



## SCPEVN

### Increased Self Consumption of Photovoltaic Power for Electric Vehicle Charging in Virtual Networks.

” *SolarCharge 2020 intends to promote inventive smart grids with locally produced solar electricity.*

#### **SolarCharge 2020 utilizes batteries in electric vehicles to store solar electricity.**

The project aims to increase self-consumption of photovoltaic (PV) power production and increase the use of renewable energy sources (RES) in electric vehicles (EVs) charging by introducing and demonstrating an aggregated system and corresponding business model of charging stations, PV installations and the technology to control charging power. The combined use of electric vehicles and renewable energy sources such as solar power has the potential to greatly reduce CO<sub>2</sub> emissions, impacting both the power and transport sectors.

#### **The business model are based on a Solar Bank.**

One way to achieve the objectives of the project is through the deployment of an aggregated system that links solar power production to electric charge through a virtual network.

The virtual network, “Solar Bank”, is the concept for supervisory control and data acquisition. The solar bank measures production from affiliated solar power producers, and provides a basis for the issuing of Guarantees of Origin (GOs). These GOs can then be traded or exploited by solar power users such as EV owners or providers of specialized parking lots with chargers for EVs connected to the solar bank.

#### **Project Duration**

01.04.2016 - 31.12.2018

#### **Project Budget**

Total Budget: € 1 414,458.-

Funding: € 911 025.-

#### **Project Coordinator**

Solelia Greentech AB (SE)

#### **Project Partners**

- Uppsala municipality (SE)
- Solelia Greentech AB (SE)
- Uppsala University (SE)
- The Arctic University of Tromsø (NO)
- Uppsala Parking company AB (SE)
- Troms Fylkeskommune (NO)

#### **Project Website**

<http://www.solarcharge2020.org/>

#### **Contact**

<http://www.solarcharge2020.org/contact-us/>

## Main Objectives

1. Establish a decentralized large scale electric vehicle charging infrastructure connected to a city-scale photovoltaic power production network of PV enabled charging stations for EVs with smart metering to enable efficient production, storage (via EV battery), and consumption of solar power in two European cities.
2. Generate, collect, evaluate and present data on solar power production and consumption patterns by electric vehicles users as monitored by smart meters coupled to EV charging stations.
3. Reduce the strain on the low voltage grid by (a) Evaluating different strategies for EV charging on a city scale with regards to intermittency of production and consumption; (b) Matching and controlling the power delivered at the charging stations to match local solar power production.
4. Compile requirements and global specification list for supporting municipalities and companies that procure equipment and technology when investing in an expanded EV charging infrastructure.
5. Validate a business model for solar charge based on a virtual network connecting solar power producers and consumers via a "Solar Bank" that balances production and consumption through real time measurement and utilization of GOs.

## Main Results

1. Directly support the increase in the growth of the EV market. Through deployment of ancillary services for EV charging, and incentivizing the use of RES, the proposed project will attract interest in EVs from consumers.
2. Emission reduction. The solar bank concept will increase the production and consumption of solar power, thereby directly impacting emission reduction.
3. Create new business opportunities for stakeholders. Companies and organizations that own or plan to invest in charging stations can offer a cost-effective solution for charging with locally produced solar electricity in alignment with the European Corporate Social Responsibility strategy (COM(2011) 681 final).
4. Create new business opportunities for equipment manufacturers. Through the utilization of off-the-shelf hardware, the proposed project opens opportunities for equipment manufacturers to offer hardware solutions to adopters.
5. Increased customer awareness of energy consumption and environmental impacts. The solar bank concept and the utilization of GOs, allows customers to choose EV charging through only solar power.

## From Local Trials towards a European Knowledge Community

<http://www.eranet-smartgridsplus.eu>



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This project is part of the 1st Joint Call for transnational RDD projects of the ERA-Net Smart Grids Plus initiative. More than EUR 31 million of funding have been made available to 21 projects from 19 regions/countries.

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