RGI FACTSHEET | MARCH 2025

Implementing the 24/7 Carbon-Free Energy (CFE) approach

WHERE ELECTRICITY GRIDS AND FLEXIBILITY MEET

Elements of 24/7 CFE

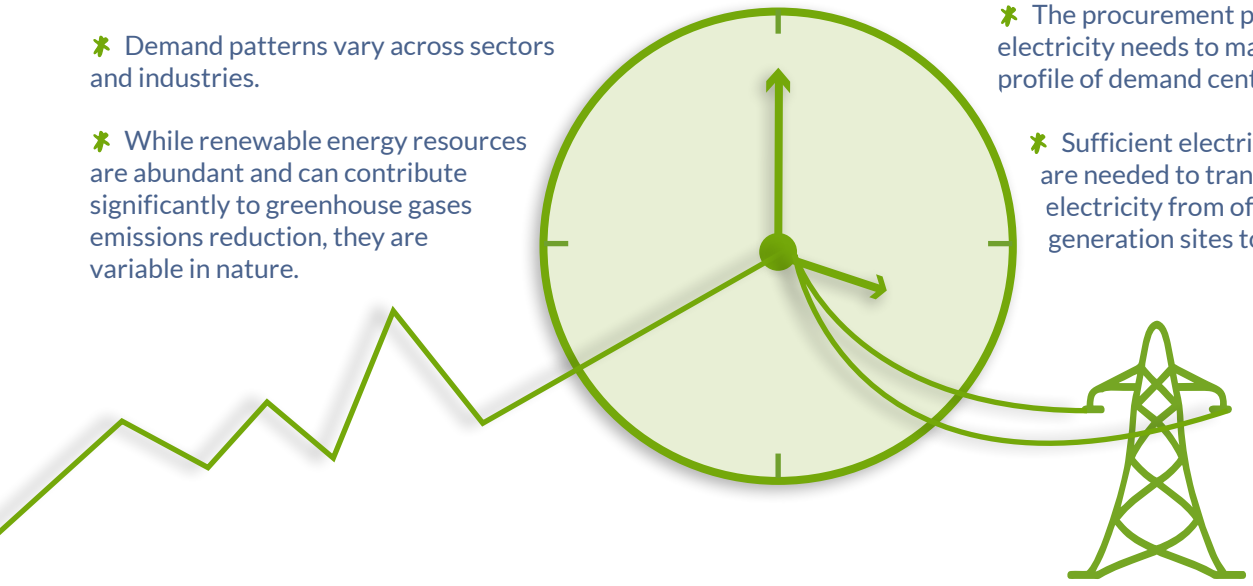
The 24/7 CFE approach aims at establishing a voluntary demand decarbonisation framework by matching in an hourly basis renewable energy generation with electricity demand on the local grid.

TO ACHIEVE 24/7 CFE, ONE SHOULD CONSIDER THAT:

- Demand patterns vary across sectors and industries.
- While renewable energy resources are abundant and can contribute significantly to greenhouse gases emissions reduction, they are variable in nature.

FOR 24/7 CFE THIS IMPLIES THAT:

- The procurement portfolio of renewable electricity needs to match the consumption profile of demand centre.
- Sufficient electricity grid capacities are needed to transfer renewable electricity from often remote generation sites to where it is needed.



How electricity grids and flexibility complement each other?

Flexibility and electricity grids emerge as key elements of success in delivering the 24/7 CFE approach.

Flexibility helps to mitigate variability and uncertainty, ensuring that the electricity grids and energy system remain stable and resilient in view of:

- Growing electricity demand
- Increasing shares of RES in the energy system
- Potential system disruptions

For **24/7 CFE**, flexibility can support demand to align their consumption patterns in response to:

- RES generation availability
- Intra-year RES variability
- Inter-annual weather variability
- Underlying electricity grid conditions
- Dunkelflaute events

The multifaceted nature of flexibility

FLEXIBILITY SERVES MULTIPLE FUNCTIONS

It addresses **diverse needs** across the energy system and different timeframes, such as:

DAILY **WEEKLY** **SEASONAL**

variations in demand and supply

It can be provided by a range of technologies and operational services, enabling a **dynamic response** to system needs, such as:

- **DEMAND** response
- Multiple types of **STORAGE SYSTEMS**
- Electricity **INTERCONNECTORS**

Temporal and geographical granularity of the 24/7 CFE, requires electricity demand to be **managed in a flexible way**, allowing to achieve decarbonisation goals in an efficient and affordable manner.

The **optimal flexibility** solutions should balance the demand profiles and the energy system at large.

24/7 CFE can become the driver that stimulates investment to **accelerate the development and deployment** of technological solutions enhancing demand and system flexibility.

Policy relevance of flexibility

Recent EU policies, including the EU Action Plan for Grids, Competitiveness Compass, Clean Industrial Deal, and Affordable Energy Action Plan all recognise the **central role of electricity grids and flexibility** in achieving net-zero, system efficiency and optimisation, underscoring the need for effective implementation.

In line with the revised Electricity Regulation, a wide range of stakeholders across the EU, including ENTSO-E, the EU DSO Entity, ACER, and Member States, are collaborating to assess and unlock flexibility across the continent, contributing to **improved system planning and operation**.

Renewables Grid Initiative

Co-funded by the European Union

Watch the RGI webinar on flexibility and 24/7 CFE: