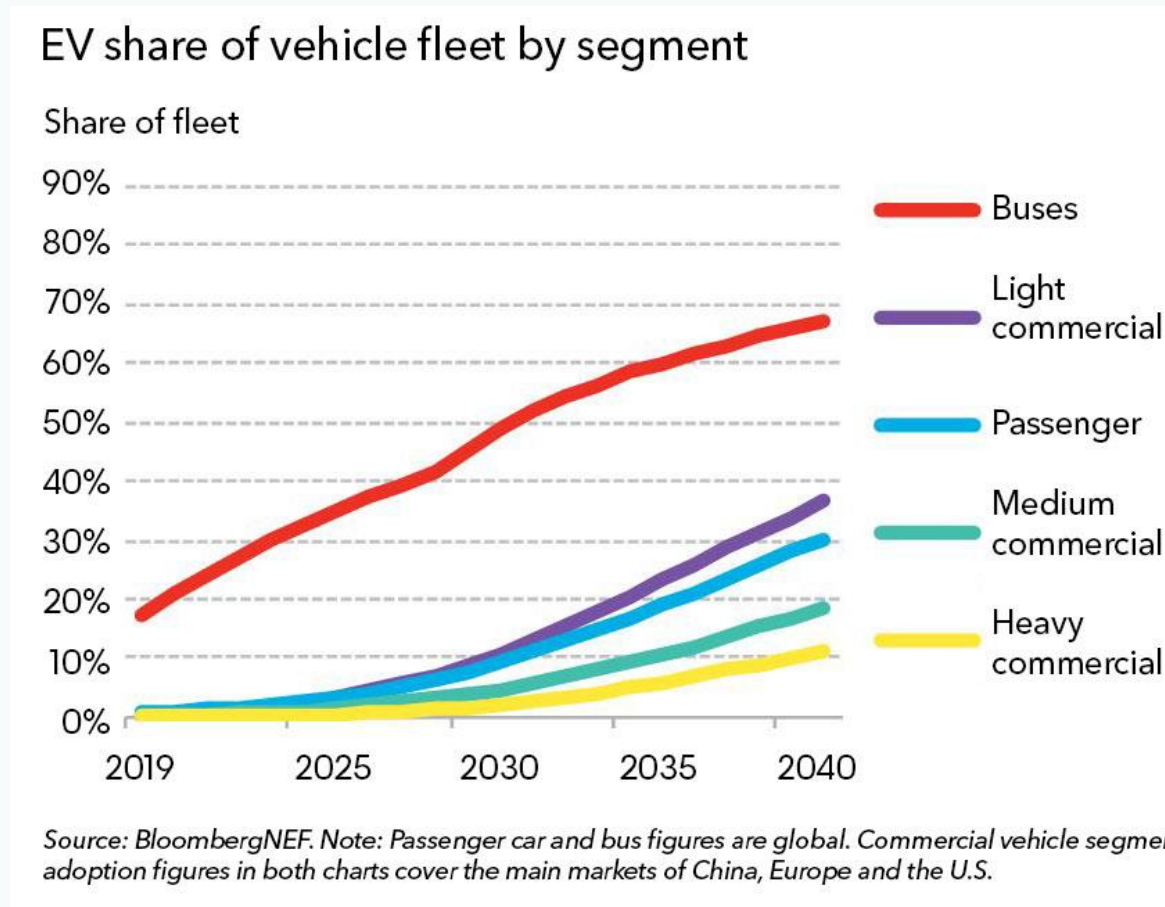




Highland

January 2023

Electrification is exploding across the country (and around the world)

