FERMATA ENERGY

SUMMARY FOR EPRI PRESENTATION
July 23, 2020

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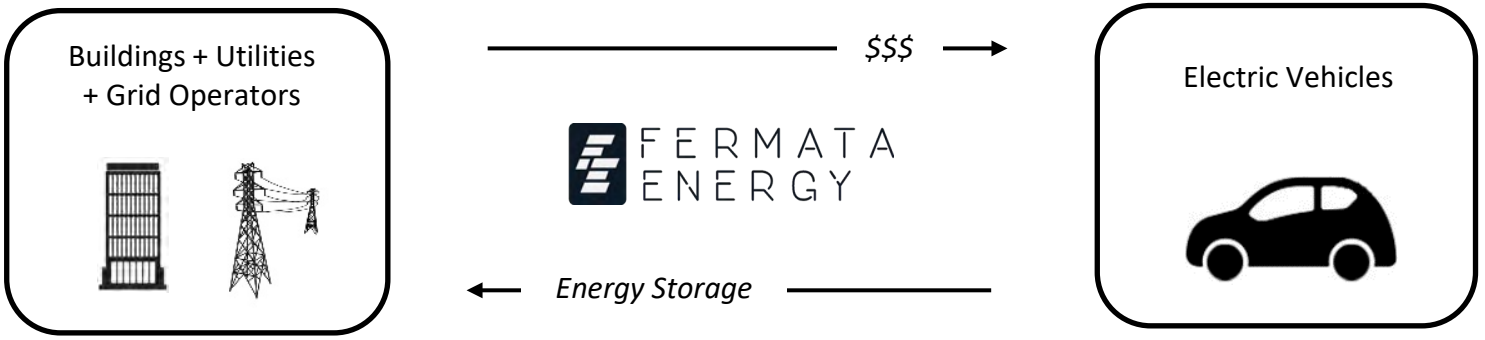
Why V2X?

1. INCREASE ELECTRIC VEHICLES ON THE ROAD
   EV cost is a major barrier to widespread adoption. Because most electric vehicles are parked over 95% of the time, they can earn money by providing energy storage, reducing the total cost of ownership of an EV below that of an internal combustion equivalent.

2. INCREASE RENEWABLE ENERGY ON THE GRID
   Intermittent wind and solar energy require energy storage to provide steady service when energy is needed. EVs can cost-effectively provide this energy storage.



Is V2X Commercially Available Today?.....Yes!

Does it make money?.....Yes!

Great – how do we get started?

V2X =

Vehicle

- Bi-directionally enabled
- CHAdeMO or CCS

Hardware

- Bi-directional off-board DC charger
- UL 9741 certified

Software

- Manages interface between charger, vehicle, building, utility and grid
- cloud-based platform provides operations, forecasting, optimization and user interface

WHAT IS NEEDED TO PERFORM V2X?

Bi-directionally enabled EV

HARDWARE

- UL 9741 certified 15 kW V2X off-board DC bidirectional charger
- By using silicon carbide technology, provides greater efficiency in a smaller package, reduces heat and component costs, and allows easier, cost-effective installation and maintenance
- Higher power 25 kW unit with similar dimensions and technology currently in development with planned release in Q1 2021
- Multiple additional chargers from different vendors coming to US market in 2021

