PV in Mobility

Publieke samenvatting / Public summary

Aanleiding

The Netherlands is one of the fastest countries to adopt electric vehicles and to provide charging infrastructure. Both nationally and globally the use of electric vehicles is growing exponentially and the uptake of electric vehicles will increase further. Electric vehicles (EV) as distributed, mobile energy storage systems offer opportunities for optimisation of the use and the inherent variability of photovoltaic (PV) solar energy in the electricity grid. PV will play a pivotal role in supplying and optimizing the EVs energy system and creating more flexibility in supply and demand. This requires understanding of the multidimensional space of the offer of solar energy, charging behaviour, charging locations, and opportunities for temporary energy storage in EVs and discharging to the grid. How can PV be integrated into this charging/discharging infrastructure, what does that mean for the electricity grid and what benefits can it bring in terms of CO2 mitigation, fuel cost reduction, energy efficiency of transport and ultimately an energy-neutral urban environment? And how can these benefits lead to new business opportunities and products?

Doelstelling

The goals of the project are to design and analyse a distributed PV2EV charging system in the Netherlands, considering both PV in the infrastructure and PV integrated into the EV itself. The project will identify new business opportunities for different parties along the PV and EV value chain and create a conceptual design of a Dutch PV2EV system. This work contributes directly to the main

Projectinformatie / Project information

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Algemene informatie / General information

Penvoerder / Secretariat
Nederlandse Organisatie voor toegepast-natuurwetenschappelijk onderzoek TNO

Publicaties en materialen / Publications and attachments

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  Eindrapport TEUE518019

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aims of PL 5b, Energy services from and for electric transportation, where the focus is on the provision of energy services to owners and / or users of EV's. It will provide essential insights into the interaction of the EV's, batteries, charging infrastructure, photovoltaics and the grid. The project outcomes will provide a broad range of end users, including energy service providers, network providers, PV industry, charger developers, automotive industry, consumers, government and policy makers the necessary tools and options to make better business decisions about this emerging economy. Additionally, the project will connect with international efforts to charge EVs with PV such as the IEA PVPS Task 17, PV in Transport1, in which the Netherlands has a leading role.

Korte omschrijving

The institutes of TNO and University of Twente (UT) will perform the core research and reporting in this project. TNO focusses mainly on the pre-design study based on experimental research with EVs and business cases, and UT will carry out a comparative LCA on PV2EV mobility systems in the Netherlands and will design a conceptual PV2EV system based on the input from TNO and the feedback of the industry partners. The work at TNO and UT will be aided by regular feedback from an Industrial Advisory Board (IAB) made up from our partners and other experts from the vehicle, grid, and smart grid communities which will meet at various workshops. At the end of the project, a joint workshop will be held to reach out to other parts of the supply chain as well as the European and International communities.

Resultaat

1 An optimal Dutch Solution for EV charging using solar energy: A conceptual design will be created for a PV2EV system based on one specific selected use case and performance criteria. The design will be based on select business cases and business opportunities for Dutch industry as determined with the IAB, as well as the benefits to the value chain. 2 Pre-design study on the potential, costs, benefit and technology requirements for PV integrated charging

infrastructure in the Netherlands, including PV integrated in vehicles.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.
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