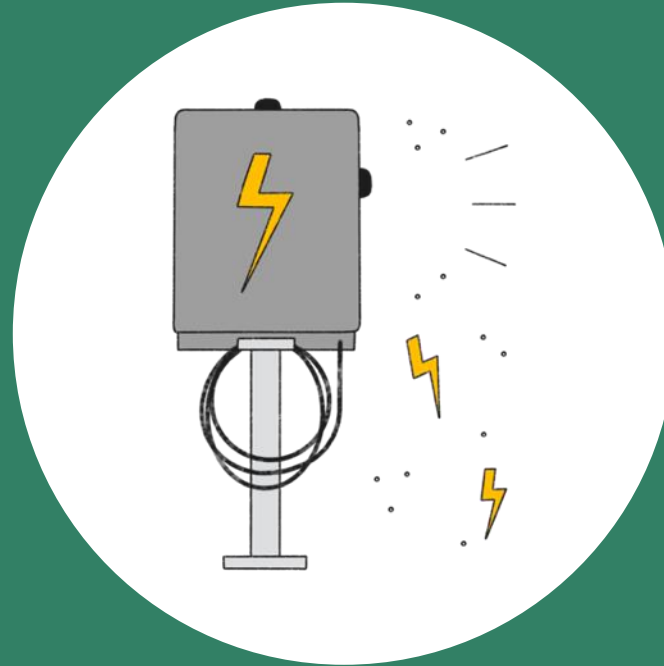


Why now?



Policy Support

IRA/EPA incentives
State policies/mandates
Utility programs



Major Manufacturers, Track Record

OEMs committed to electrification
1,700+ electric buses on the road
for 5+ years



Business Model Innovation

Zero upfront cost
Lower cost of operation
Summertime V2G

Why Lead with the School Bus?

School buses are the perfect electric vehicle use case – predictable routes, single charging location, equitable benefits.



Predictable

Defined routes, limited range & uniform depots



Versatile

Large & underutilized bidirectional battery



Available

4+ EV models with fierce OEM competition

E-Bus Landscape Update

Federal Incentives:

EPA CSB Program

IRA Tax Credits & CHDV Program

Grant Opportunities

EPA Clean School Bus Program

- Authorized through the BIL
- \$5B over FY 2022-2026
- To replace existing school buses with zero-emission and low-emission models
- First round awarded ~\$1B in 2022
- Second round to be announced Q1 2023

IRA Tax Credits & CHDV Program

- \$40k tax credits for clean vehicles over 14,000lbs
- Additional tax credits for charging infrastructure
- \$1B for M/HD vehicles, charging infrastructure, and training

DOE Renew America's Schools

E-Bus Landscape Update

State Incentives:

MOR-EV

MassCEC ActBus

Utility Programs

Clean Peak Energy Standard

MOR-EV

- Broad EV incentive program funded through DOER and in statute
- “Trucks” component provides vouchers and rebates for medium and heavy-duty vehicles
- Incremental cost incentive (\$75k/\$90k value for buses)

MassCEC ActBus

- \$8M project demonstration grant program
- Intended to complement/support federal funding awards
- Includes planning and technical assistance support

Utility Programs

- Make-Ready
- EVSE rebates
- ConnectedSolutions

Clean Peak Energy Standard

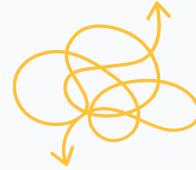
- Market mechanism designed to support any resource shifting load

Why hasn't electrification happened yet?



Affordability

- Electric buses have a high upfront cost
- Additional cost of charging infrastructure



Complexity

- Grant processes and scrappage requirements complicate processes for school districts
- Charging infrastructure installation and utility coordination
- Charge management
- Driver training
- Legal considerations
- Not enough bandwidth



Risk and Reliability

- Concerns about reliability of technology
- Financial risk
- Range misunderstandings
- No one wants to be first

