White Plains Electric School Bus Vehicle to Grid (V2G) Project

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White Plains bus yard, New York Times, November 28th, 2018
Vehicle-to-grid School Bus Overview

- Five Lion electric school buses serving White Plains School District since fall 2018
- Buses have had a >95% planned uptime thru 2019
- Each bus charged overnight, using an L2 charger

- V2G: Con Edison will cycle bus batteries for grid services and observe viability of vehicle-to-grid model including impacts on battery.
  - V2G site work complete. Vehicle engineering ongoing
  - V2G revenue

- Project a collaboration with: Lion Bus, Nuvve, National Express, and First Priority

Lion bus in Manhattan
Site Layout & Hardware

White Plains, NY Bus Yard

On location chargers
How this V2G model works & What it Offers

Vehicle Battery $\rightarrow$ Invertor (DC/AC) $\rightarrow$ Charger & Electrical Relays $\rightarrow$ Power Grid

Potential V2G revenue:
- In NYC area V2G revenue could come from participating in several utility programs
- State-wide programs for small batteries are still being developed
Optimizing Energy Costs – Overnight vs. On Demand Charging

Like your car’s odometer, which shows total miles driven, regular **consumption** charges show your company’s total energy use.

Like your speedometer, which shows how fast you are driving, **demand** charges indicate your company’s maximum rate of energy use during peak demand periods in a monthly billing cycle.
Optimizing Energy Costs – Overnight vs. On Demand Charging
Conclusion

• E-school buses function well as transportation

• V2G has several potential uses: reducing electric bill, obtaining grid revenue, emergency power

• Talk to your utility about minimizing your upfront and ongoing energy costs

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