



OPPORTUNITIES IN THE ENERGY TRANSITION

ELECTRIC VEHICLE CHARGING AND FUELING INFRASTRUCTURE

DECEMBER 2022

Exploring opportunities in the energy transition

The ongoing shift toward more sustainable energy represents a massive near- and long-term opportunity for investors. Vehicle charging and fueling is a key component of this shift as the transition to electric vehicles (EVs) drives continuing evolution in our transportation and power infrastructure.

Where are we today?

- Current market landscape (traditional fueling and EV charging)
- Historical strategic and private equity investment in the sector

Where are we headed?

- Major market trends and focus areas
- Strategic players and private market participants

Key considerations for investors

- Opportunities and risks in the sector
- Key characteristics and drivers of value

Scope

- For the purposes of this discussion, we have focused exclusively on the United States market

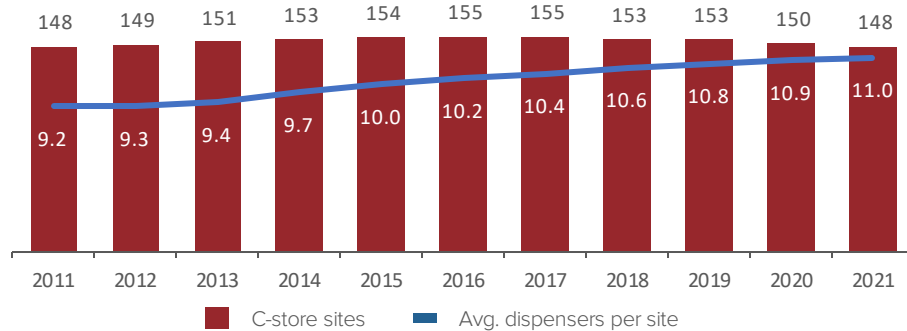
Fueling infrastructure today

The overwhelming majority of current infrastructure serves internal combustion engine (ICE) vehicles. Fueling stations for ICE vehicles are common at convenience store locations (C-stores) and are widely dispersed with ~150K retail locations across the United States. Operations & maintenance (O&M) services for these sites represents a robust market with few players of scale.

Traditional Fueling Remains a Stable Market With Powerful Macro Drivers for O&M Services

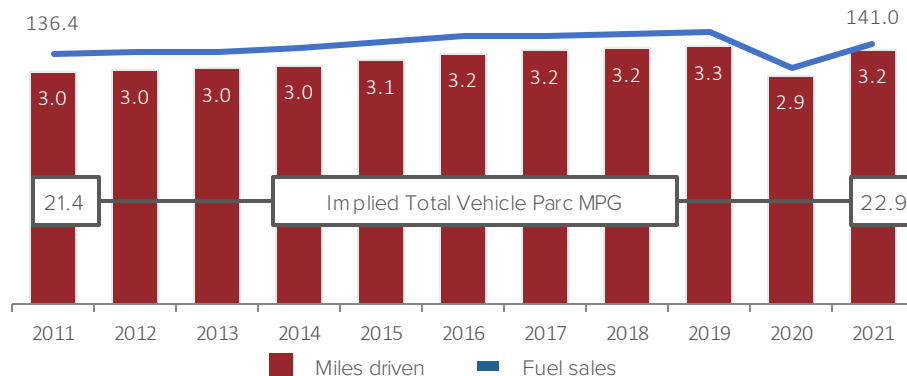
Infrastructure Reflects the Continued Prominence of ICE Vehicles

Count of U.S. C-Stores and Average Fuel Dispensers per Site¹
(Sites in thousands; average fuel dispensers per site²)



Despite the focus on EV proliferation, fueling station counts and fuel sales have remained steady, with ICE efficiency gains, stricter regulation, and EVs combining to drive only modest implied MPG increases

U.S. Annual Miles Driven and Fuel Sales³
(Miles driven in trillions; fuel sales in billions of gallons)



Powerful Tailwinds for Continued O&M Spending

Ongoing Maintenance & Compliance

- Modest growth in dispensers per store and rebound of fuel consumption post-COVID ensure continued demand for O&M services
- Stricter compliance standards drive increased demand for recurring testing services on tanks, dispensers, and supporting equipment

