





## THE FIRST PORTABLE L3 FAST-CHARGING PLATFORM EVAN KIRCHHOFF, CEO & CO-FOUNDER - JULY 24, 2024

openroad.eco

### TWO SETS OF INTERLOCKING PAIN POINTS AROUND EV ADOPTION AND ELECTRIFICATION

**EV PAIN** 

POINTS

### **EV USERS & OPERATORS:**

- Range anxiety
- Inadequate public fast-charging network
- Equitable access to EV charging



### **POWER UTILITIES:**

- Daily solar/wind surges at the wrong time for demand
- Increasing renewable power mix
- Grid overload due to EVs, Al datacenters, etc.



### THE EV CHARGING MARKET





![](_page_2_Picture_4.jpeg)

COMMERCIAL SUPERCHARGER STATIONS: \$60K - \$300K

500+

![](_page_2_Picture_6.jpeg)

CHARGING SPEED (MILES ADDED PER HOUR)

![](_page_2_Picture_8.jpeg)

### THE OPENROAD PLATFORM

![](_page_3_Picture_1.jpeg)

![](_page_3_Picture_2.jpeg)

### MODULAR SMART BATTERIES + INTEGRATED HIGH-SPEED CHARGING + CLOUD SOFTWARE PLATFORM

### STACKABLE CHARGER MODULES

![](_page_4_Figure_1.jpeg)

### 3.4 kWh capacity 25 kW output

![](_page_4_Picture_4.jpeg)

Add 1-6 modules up to 20 kWh capacity, 150 kW output

![](_page_4_Picture_6.jpeg)

Head unit contains **EV charging interface** 

![](_page_4_Picture_8.jpeg)

### ADVANTAGES OF BATTERY-INTEGRATED CHARGING

### (1) **BUFFERING**

# Produce fast output from slow input

### (2) CACHING Store/transport energy when vehicle is not present

![](_page_5_Picture_4.jpeg)

![](_page_5_Picture_5.jpeg)

### (3) TIME-SHIFTING

Bank power at lower-cost intervals; shift off-peak electricity to on-peak times

![](_page_5_Picture_8.jpeg)

![](_page_5_Picture_9.jpeg)

### HIGHLY PORTABLE

7 kWh configuration delivers 28 miles\* of additional range in 8 minutes

\* TESLA MODEL 3, TESLA MODEL Y, HYUNDAI IONIQ 5 - EPA AVG. MILEAGE

![](_page_6_Picture_3.jpeg)

### MILITARY APPLICATIONS FOR PORTABLE FAST-CHARGING

Significant electrification demands for future land & air vehicles Modular charger design (approx. 50 pounds) is **OSHA compliant** for field use

![](_page_7_Picture_2.jpeg)

![](_page_7_Picture_3.jpeg)

![](_page_7_Picture_4.jpeg)

![](_page_8_Picture_0.jpeg)

### SUITABLE FOR GAS STATIONS & OTHER SMALL RETAIL LOCATIONS

![](_page_9_Picture_1.jpeg)

### WHY IS 150 kW SIGNIFICANT?

![](_page_10_Figure_1.jpeg)

### ALTERNATIVE FUEL CORRIDORS = 190,000 MILES OF NATIONAL HIGHWAYS FEDERAL SUBSIDIES AVAILABLE FROM **\$7.5B NEVI PROGRAM** FOR LOCATIONS ALONG THESE ROUTES

![](_page_10_Picture_3.jpeg)

### OPENROAD PLATFORM CONNECTS TO BOTH VPP AND OCPP ENDPOINTS

![](_page_11_Figure_1.jpeg)

### TARGET MARKETS

(1) **EV FLEET OPERATORS** (25-150kW configuration) Our initial target market; founders have experience selling into this channel.

- (2) COMMERCIAL CHARGERS (150 kW configuration) Eligible for federal subsidies for locations along **Alternative Fuel Corridors.**
- (3) **POWER UTILITIES** (50-150 kW configuration) Using existing L1 or L2 electrical infrastructure, OpenRoad radically increases equitable access to fast charging at the "grid edge" in rural areas, as well as underserved urban areas like older multi-unit buildings, while providing VPP functionality.

![](_page_12_Picture_6.jpeg)

![](_page_12_Picture_7.jpeg)

![](_page_12_Picture_8.jpeg)

![](_page_13_Picture_0.jpeg)

![](_page_13_Picture_1.jpeg)

### MADE IN USA

#### FLINT, MI ELECTRICAL ENGINEERING, TOOLING & MANUFACTURING

### PRODUCTION BOM HAS NO CRITICAL PARTS FROM CHINA

![](_page_14_Picture_1.jpeg)

**PROTOTYPE 1** 50 kW, self-contained (Q3 2024)

### 2024 ROADMAP

![](_page_14_Picture_4.jpeg)

### **PROTOTYPE 2** 150 kW, modular, release candidate (Q4 2024)

### CURRENT HARDWARE STATUS: TRL 4

![](_page_15_Picture_1.jpeg)

![](_page_15_Picture_2.jpeg)

**Core technology validated** in laboratory environment Next milestone: completing enclosed prototype for **field testing** 

![](_page_15_Picture_4.jpeg)

![](_page_16_Picture_0.jpeg)

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![](_page_16_Picture_2.jpeg)

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![](_page_16_Picture_8.jpeg)

![](_page_16_Picture_9.jpeg)