SOFTWARE

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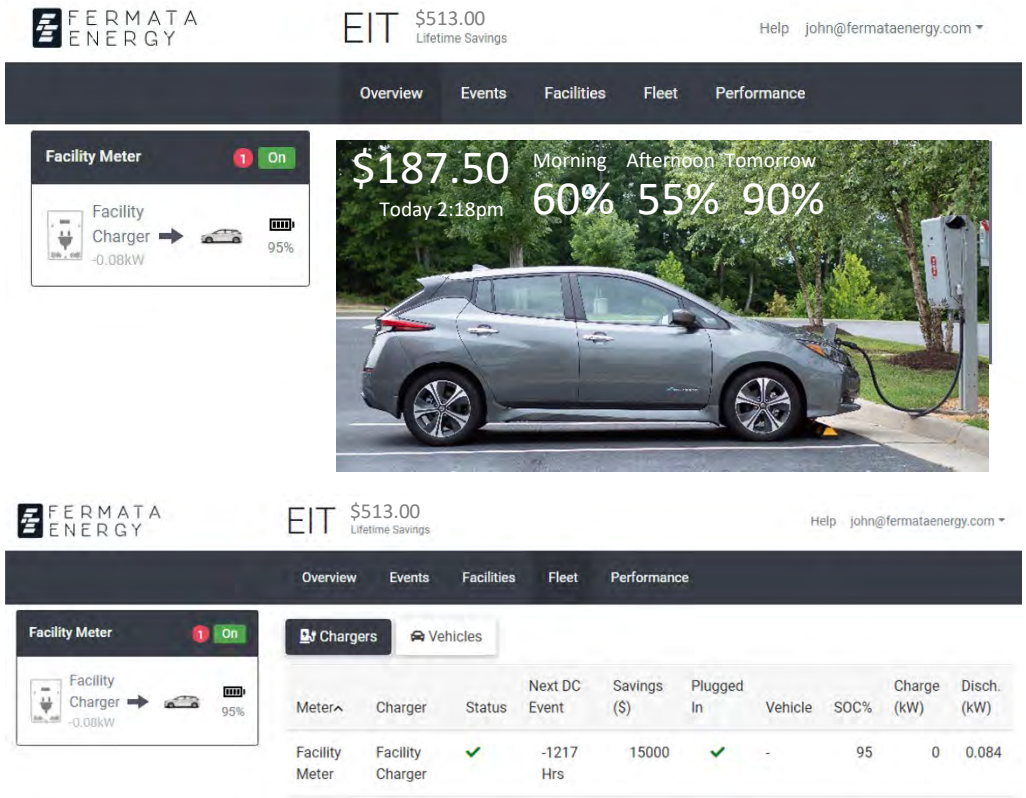


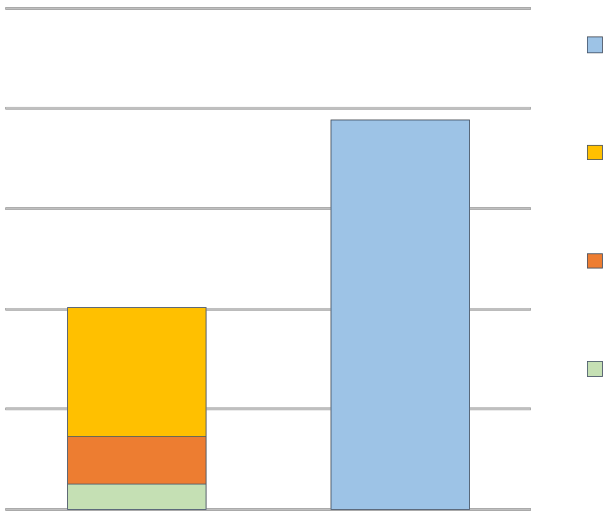
Fleet customer web interface

mata operations web interface

EV RELATIVE STORAGE CAPACITY

The combined energy storage from sales of a single, modest selling EV model is greater than the entire stationary storage industry including all U.S. stationary storage deployments by all companies in all sectors.

- The Nissan LEAF has ~16K average annual sales which is about 1/10th the sales of a Nissan Sentra or Tesla Model 3, yet these EVs on the road today represent almost twice as much energy storage as all stationary systems in the U.S. as of 2019.
- Assuming several bidirectional EVs enter the market at sales comparable to Sentra/Model 3 – energy storage rapidly becomes an abundant resource, assuming there is infrastructure to access it.