Sustained regulatory support for O&M spending

Increasing Technical Complexity

- Fueling sites are increasingly complex ecosystems, with monitoring, payment, and back-office systems interfacing with equipment and requiring ever greater technical expertise to install, maintain, and repair
- Recent required upgrades to EMV systems demonstrate the challenge to operators of remaining current as technology evolves

Sizable opportunity to update evolving infrastructure

Aging Underground Storage Tanks (USTs)

- Significant portion of existing USTs are beyond 30-year useful life
- Warranties typically last 30 years, after which insurance premiums spike
- The 2015 EPA UST System requires monthly and annual inspections of USTs and related equipment

Significant momentum for UST inspection, repair, and maintenance spending

EV charging infrastructure today

As EVs proliferate, charging infrastructure must follow – if not lead. Infrastructure growth has been notable in the last 10 years, but further investment is needed across all charger types to meet demand and enable EVs to attain a meaningful share of the vehicle parc across the United States.

EV 101: Charger Levels and Capabilities

Level 1

- Provides charging through 120V AC plug
- Typically found at residences
- Slow charging – 8 hours of charging equates to roughly 40 miles of electric range for a midsize EV

Level 2

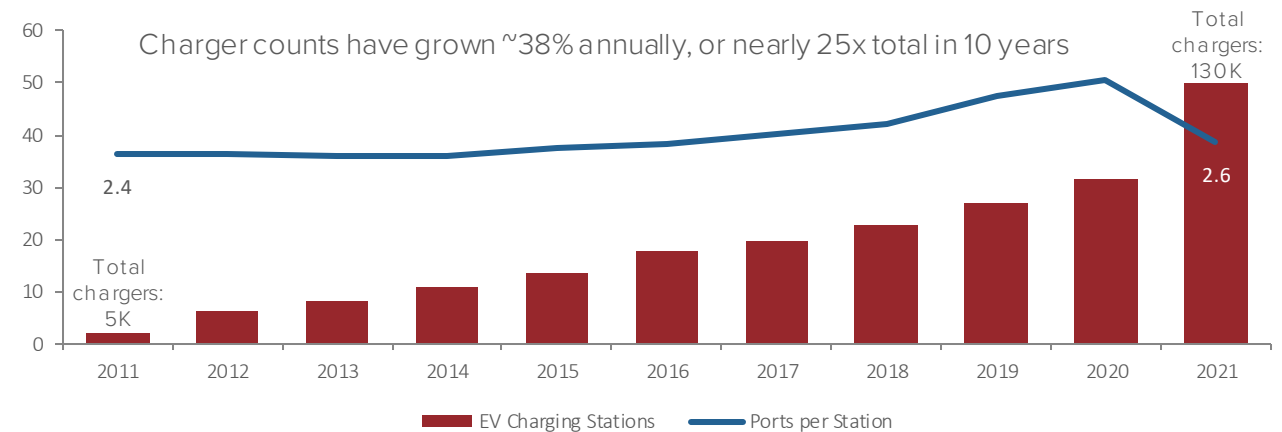
- Charges through 240V (typically residential applications) or 208V (typically commercial)
- Often used in homes for overnight charging, as well as installed in public/workplace settings
- Can usually fully charge a standard EV overnight

Level 3 / DC Fast Charger

- Charges through 208/480V AC input that enables rapid speeds
- Not very common – not all current EVs can even use a DC charger
- Mostly used to facilitate long-distance driving and usually found at commercial locations

EV Charging Accessibility

EV Charging Station Count and Avg. Ports Per Station¹
(Stations in thousands; average number of ports per station)



