

CIGRE 2024 Key Take Aways

Study Committee C6, by Evert de Haan



cigre

For power system expertise

C6 agenda during the conference

Monday

- Opening panel

Tuesday

- Poster Session
- Tutorial: Aggregation of BES and DER
- Workshop: Customer-Side Energy Resource Management (*with C5 and D2*)

Wednesday

- Group Discussion Meeting

Thursday

- Study Committee Meeting



Opening panel – C6 is more important than ever!

We search for affordable, **energy-intensive flexibility**. Power-intensive flexibility is available but won't save the European system.

~ Damian Cortinas

Quick network expansion and volatility are hard. We get increasingly less time to repond. Flexibility requires more **automation** and **digitalisation**, as well as storage.

~ Ambra Sannino

DSOs have the cash register.

~ Kurt Dedekind

As we electrify more and more of the economy, **reliability** and **resilience** become more and more important.

~ Vincent Sorgi

People are willing to **opt in** to DER flexibility schemes. But after the fourth hot day in a row, you see people **opting out**.

~ Alex Cruickshank

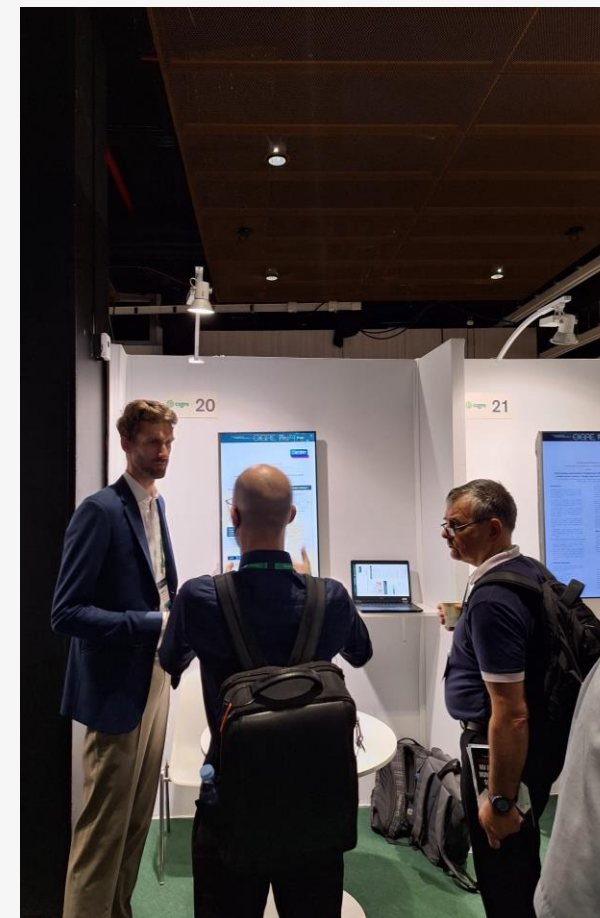
Capturing all flexibility in a **tariff**, we saw how well this worked in Texas.

~ Gordon van Welie



Poster Session

- 72 posters were presented over two sessions
- 5 posters were NGN papers
- 1492 attendees
- Great interest and a lot of interaction



Tutorial: Aggregation of Battery Energy Storage and Distributed Energy Resources

- Hosted by Working Group C6.43
- 597 attendees spread over two rooms
- Details can be found in the soon to be published Technical Brochure
- Difficulty finishing in time due to the great interest



Workshop: Customer-Side Energy Resource Management

- Hosted by Study Committees C5, C6 and D2
- Representation from C6 by Daniel Eghbal (C6.47) and Evert de Haan (Secretary)
- 186 attendees
- Very active discussion
- Controlling customer-side flexibility requires
 - Fair, clear, predictable and efficient tariffs (long- and short-term)
 - Interoperability of devices
 - Cyber security
 - Clear standards
 - ...



Workshop: Customer-Side Energy Resource Management

Salient items

- Customers just want to **minimise** their **bill**. Find a way that they don't have to be interested.
- What is the **social license** of controlling behind-the-meter devices?
- Energy/Capacity of different sources all has the **same value**, whether it be solar, wind or coal. The same holds for batteries.
- Most **flex volumes** are in changing the general profiles (futures market). Less flex volumes are in day-ahead uncertainties and even less in real time.
- Additional **short-term balancing need** is small. Generators remain responsible for an appropriate energy balance.
- You need to *know* customers are going to **change** their **load**. An incentive is not enough.



Group Discussion Meeting

Statistics

- 78 papers were submitted
- 37 prepared contributions
- 3 NGN presentations
- 2 Working Group presentations
- 217 participants

Preferential subjects

- Flexibility Management in Distribution Networks
- Power Electronic based Solutions for Smart Distribution Systems
- Rural, Islanded and Industrial Electrification Standards, Practices and Technology Options



Group Discussion Meeting – Salient items

- **Stability (1):** A few years ago, we thought grids with over 10% of rooftop PV penetration would be hard. In South Australia they already have more than 100% of load covered by behind-the-meter PV. Still the system runs with maybe 1 CCGT and batteries.
- **Stability (2):** Technologies such as dynamic operating envelopes and grid-forming converters may be needed to assure system stability.
- **Reliability:** Have we designed too reliable a system? Can we find this out (without having to switch of customers)?
- **Load management:** Dynamic pricing is emerging as a non-direct control method. It encourages consumers to shift their energy usage patterns. No guarantees for certain responses, though.