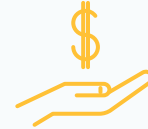
The Highland Story



FOUNDED
2018



BUSES UNDER CONTACT
300+



FUNDING
\$253 Million



PIONEERING P3
300+ Buses,
Largest U.S.
electric bus buyer,
Largest U.S. project



We handle projects of all sizes

Peak to Peak, CO

4 BUSES
5 CHARGERS
1 DEPOT

Salinas, CA

10 BUSES
10 CHARGERS
1 DEPOT

Hardin, IL

7 BUSES
7 CHARGERS
1 DEPOT

So. Burlington, VT

4 BUSES
4 CHARGERS
1 DEPOT

Beverly, MA

5 BUSES
5 CHARGERS
1 DEPOT

Dracut, MA



10 BUSES
10 CHARGERS
1 DEPOT

MCPS, MD

326 BUSES
111 CHARGERS
5 DEPOTS

Manassas, VA

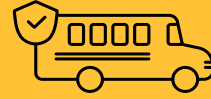
12 BUSES
12 CHARGERS
1 DEPOT

 Projects
 Active & pipeline states



More affordable, cleaner student transportation

Highland



A reliable electric fleet -
without the headaches



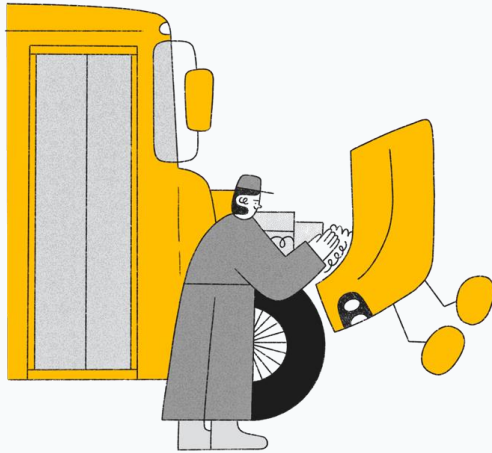
Cleaner buses, healthier
communities



10%+ savings vs. cost to
purchase, fuel, and
maintain diesel buses



A reliable electric fleet without the headaches



- 1 Plan** We design and implement the entire project.
- 2 Budget** We create a budget together that encompasses all aspects of your electric fleet.
- 3 Build** We procure school buses & infrastructure and manage the construction of depot upgrades.
- 4 Train** We train your drivers & mechanics to operate & maintain your new fleet.
- 5 Charge** We charge the school buses during off-peak hours, ensuring a “full tank” before each trip.
- 6 Maintain** We provide a complete service plan, reimbursing for all repair costs, including parts and labor.

Our Guarantee: We don't get paid until your buses are running and only if we keep them running



Improving student and community health



Student Health

- A child riding inside a diesel school bus may be exposed to as much as 4 times the level of diesel exhaust as someone riding in a car ahead of it.
- Exposure of children to diesel exhaust while riding in a school bus for 1–2 hours a day, 180 days a year for 10 years might result in 23–46 additional cancer deaths per 1 million children.
- More exposure to air pollution is linked to a higher rate of serious illness and death from respiratory illnesses including COVID-19.



Community Health

On average, African Americans and Latinos breathe in about 40 percent more particulate matter than white Californians. Asians Americans are exposed to about 20 percent more pollution.¹



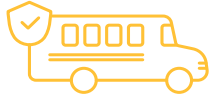
Climate Health

“Charged on the California grid, an electric school bus will see 286 short tons lifetime GHG reductions over diesel bus.” This is the equivalent of over 4 passenger vehicles.²



10%+ savings, guaranteed

How do we do it?



Bus costs ↓

- Asset depreciation
- State & federal grants
- V2G participation
- Bulk orders & contracts



Fuel costs ↓

- Long-term energy purchasing
- Managed charging & energy optimization software
- Scalable electric depot construction & operation



Maintenance costs ↓

- EV technology expertise
- Lower cost of operation EV vs. diesel

No upfront costs & a long-term electrification partnership



A partner in fleet electrification



Savings

Avoid peak rates and lower your electric bill by 40-60% with managed charging.



Simplicity

Just plug in your buses and let Highland handle when they charge.



Reliability

Know your buses are charged and ready to go, every day.

H: Fleet

Our all-inclusive electric bus fleet solution, Highland Fleet includes everything you need to transition your fleet to electric - planned & implemented together at your pace.