Electric Vehicle Charging Station Concentration²



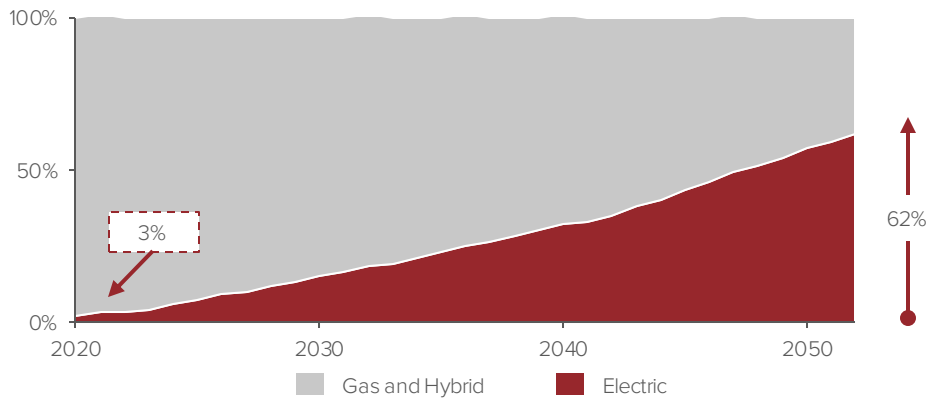
Rapid growth in charging infrastructure has expanded availability, but access continues to lag anticipated needs and remains concentrated on the coasts and in major cities

While EV infrastructure matures, fueling station services opportunities remain plentiful

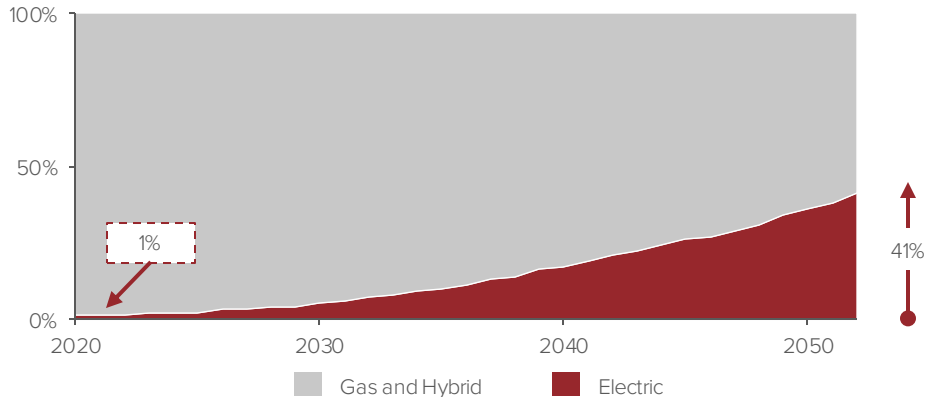
The mobility industry is in transition, but ICE vehicles still represent a large majority of the vehicle parc and likely will for many years. Thus, even as EV charging infrastructure develops, opportunities in traditional fueling services remain abundant.

Gasoline Expected to Remain Primary Fuel for Next 30 Years...

New Vehicle Sales¹
(% of Total Sales)



Vehicles on the Road¹
(% of Total Vehicles)



It will be decades before EVs comprise a majority of vehicle sales, and longer still before they represent a majority of the vehicle parc

... Giving Critical Fueling Infrastructure Services a Long Runway

Installation



Construction of new fueling sites, installation of dispensers and related equipment, and upgrade or overhaul of aging equipment and infrastructure

~\$2.5–\$3B
Annual addressable market²

Service / Maintenance



Proactive maintenance, break-fix maintenance, regulatory-mandated equipment upgrades, and responsive maintenance for inspection and compliance

