



Internship Proposal: Assessment of home smart charging services for EV Users - Belgium

Background

irex Consulting is a straightforward business engineering consultancy specialized in the energy & utility sectors. We are experts in tackling operational business challenges across the entire value chain – production, sourcing & trading, grids, and supply.

Assignment

Context

Electric Vehicles (EV) will be key enablers for the EU and its Member States to reach their ambitions of climate neutrality by 2050, as set out in the European Green Deal. In this fast-growing E-Mobility market, companies are still defining which services and solutions can be offered to the EV End user. The objective of this internship is to investigate the economic viability of home smart charging services that could be offered to EV users. This incorporates the development of a model and methodology to automatically assess the economic viability of these different services. With a better understanding of the possible business models, the link to existing energy markets and infrastructure can be made.

Approach

1. E-mobility and energy market study to understand the current economic and regulatory landscape and identify the important upcoming changes (Smart meters, Capacity tariff, MIG6, ...).
2. Elaboration of the Smart Charging Services (SCS) that could be offered to EV Users using principles as load balancing, local renewable integration, Vehicle-2-Grid, ...
3. Model building of the elaborated Smart Charging Services
 - Determine variables in calculation methodology: define input, assumptions, constraints, output and optimization formula
 - Data gathering: consumer data, production data & constraints, economic & regulatory information
 - Build model: The model will be implemented in an environment to be defined
4. Scenario building and economic assessment of the different SCS for different scenarios (Region, Type of energy contract, regulatory changes ...).
5. Results interpretation: Analyze and understand the results and perform sensitivity analysis
6. Iterate for new technologies or scenarios: The above steps can be iterated for other technologies and/or scenarios. This depends on the progress made so far and will be discussed with the internship supervisor.

Objectives

- Market analysis of EV home charging segment and impact of upcoming regulatory energy market changes
- Model development and assessment of smart charging services for different scenarios

Preparation Material

- Information about energy markets in Belgium:
 - <https://www.vreg.be/en/energy-market>
 - <https://www.vreg.be/nl/gezinnen-met-elektrische-wagen-enof-warmtepomp>
- Information on E-Mobility :
 - <https://www.virta.global/blog/the-two-sides-of-ev-charging-network-operators>
 - https://www.usef.energy/app/uploads/2016/12/USEF_PositionPaper_ElectricMobility-vs3-1.pdf

Schedule

- Beginning of July -- End of August (Period flexible with a minimum of 6 weeks)

Supervisor

Pieter Schoolmeesters (Master in Energy Engineering from the KU Leuven)

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