- ✓ School Buses
- ✓ Chargers
- ✓ Training
- ✓ Maintenance Cost
- ✓ Fleet & Charge Management

H: Depot

For districts with existing electric vehicles, Highland Depot upgrades your infrastructure - providing reliable chargers, affordable fueling, coverage of unexpected repairs, and software to manage your fleet.

- ⊖ School Buses
- ✓ Chargers
- ✓ Training
- ✓ Maintenance Cost
- ✓ Fleet & Charge Management

H: Dashboard

Dashboard is the software tool built for districts with electric buses & reliable charging infrastructure. Dashboard connects and coordinates all aspects of your electric fleet - keeping your school buses charged, reliable, & safe.

- ⊖ School Buses
- ⊖ Chargers
- ⊖ Training
- ⊖ Maintenance Cost
- ✓ Fleet & Charge Management



CASE STUDY

Beverly, MA



The Team

Planning/ Budgeting

We partnered with Beverly's Transportation Director, Dana Cruikshank, and his team to implement a 2-bus pilot that's now expanding to 30 buses.



Beverly's Electric Fleet

Training

We trained Beverly's drivers and mechanics on how to use and maintain the electric vehicles.



The Fleet

Beverly's Electric Fleet

Fleet Build

Beverly selected Thomas Built Saf-T-Liner® C2 Jouley® for their fleet, designed to their specifications.



Fleet Charging

We installed high power, bi-directional charging stations to fully charge buses in 3 hours.



The Depot

Beverly's Electric Fleet

Depot Build

We future-proofed Beverly's depot by installing infrastructure for 24 buses.

Depot Charging

We powered the site in partnership with National Grid, enabling vehicle-to-grid connectivity.



Vehicle-to-grid (V2G) with Highland

# OF BUSES	ENERGY CAPACITY	IMPACT TO COMMUNITY
25	5 MWh	116 Local Homes for 1 Day
275	58 MWh	1,400 Local Homes for 1 Day
1,100	231 MWh	5,500 Local Homes for 1 Day



Electric school buses are essentially batteries on wheels. They're ideally suited to provide capacity, stability, and emergency power to the grid.



500k electrified buses add 60GWh of storage capacity.



Highland uses V2G participation to offset the upfront cost of electric buses and make your fleet more affordable.

REAL RESULTS

In the summers of 2021 and 2022, Highland orchestrated a commercial V2G program with National Grid in Massachusetts, that sent **10.8 MWh** back to the grid over **158 hours**.



V2G Conceptual Diagram

Provide up to nine hours of 60kW output with a three-bus bidirectional charging system:



600 kWh of mobile dual-use EDSI assets¹

Three interconnected 60 kW bidirectional chargers²

Single 60 kW bidirectional inverter for charge / discharge³

Backflow energy to anywhere with a bidirectional charger: installation distribution grid, microgrid, or critical infrastructure⁴

A single 3-bus system (pictured) services a peak electric power output of 60 kW for 9 hours

40 systems (4,000-amps) will support 2.4 MW of power output for 9 hours (or 60 kW for 360 hours)



