EV Street Charging Use Case

EV Charging Delivering is an essence for EV cars roll out

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Overview

Electric Vehicles (EV) play an important role in the world's fight against climate change. Year 2022 will end with 13% of new car sold and many EU countries will ban selling of new diesel and gas cars in 2030. At this pace, the number of EV charging spots is becoming the main barriers for EV penetration. While Fast chargers are available mostly in points of interest, the main expectation is that passengers EV will be charged where they are parked during the day or the night.

This demand may be supplied by many low cost slow but smart chargers, leveraging the existing power line for streetlighting could they share the available power budget and provide many charging locations where cars are parked for many hours.

EV Charging Challenges

- **Availability of charging spots,** availability of charging stations in the public space for people who do not have private parking.
- **Insufficient electrical infrastructure,** existing power infrastructure supports less than 10% of the required power to connect EV Charging to all parking places
- **Rapid charging (DC),** Rapid charging devices (rated at >50kW) that can charge a vehicle's battery to 80% in less than an hour. Require major infrastructure and are installed only in high interest locations.
- **Availably of usable power lines** – while in most of the world power lines for the street lighting are available most of them support the amperage enough for less then 5% of the available parking spots on the road or the parking lot
- **EV Charging Dynamic Load Management -** To avoid an expensive grid upgrade and install the desired number of chargers. Chargers must be 'smart' and communicate with each other in **real time** and implement a Dynamic Load Management. Optimal distribution of the existing capacity may increase the number of chargers on the same line by factor of more than 10 on the same power lines.
- **Reliable communication edge network:** Reliable method for smart chargers' real time communication is costly and hard to implement with existing technologies

ACiiST's Approach

- Slow (AC) EV Charging will be used for 90% of the charging available spots and we expect that most of the Electrical Vehicles (EVs) parked will be charged using these EV Stations
- Having as many AC EV Charging spots as possible is a must, wherever the cars are parked day or night they should be charged
- Smart EV charging stations that communicate and distribute the electricity between them in real time guarantees that the critical resource (power supply) is fully utilized and is never overloaded
- Connecting the charging stations in a reliable network with survivability and behavior that allows M2M communication
- Installation inside the existing light poles or the EV Charging Station

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Results

$ — **Overall Cost**
Major networking cost reduction compares to the budget

40% — **Increase Usability**
Allow 40% of the parking places to support EV Charging

100 — **More EV Charging**
Install up to 200 EV Charging spots in 1KM street

<Time — **Installation Time**
Plug and Play Installation much faster than any alternative solution

V — **Zero Permits**
No digging or new structure permits needed for field deployment

V — **Use existing infrastructure**
The solution does not require increasing the electricity infrastructure

Smart — **Dynamic Enabler**
Enabler for Dynamic EV Charing Management solution

<10 — **Unified Network**
The same network will also be used for parking management, cameras, sensors, security applications and more

Ways Electric Vehicle Load Management Can Provide Electricity

There are three ways in which load-sharing electrical chargers will provide a steady stream of electricity to the stations: equally distributed, first in, first charged or dynamic charging management With equally distributed load sharing, each of the EV chargers will get the same amount of electricity depending on how many amps are available and how many stations are being used. With first in, first charged load sharing, distribution of electricity to the EV chargers would depend on when it began. With dynamic charging, multiple load management decision can be applied.