



Smart Electric
Power Alliance

Case Study: Revel Rideshare— Commercial Fleet V2G & Demand Response

The State of Bidirectional Charging in 2023

September 2023

In Partnership with

CLEARResult®



 **Fermata Energy**



Virtual Peaker 

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Customer Project: Revel Rideshare

Commercial Fleet V2G & Demand Response

Description of Project

In 2022, the rideshare company Revel partnered with Fermata Energy on a fleet V2G project with the aim of understanding the value proposition V2G has for fleet operators.¹ The project consists of three 15 kW Fermata FE-15 chargers and three Nissan LEAFs that were configured to discharge directly to the grid. The chargers were installed at Revel's fleet facility in Red Hook, Brooklyn and were the first V2G chargers interconnected on Consolidated Edison's (ConEd) grid. The project interconnected through a variation of ConEd's stationary storage process where the chargers were subject to additional certifications and requirements.

Key Partnerships

- Fermata Energy
- NineDot Energy

System Set-up

- **Strictly Exporting**—The chargers are not connected to the building and can only perform V2G.

Goals

- **To understand how V2G systems interconnect in ConEd's territory.** Lays the foundation for Revel's development of the Red Hook Recharge Zone, a multi-use community center intended to have 20 ultrafast EVSE, a fleet of 30 V2G-capable EV, and solar and battery storage assets.²
- **To understand real revenue from V2G.** Revel wanted to understand the real revenue that could be achieved from V2G chargers in the long-term, taking discharge reliability and cloud-based monitoring efficiency into effect.

Figure 1. Revel Rideshare's V2G System



Source: Revel. (2022). Shared with permission.

¹ Fermata Energy. (August. 2022). [Revel, Fermata Energy, NineDot Energy Launch First V2G System on NYC's Grid.](#)

² Revel. (Nov. 2022). [Revel Selected as Grand Prize Awardee for the New York Clean Transportation Prizes Program, Winning \\$7 million for Red Hook Recharge Zone Project.](#)

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- **To showcase how VGI works in an urban fleet environment.** Revel believes urban EV fleets will play a big role in grid resiliency in the future and wanted to showcase how V2G works on a complicated, urban grid.

Economic Incentive Structure

- Under ConEd's VDER tariff, the V2G system is required to discharge daily between 2 and 6 pm.
- The VDER tariff has multiple value streams and Revel gains revenue through two streams: Demand Reduction Value (DRV) and Capacity Value (ICAP). DRV is valued for participation over the entire summer, with approximately 50 events occurring, while ICAP is valued for 1 hour of discharge that occurs during the peak hour of the year. DRV is valued at \$0.854/kWh,³ and the ICAP is valued at \$100/kW-y.
- In 2022, Revel earned close to \$6,000 under DRV and \$4,500 under ICAP.

Lessons Learned

Challenges

- There is an opportunity cost of parking the car during peak times. Participating in V2G takes vehicles away from participating in rideshares, which is Revel's base business model.
- Under ConEd's tariff, the V2G system needs to participate every day during the entire summer. For vehicles, it makes more sense for V2G to be valued during the 4-6 days of extreme peaks.

Successes

- Under the VDER tariff, Revel is expecting to earn approximately \$10,000 for the summer of 2023.
- Revel is collecting real-time data on battery discharge patterns, continually improving alignment with discharge windows and therefore revenue potential.
- With the program in its second year, Revel is beginning to see how frequent charging and discharging impacts the V2G capability of an EV.

³ ConEd. (July 2023). [State of Value of Distributed Energy Resources Value Stack Credits](#).



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