

The background of the slide is a close-up, slightly blurred photograph of a gas turbine engine. The engine's internal components, including compressor and turbine blades, are visible in shades of blue and grey. In the top right corner, there is a white rectangular box containing the 'heliox' logo in a dark grey, lowercase sans-serif font. A thin yellow horizontal line is positioned above the 'i' in the logo. On the right side of the image, the word 'heliox' is printed vertically in white on a dark blue component of the engine.

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14 April 2021

# **V2G: Heliox-PRE case studies**

## Our purpose

We drive the industry's progress in smart energy management solutions, harnessing technology in innovations that enable responsible choices for



**cleaner, greener transport systems**



## **Heliox DC Fast Chargers for Passenger Vehicles**

- 25 kW – 150 kW standard chargers
- CCS, CHAdeMO, AC

## **Heliox DC Fast Chargers for Heavy Vehicles**

- 25 kW – 600 kW standard chargers (Depot charging & Opportunity charging)
- CCS (Plug or Pantograph)



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## PRE power developers

- Founded 1984
- Development and Production of power electronics
- Active in EV charging market since 2009
- 40% of DC chargers are based on PRE technology (installed base in Europe)
- Experts in V2G technology (Partnering with New Motion)

Member of:



heliox

## References PRE





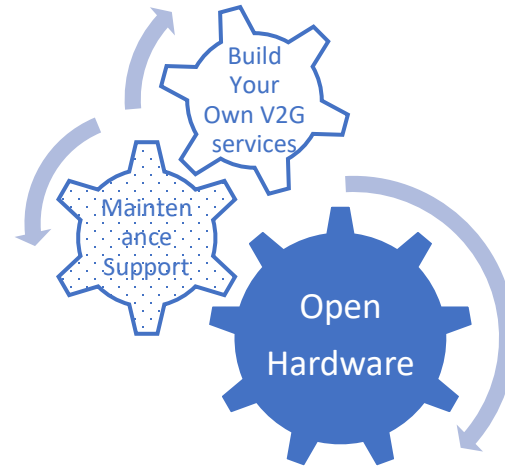
## References: V2X

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# Our V2X offers: From Hardware to Energy Management

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**Products for:** Software aggregators, Energy Management Service providers

**Included:** Maintenance, OTA updates

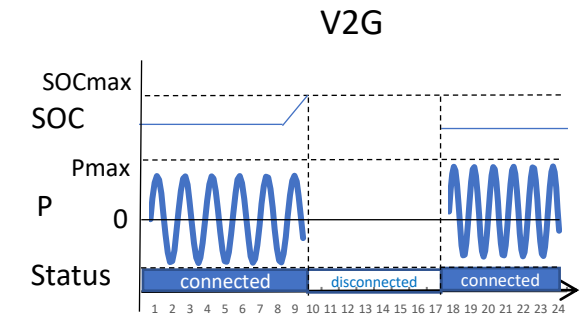
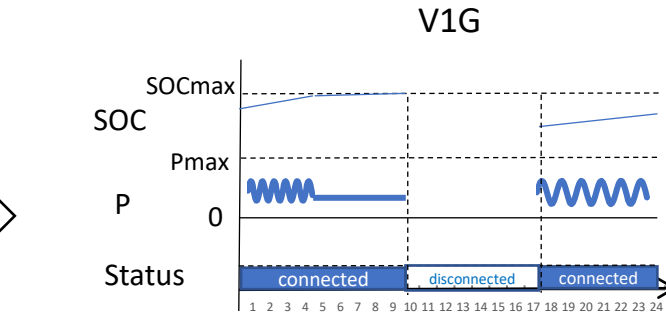
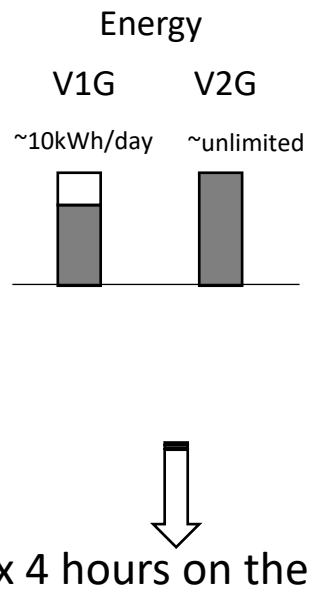
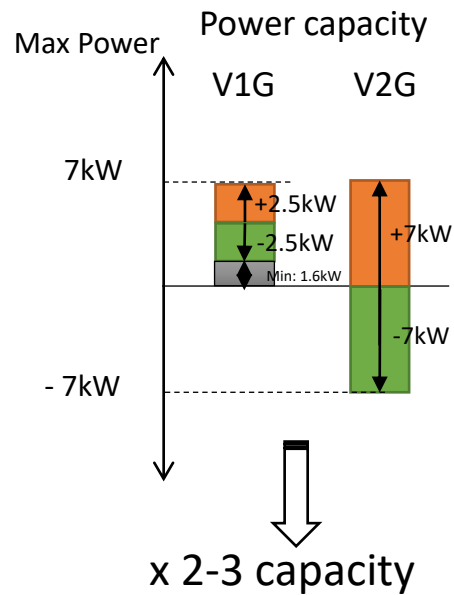
**Models:** 6kW, 10kW, 20kW (EU, US certifications)