~\$3–\$3.5B
Annual addressable market²

Testing, Inspection, and Compliance



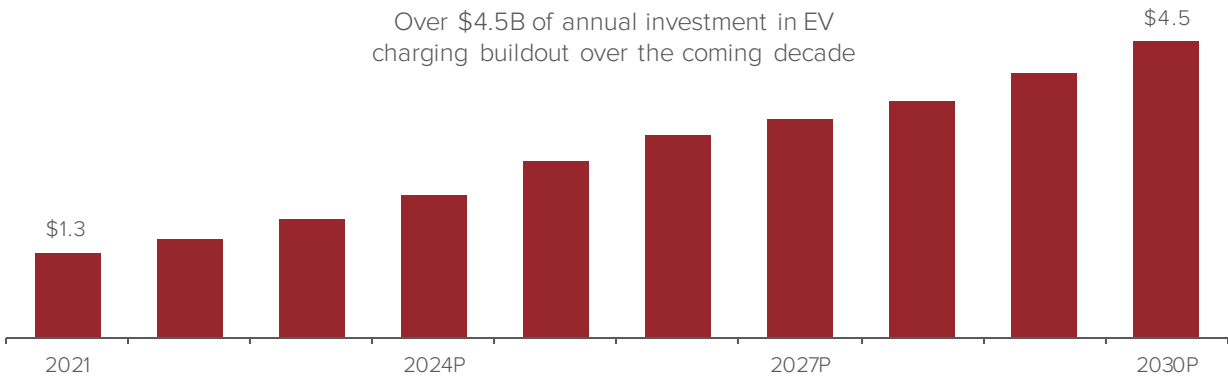
Proactive equipment testing, regulatory-mandated inspection and certification, leak detection, weights and measures

~\$500M
Annual addressable market²

Looking ahead, solving the EV charging challenge represents a large and growing market opportunity

While ICE fueling remains a larger market today, enormous public and private capital inflows and a highly fragmented market offer tremendous opportunity in the EV charging market going forward.

Installation Addressable Market (\$ in billions)¹



Public Funding for EV Infrastructure²

IIJA²

~\$7.5B of direct funding
~\$30B of adjacent funding

Key programs include:

- National EV Infrastructure Formula Program
- Discretionary Grant Program for Charging and Fueling Infrastructure

IRA²

~\$40B of potential funding
Billions in related tax credits

Key programs include:

- Greenhouse Gas Reduction Fund and Climate Pollution Reduction Grants
- Tax credits for EVs and charging infrastructure

As federal funding accelerates and incentivizes EV adoption and infrastructure development, demand for installation and maintenance services will grow rapidly

Breakdown of the EV Charging Installation and Maintenance Opportunity

Charger Unit Economics

Service	One-Time Installation Cost	Annual Maintenance Cost
Level 2 Charger	~ \$20K	~ \$500
Level 3 Charger	~ \$45K	~ \$2K
Weighted Average Cost per Station	~ \$30K	~ \$1.5K

2030 Opportunity Sizing

<p>Installation</p> <p><u>Chargers to Install</u> ~100-150K</p> <p>✖</p> <p><u>Installation Cost</u> ~\$30K</p> <p>⌵</p> <p><u>Opportunity Size</u> \$3-4.5B</p>	<p>Maintenance</p> <p><u>Chargers to Maintain</u> ~1-1.5M</p> <p>✖</p> <p><u>Annual Maintenance Cost</u> ~\$1.5K</p> <p>⌵</p> <p><u>Opportunity Size</u> ~\$1.5-2.3B</p>
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Influx of public and private investment will create a ~\$5-6 billion market for EV charging installation and maintenance by 2030, equivalent to the current size of the fueling infrastructure services market

¹ International Council on Clean Transportation
² Harris Williams analysis of the Infrastructure Investment and Jobs Act (IIJA) and Inflation Reduction Act (IRA). Direct funding provides funding for EV charging infrastructure development. Adjacent funding supports related initiatives. Potential funding includes funding that could be applied to EV charging infrastructure but could also be deployed elsewhere.

Achieving widespread EV adoption requires recognizing existing challenges and the opportunities they represent

Several key obstacles remain to the widespread expansion of charging infrastructure and the corresponding adoption of EVs. Understanding each of these, and the opportunities they create, is critical for consumers, operators, and investors.

Significant Challenges Remain...



