SCALE

SCALE INSIGHTS

TURNING EV FLEETS INTO GRID ASSETS

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EQUIGY

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THE POTENTIAL OF EV FLEETS IN GRID BALANCING

As electric vehicles (EVs) become more widespread across Europe, so does their value beyond mobility. **EV batteries can act as flexible, distributed energy resources, helping not just to decarbonize transport, but also to stabilize the electricity grid.** One of the most critical grid services in this context is automatic Frequency Restoration Reserve (aFRR), a fast-response service that helps correct short-term grid imbalances and maintain system frequency.

Within the SCALE project, We Drive Solar, Enervalis, and Equigy demonstrated that EV fleets can deliver this service in real-world conditions. Successful tests in the Netherlands showed that EVs can respond to aFRR signals reliably and at scale, delivering **up to 700 kW of flexibility**, even under today's infrastructure and regulatory limitations. Unlocking this flexibility is crucial, as the grid increasingly relies on distributed resources like EVs to balance rising renewables and fewer conventional power plants.

WHAT NEEDS TO HAPPEN NEXT?

1 Use smarter data reporting to reduce network load

Implement delta monitoring, where data is only sent when meaningful changes in charging power occur. This reduces communication traffic while keeping data accurate, essential for scaling EV participation without overwhelming networks.

2 Improve baseline calculations to prevent false alarms

Refine how baseline energy use is calculated to avoid errors caused by sudden data spikes. More frequent updates (e.g., every 4 seconds) or threshold-based reporting can prevent valid grid activations from being mistakenly rejected.

3 Adopt faster, cost-effective communication technologies

Transmission System Operators (TSOs) and aggregators should invest in cost-effective communication solutions such as 5G or edge computing to enable reliable, real-time signal transmission from thousands of EVs.

4 Update regulatory frameworks to welcome new market players

Modernise grid rules to include EV fleet managers and other flexible actors. Flexible, innovation-friendly regulations will open markets while maintaining grid security.

5 Allow temporary data variations with post-event corrections

Accept small, short-term deviations in reported data that can be corrected after the fact. This approach increases market access for EV fleets and is supported by emerging standards such as **OCPP 2.0.1**.

6 Enhance prequalification and forecasting models

To unlock large-scale EV participation, TSOs need to refine their prequalification criteria and improve models that predict power delivery and detect baseline shifts.