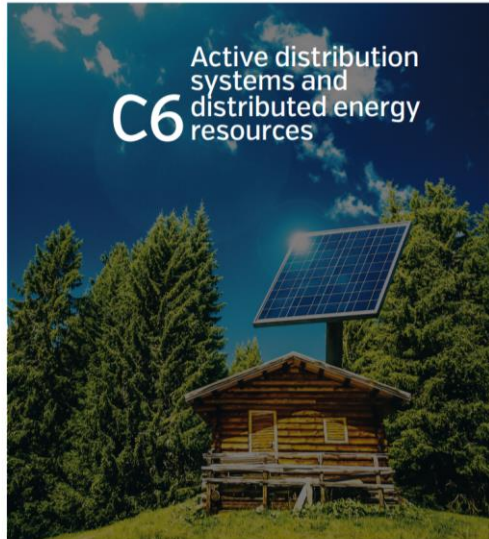


Group Discussion Meeting – Salient items

- **Tariffs:** Energy could also be valued non-financially. For example, customers could be exempted from rotating outages if they allow their flexibility to be used. Could work for green power, local power, and other values as well.
- **Reinforcement vs. flex:** Balancing the use of DERS alongside necessary grid upgrades is crucial for sustainable and reliable energy management.
- **Battery use cases:** Batteries are being used in numerous use cases: peak-shaving, financial optimisation, optimising self consumption, emergency power, and more.



Study Committee Meeting: Recent Technical Brochures of (Joint) Working Groups



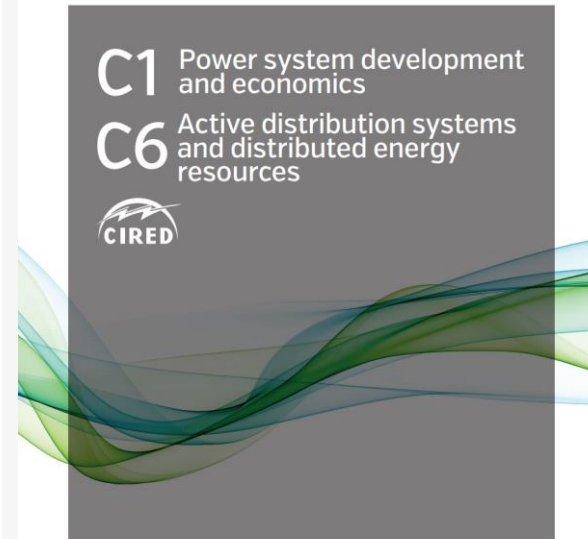
Distributed Energy Resource Benchmark Models for Quasi-Static Time-Series Power Flow Simulations

 TECHNICAL BROCHURES
June 2023 - Reference 906



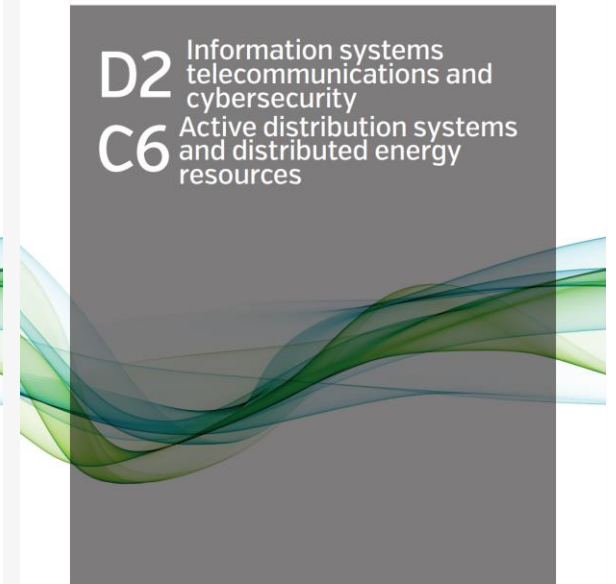
Aggregation of Battery Energy Storage and Distributed Energy Resources

 TECHNICAL BROCHURES
May 2024 - Reference 932



Optimal transmission and distribution investment decisions under increasing energy scenario uncertainty

 TECHNICAL BROCHURES
January 2024 - Reference 923



Advanced Consumer Side Energy Resource Management Systems

 TECHNICAL BROCHURES
April 2024 - Reference 929

Study Committee Meeting: Proposed new Working Groups

- Dynamic simulation technologies
- Power system operational control
- Hosting capacity (*potentially together with CIRED*)
- Dynamic operating envelopes