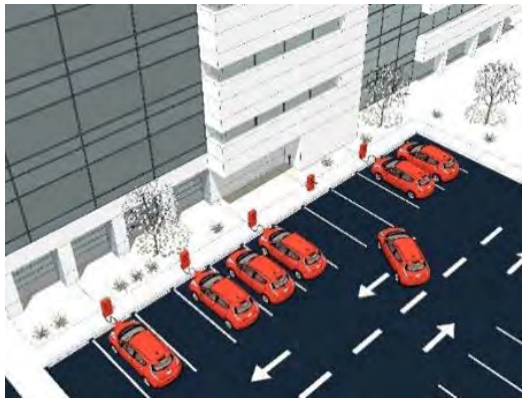


source: Wood Mackenzie Energy Transitions Practice, InsideEVs

SAMPLE V2X APPLICATIONS

1. Electricity Bills Savings + Revenue Generation

- Site buildings connected to chargers can reduce monthly demand charges and other costs by discharging fleet vehicles a few times a month
- Charger systems earn revenue for fleets by providing services when the vehicle is parked
- Providing peak shaving for utilities.
- Providing ancillary services for grid operators.

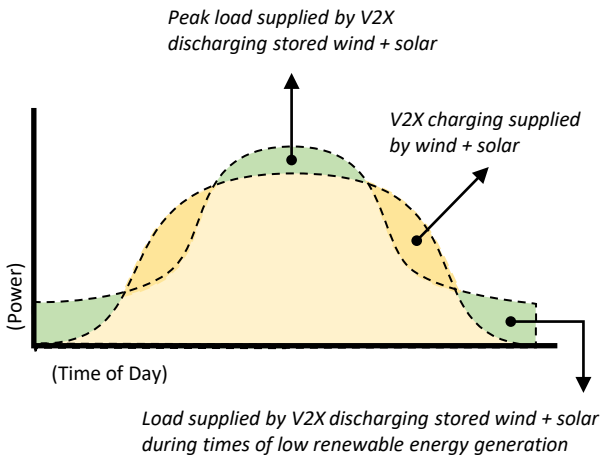


2. Disaster Resiliency and Backup Power

- Can use EV fleet as swappable batteries for buildings during times of outage
- Provides power to key infrastructure by working together with on-site generators and solar.
- Can be driven to safe areas during storms and then returned to provide mobile energy supply.

3. Renewable Energy Optimization

- EVs can charge during times when the grid has much renewable energy generation and not enough demand.
- EVs can then discharge stored renewable energy to supply energy later when renewable generation is low.



V2X USE CASES + APPLICATIONS

V2B City + Commercial Fleets

- Fleet use cases using vehicle-to-building offer a quick, direct way to deploy V2X at scale where it is most valuable.
- Can include multi-tenant buildings and shared vehicle ownership models, particularly for low income customers.
- V2X applications include smart charging, customer bill management, demand response, resiliency, utility peak and other utility services.
- Leads directly to workplace charging use case, allowing employee vehicles to the access existing systems.

Vehicle at Home

- Add vehicle-to-home, “V2H”, consumer product for singe family residential users. Core application for the customer is home backup while providing V2X energy storage services for the utility.
- Can also include multi-tenant buildings.

V2X USE CASES + APPLICATIONS

Vehicle at Work

- Similar to city fleet model, but utilizes employee vehicles and provides workplace charging.
- Large potential daytime capacity as work consumer vehicles will be parked all day.

Destination + Public

- Add parking garages, commercial, and public sites.
- “V2G” applications with net metered direct injection.
- V2G tariffs rates and programs.