**Connection options:** OCPP 1.6



# V2G vs. V1G: Ancillary Services

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7-15 x more revenue (Thingvad et al., 2016)  
10-15 x more system value (Coignard et al., 2018)



# V2G vs. V1G: Residential Tariffs

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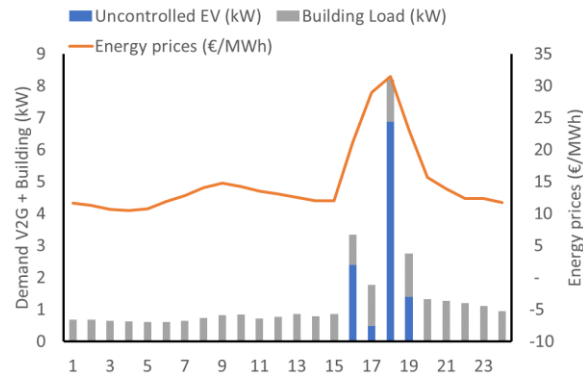
## Case 1

Country: UK

Tariff: Half-hourly, wholesale-linked

Utility: Octopus

**Key outcomes:** V1G saves c. **50%** of charging costs  
V2G saves c. **70%** of charging costs



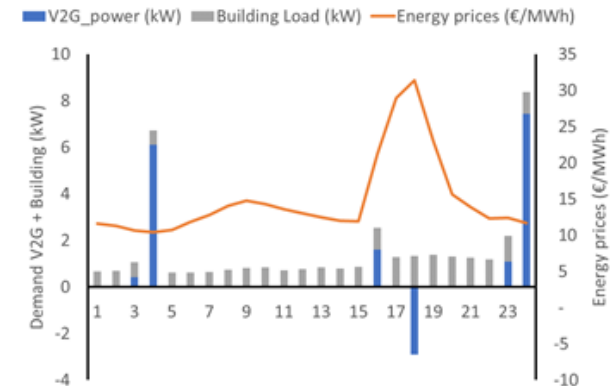
## Case 2

Country: US (California)

Tariff: Time-of-Use, multi-band

Utility: SDG&E

**Key outcomes:** V1G saves **29%** of charging costs  
V2G saves **42%** of charging costs



(Weiller & Noel, 2019)

## Conclusions

- Ongoing trials are suggesting that substantial value can be extracted from V2G for commercial fleets
- Very different revenues per case
- V1G is beneficial for some cases
- The price point of the charger is no longer a barrier



## Questions?

## Contact

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