ABB’s Vehicle-to-Grid technology

What is Vehicle-to-Grid?

Vehicle-to-Grid (V2G) technology opens new opportunities for energy trading and smart energy management. V2G technology unlocks the energy stored in electric vehicle batteries so that households and fleets can support the grid when demand peaks. V2G gives utilities access to the renewable energy stored in vehicles so they can better balance loads and mitigate grid bottlenecks.

How V2G works

Electric vehicle charging is usually a one-way “Grid-to-Vehicle” flow of energy. The power stored in EV batteries is used exclusively for driving.

Bi-directional V2G charging points make EV charging a two-way street. At times when the grid’s power demand spike, fully charged vehicles have the ability to feed stored energy back into the network.

EV owners charge the grid a fee for the service, enjoying a return on their EV investment while setting sensible limits to ensure they always have the range they need. Smart grids benefit by maximizing their use of renewables and optimizing their carbon footprint in real time.

V2G use cases

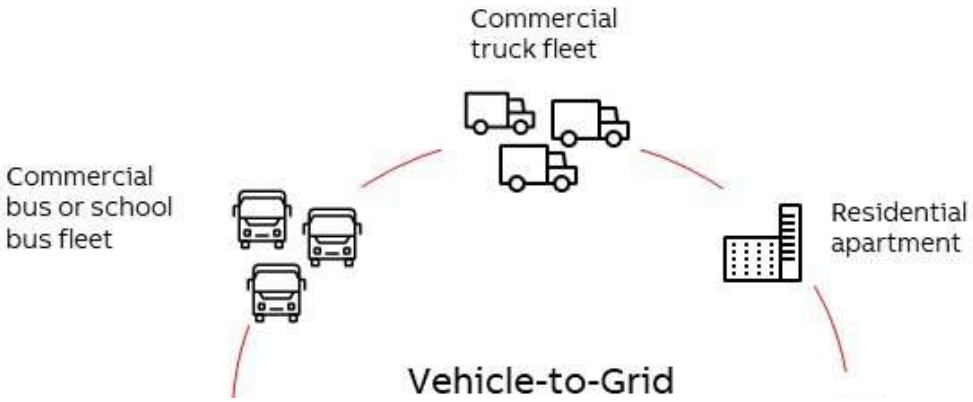
With the number of EVs on the world's roads forecast to rise to 559 million by 2040, our energy ecosystems are evolving. Energy is becoming more intelligent, interconnected – and EVs are becoming an active part of the network.

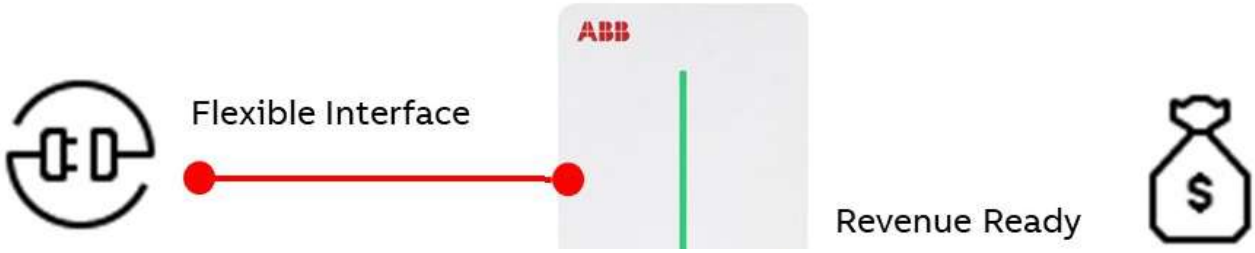
V2G technology is a key component in strategies to address climate change. The technology makes integrating renewables more efficient, mitigating grid bottlenecks and minimizing grid volatility.

The technology also has transformative potential for energy markets. V2G leverages society's investment in e-mobility to make energy more agile. It creates new business models and additional revenue opportunities by sharing a crucial, under-utilized resource: EV batteries.

The use cases for V2G are compelling. For utilities and operators of larger EV fleets, the benefits are unmissable. And, with ABB's bi-directional charging solution, smarter energy and emission-free mobility strategies are better connected and more cost-effective.

Where is the EV used and charged / discharged





What are the benefits of Vehicle-to-Grid?

Utilities

V2G supports in balancing the grid and smoothly integrating renewables, it enables utilities to become less dependant from fossil fuel power plants. V2G technology helps utilities in reaching their sustainability targets.

EV driver

Since V2G solutions are expected to become a financially beneficial feature for utilities, they have a clear incentive to encourage consumers to take part. Consumers will be rewarded if they make their battery available to the utility to be used for V2G. This will result in a lower total cost of ownership.

EV fleet operators

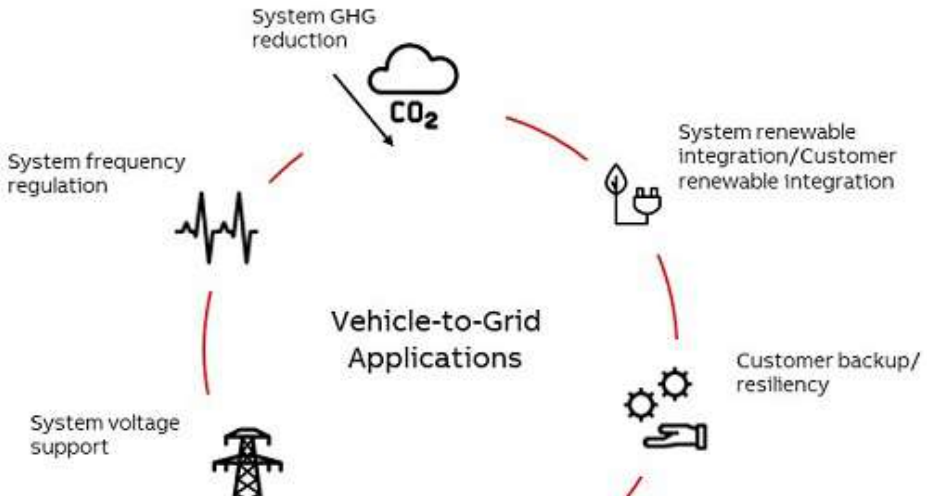
Fleet owners can make money with their fleet by putting power back to the grid and reduce their energy costs by being more active in consuming the energy. While the stored energy can be used in case of a power outage, continuous operation is guaranteed.

Commercial buildings/homes

V2G helps in the storage of renewable energy and consuming it again when you feel is the right moment. With V2G, the momentary electricity consumption spikes in the building can be balanced with the help of electric cars and no extra energy needs to be consumed from the grid.

Learn more on some of the key V2G applications

The V2G applications refer to the service(s) that this technology aims to provide. Applications can be broadly grouped into “customer applications” that focus on services to the electricity customer and/or EV owner/operator, and “system applications” that focus on ancillary services to the grid.



Highlights

Stay tuned, new V2G solution launching soon

EVs to return power to grid with ABB intelligent charging

Powering e-mobility forward