24/7 OPERATIONS - EIT Manufacturing Facility, VA

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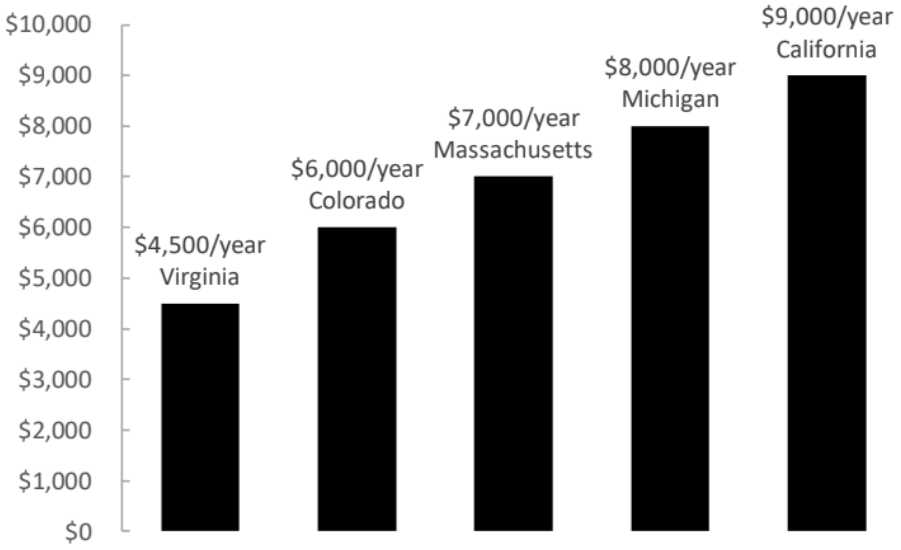
Commercial Project Operating Results

- In Mar 2019, Fermata deployed our prototype FE-15 charger and 2018 40kWh Nissan LEAF at EIT manufacturing facility in Danville, VA.
- V2X application testing focused on customer bill management, with more applications including utility services to be added.
- Utilizing our cloud software's demand charge management application, the system was able to successfully monetize $187.50 by discharging a Nissan LEAF to reduce the peak kW demand portion of EIT's monthly electricity bill.
- This was the maximum dollar amount achievable under the local retail tariff as the full 12.5kW capacity of the charger was successfully applied to reduce the peak event by 12.5 kW, resulting in a 100% performance score. All savings have been verified by comparing EIT's June electricity bill to meter and charger data.
- Demand charge management was performed three times during month, each event lasting approximately 45 minutes with the state of charge of the LEAF battery never falling below 75% in any event.
- These results are analyzed pro forma for different markets using our planned 25kW FE-25 in the chart below. *Note: these are based on average price ranges for specific tariffs.*



FERMATA OPERATING PRO FORMA ANALYSIS

Current Operations in Danville, VA

12.5	x	$15	=	$188	x	12	=	$2,250
Charger kW		*$ per kW price*		*Monthly Savings per charger*		*months*		*Annual Savings per Charger*

Same system above in California

12.5	x	$30	=	$375	x	12	=	$4,500
Charger kW		*$ per kW price*		*Monthly Savings per charger*		*months*		*Annual Savings per Charger*

25 kW system in California

25	x	$30	=	$750	x	12	=	$9,000
Charger kW		*$ per kW price*		*Monthly Savings per charger*		*months*		*Annual Savings per Charger*

THINGS TO CONSIDER: EV AS ENERGY STORAGE

1. EVs are in the right place, at the right time.
   - EVs are often in ideal locations to act as a grid resource
   - Cars are parked 95% of the time with 80% of charging happening at night
   - Cars are often parked where local and system wide peak demand originates – i.e. places and times of human activity.

2. EVs have more than enough energy capacity.
   - Underutilized EV battery capacity is significant and increasing every year.
   - When cars are being driving, they don't go very far. Average work commute is ~13 miles requiring 3 to 4 kWh.
   - While driving patterns remain unchanged, EV batteries are getting bigger. The LEAF battery has almost tripled in size in the last 4 years.

3. EVs are capable of providing grid energy storage.
   - EV's can perform the same technical functions as a stationary battery.
   - Marginal equipment cost of a bidirectional charger vs. unidirectional is very small.
   - Automotive supply chain dwarf's the stationary industry enabling rapid deployment of energy storage at a fraction of the cost.
   - People are willing to share property for money as evidenced by Uber, Airbnb, and other disruptive innovations for the sharing economy.