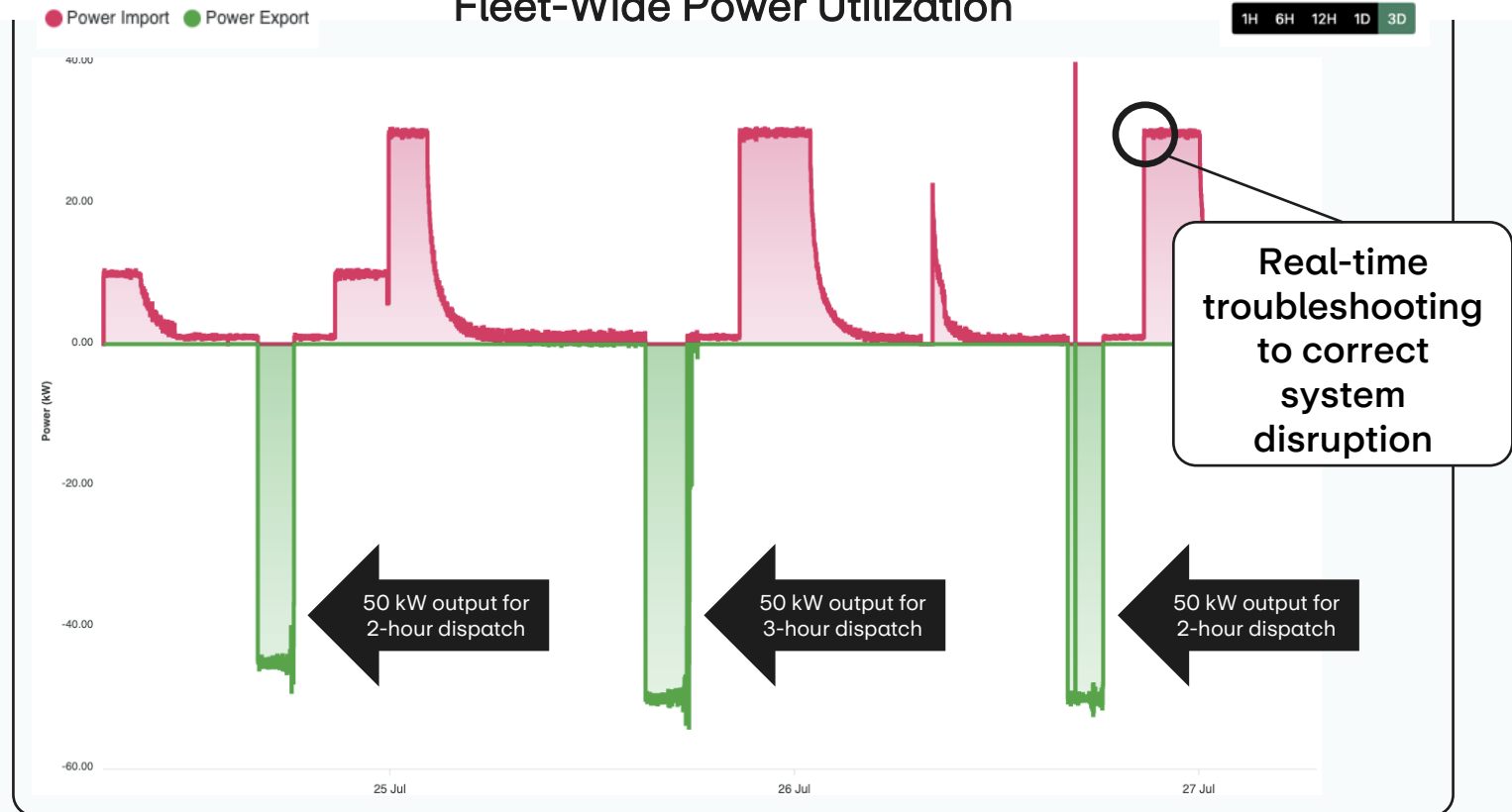
1. Based on 200kWh of usable battery capacity on Thomas Built Jouley (2022 vintage); actual capacity varies by OEM model
 2. Sequential discharge format requires cycling between ports; simultaneous discharge capabilities expected in 2023
 3. System capable of continuous backflow of 60 kW until bus batteries are depleted; DC-to-AC conversion results in approximately 5% line losses in Highland operating projects
 4. Additional electrical panels and controls required for interconnection; dependent on localized project dynamics

V2G Operating Experience

Highland has two operating Vehicle-to-Grid projects for peak shaving



Single Bus V2G Performance Summer 2022 – Massachusetts¹ Fleet-Wide Power Utilization



1. Snapshot from Highland's energy management software system, developed in coordination with partner Synop. Output not a guarantee of future performance.

Highland

Building electric fleets, today.



Amy McGuire

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