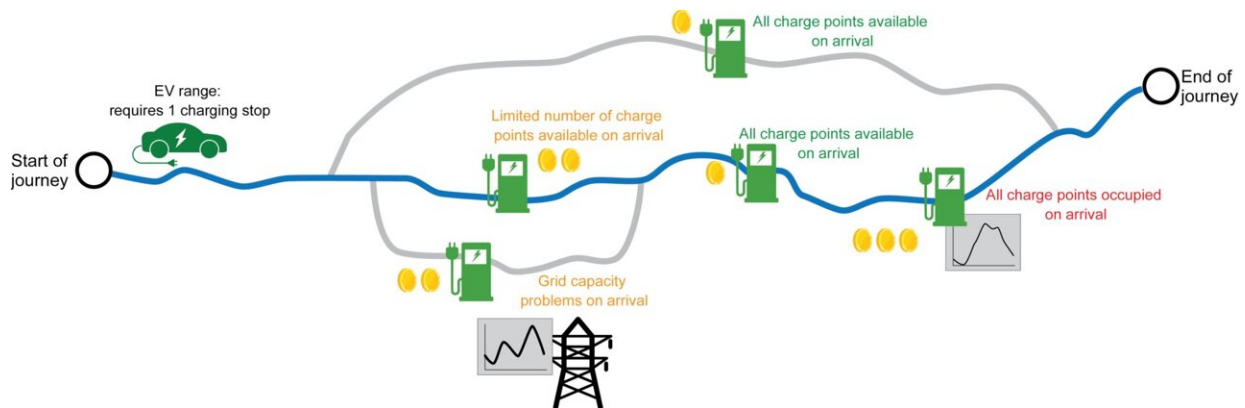


Smarter charger pricing offers effective emergency aid to the power grid

March 16 2023, by Hanne Strypet



On a car journey, a motorist may have a number of routes and charging stations to choose from. A useful overview of charging prices based on factors such as frequency of charge point use and power grid capacity may help motorists to select their route and charging stations. Illustration: SINTEF. Credit: *2021 IEEE Madrid PowerTech* (2021). DOI: 10.1109/PowerTech46648.2021.9494818

More and more things in our lives are being "electrified," not least in the transport sector. This puts local power grid capacity under strain. Expanding the grid to relieve the system is expensive and takes time. And besides, the bill always ends up being sent to the consumer in the form of increased grid tariffs.

"This is why we need immediate solutions that can relieve the pressures on the power grid," says Bendik Nybakk Torsæter, who is a Research

Manager at SINTEF Energy Research.

He and his colleagues are proposing that charge point operators should introduce a so-called dynamic pricing system at public EV charging stations.

"This will have a positive impact on the Norwegian power grid and, according to our research, will help avoid bottlenecks," he says Torsæter.

Today, most public charging stations offer flat pricing. The price is the same all day and all night.

A dynamic system will offer higher charging prices at locations where 'everyone else' is using electricity, and lower prices in places where the grid has better capacity. Your electric car is one of the few electric items that can be adapted to flexible power consumption. You can simply drive it to another charging [station](#).

Best for the consumer and wider society

As part of a research project called FuChar, Torsæter and his colleagues have been taking a closer look at the links between the power grid and electric vehicle (EV) charging. They have applied a new approach that calculates how charging impacts on the power grid, taking EV drivers' charging behaviors into account. Their results, published recently in the proceedings of the conference *2021 IEEE Madrid PowerTech*, demonstrate that dynamic pricing offers benefits to both the [power](#) grid and consumers.

"Furthermore, the infrastructure for fast charging stations will be better exploited and we will avoid having to construct too many inessential facilities. This will be cheaper for everyone, and also the optimal solution from a socio-economic perspective," says Torsæter.

"The Norwegian Postal Service and the freight management company ASKO, as well as other major players, are now fully committed to introducing EVs to their fleets," says Torsæter. "Not all of these vehicles can charge at the company depots and will have to use public charging stations," he says.

According to Torsæter, if these players are offered the right incentives, it ought to be easy for them to draw up effective charging schedules that will help to flatten the output peaks in the [power grid](#).

EV owners can relieve the power grid

"EV motorists planning a long journey can select their route and charging stations based on where charging is least expensive," says Torsæter.

However, the Norwegian Electric Vehicle Association (NEVA) disagrees, saying that consumers have only limited opportunities to adapt to charging availability, especially when it comes to fast charging.

"This makes us much less sensitive to prices, and it's far from certain that dynamic pricing will have much influence on charging patterns," says Erik Lorentzen, who is head of technical issues and consultancy at the NEVA.

How do we set charging prices?

If dynamic pricing is introduced, Lorentzen wants to see charge point operators offering adequate price information so that motorists know exactly what they are paying and why.

"This must be done physically at the stations themselves so that the

information is easily accessible to all," he says. "There should also be detailed supplementary information such as the following day's price, perhaps on an app. And we cannot accept operators changing prices during a charging session," says Lorentzen.

Torsæter thinks that charge point operators should speak with the grid companies with a view to developing effective price setting tools and systems.

The proposal offered by his research team is that charger pricing should be based on a combination of factors such as load on the local grid, the electricity price, the [grid](#) tariff and the time of day when demand for public charging is greatest. This is effectively a form of 'rush-hour levy,' designed to prevent queueing at the charging stations.

More information: Michele Garau et al, Agent-Based Analysis of Spatial Flexibility in EV Charging Demand at Public Fast Charging Stations, *2021 IEEE Madrid PowerTech* (2021). [DOI: 10.1109/PowerTech46648.2021.9494818](#)

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