth peaks in demand from households and businesses to overcome constraints in grid capacity.

A 10 Point Grids Plan to match the urgency of the energy shock

Below are 10 policies and investments in electricity grids that can immediately reduce consumers' vulnerability to oil & gas shortages and price spikes.

Synergies between the 10 points can create greater impact.

Increase the ability of the grid to carry more power

1. Increase the use of **dynamic line and dynamic transformer rating** to maximise the network that's already built.
2. Implement **inter trip schemes** across constraint boundaries to release more pre fault capacity.
3. Adopt **advanced conductoring** to enhance the capacity and efficiency of wires to carry significantly more power.
4. Invest in **buffering batteries** to bridge the gap between grid limitations and demand.

Proactively allow more power into the grid

5. Increase **dynamic operating envelopes** to optimise more power availability from all grid connected resources, including consumer owned renewable energy resources.
6. Increase the use of **power flow controls, data and forecasting** to keep a closer eye on how much electricity there is in the system, reduce congestion and use more of the existing grid.
7. Invest in **vehicle to grid technologies** to leverage the significant storage capacity of EVs and reward consumers with financial incentives.
8. Cut red tape for **plug in solar and batteries** to accelerate consumer generation and consumption.
9. Bring forward **grid connections** for shovel ready renewable generation and storage projects.

Flex demand to smooth peaks and overcome constraints in grid capacity

10. Promote **demand and consumer led flexibility through** tariffs to smooth peaks and troughs (reduce curtailment and outages) and reward consumers financially. Take a technology agnostic approach to allow services from electric vehicles, batteries and renewables.

Examples of the benefits of taking action

Dynamic line rating and power flow controls to make the most of existing wires:

- In the UK, USA, Belgium, France, and Norway dynamic line rating has increased line capacity by [10–45%](#) by strategically allowing transmission lines to carry more power.
- When National Grid installed [SmartValves](#) to overcome bottlenecks in northern England an estimated [1.5 GW](#) of extra capacity was unlocked from the grid - enough to power [1 million homes](#).

Storage to enable flexibility and maximise domestically generated electricity:

- Australia is already reaping the benefits of its [Waratah super battery](#) that strengthens resilience and enables higher amounts of [cheaper renewable energy](#) to be used.
- Germany is building 700 MW of [booster batteries](#) to store renewable energy (such as offshore wind energy in the north) so that it is [not wasted](#) at times of congestion.

Vehicle to grid to strengthen modern flexible grids:

- Pilots in Denmark have already demonstrated that vehicle to grid technologies can supply [thousands of hours](#) of frequency services, while also making money for their owners.
- Engie is enabling customers in France, Belgium and the Netherlands to [charge their EVs more cheaply at night](#) as part of efforts to promote grid flexibility.
- Investments today will enable grids to integrate the huge capacity of batteries inside the [booming](#) sales of 2, 3 and 4 wheel electric vehicles.

Demand response to strategically shift consumers energy consumption:

- Initiatives to encourage flexible demand from consumers have been [successful](#) in a [range of countries](#). They are a way to shift electricity demand to times of high renewable energy generation, reducing the need to use alternatives such as gas.
- The IEA finds that “demand flexibility can [raise system efficiency by up to 30%](#)” if it improves how generation and network assets are used.
- In South Korea there is around [4.9 GW](#) of registered capacity available to help reduce peak demand in summer and winter.