Access to Charging

Home charging remains either too slow or too costly for many consumers, multifamily residential buildings may struggle to meet demand, and overall, nearly 90% of global EV charging stations are private



Downtime

Many charging stations require consistent service, and in the absence of enough providers may remain offline for extended periods of time



Impact on Power Grid

EV charging represents a potential massive demand increase for the grid, which may stress aging infrastructure and existing supply sources



Cost and Payment Issues

Third-party charging is expensive, and open questions remain over payment structures and profit allocations, with potential costs for utilities, asset owners, operators, and consumers



Supply Chain

EV charger (and vehicle) manufacturing has been slowed by the same supply chain obstacles facing manufacturers across all industries



...Which Means Meaningful Opportunities Abound



Access to Charging

Challenges create opportunities for “on-the-go” charging, chargers at retail sites, and innovation in residential and multifamily charging technology



Downtime

Reliable service providers with the necessary coverage and expertise have a clear path to help fill a critical gap in the value chain



Impact on Power Grid

Infrastructure investment and technological advances could offer major improvements and cost savings across generation, distribution, and storage



Cost and Payment Issues

Payment solutions and software that offer a “win-win” answer to the payment question could rapidly gain traction, and networks that can capitalize on efficiencies and scale will realize major cost advantages



Supply Chain

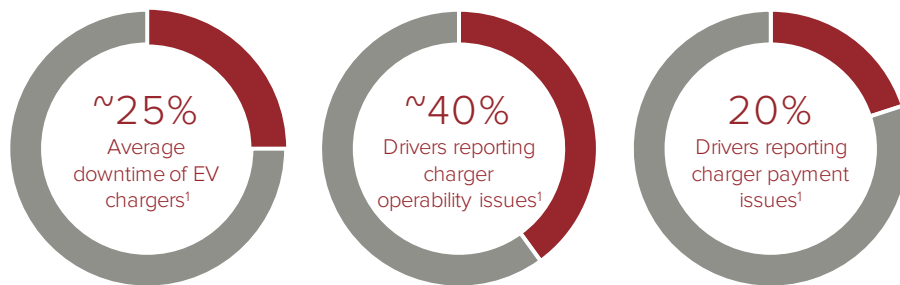
As supply chain conditions improve, increasingly streamlined production channels could accelerate EV adoption and mitigate current headwinds

Case study: Finding opportunity in downtime

Downtime is a critical issue for EV charging network operators, as every minute of downtime represents declining profits and declining customer satisfaction. Operators are willing to pay a premium for field service providers that can keep their equipment running and address issues quickly and effectively.

EV Charging Infrastructure Downtime

The Problem

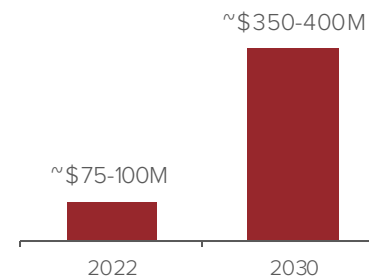


Drivers report downtime as a widespread and persistent issue when trying to use public charging infrastructure

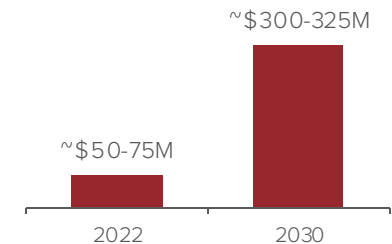
- EV charging infrastructure is expanding quickly, but maintenance and repair services have not kept pace
- Studies have reported differing results, but nonoperational chargers are clearly a common problem for EV drivers
- Downtime results in lost profits for all stakeholders
- The problem may be exacerbated if responsibility for repairs is unclear between retailers, operators, and OEMs

The Impact

Lost Charging Revenue
(\$ in millions)



Lost Retail Revenue
(\$ in millions)



Downtime is a ~\$150M problem that, if not improved, could become a \$500M-\$1B problem by 2030

- Downtime is costly to owners, operators, and utilities
- For operators, downtime represents lost charging profits in addition to direct repair costs
- For owners and retailers, downtime represents lost retail profits as a potentially captive customer leaves the site due to inability to charge
- For utilities, downtime represents lost marginal profits on energy sales, including potential demand charges

All stakeholders in the EV charging landscape recognize the cost of downtime, creating an enormous opportunity for companies that can shorten or avoid periods of lost revenue

Understanding the EV charging value chain

Charging stations are one node in a complex system powering the mobility transition. The growth of charging infrastructure is dependent on a network that includes vehicle manufacturing, battery manufacturing, sales, distribution, installation, operation, maintenance, financing, power, and more.

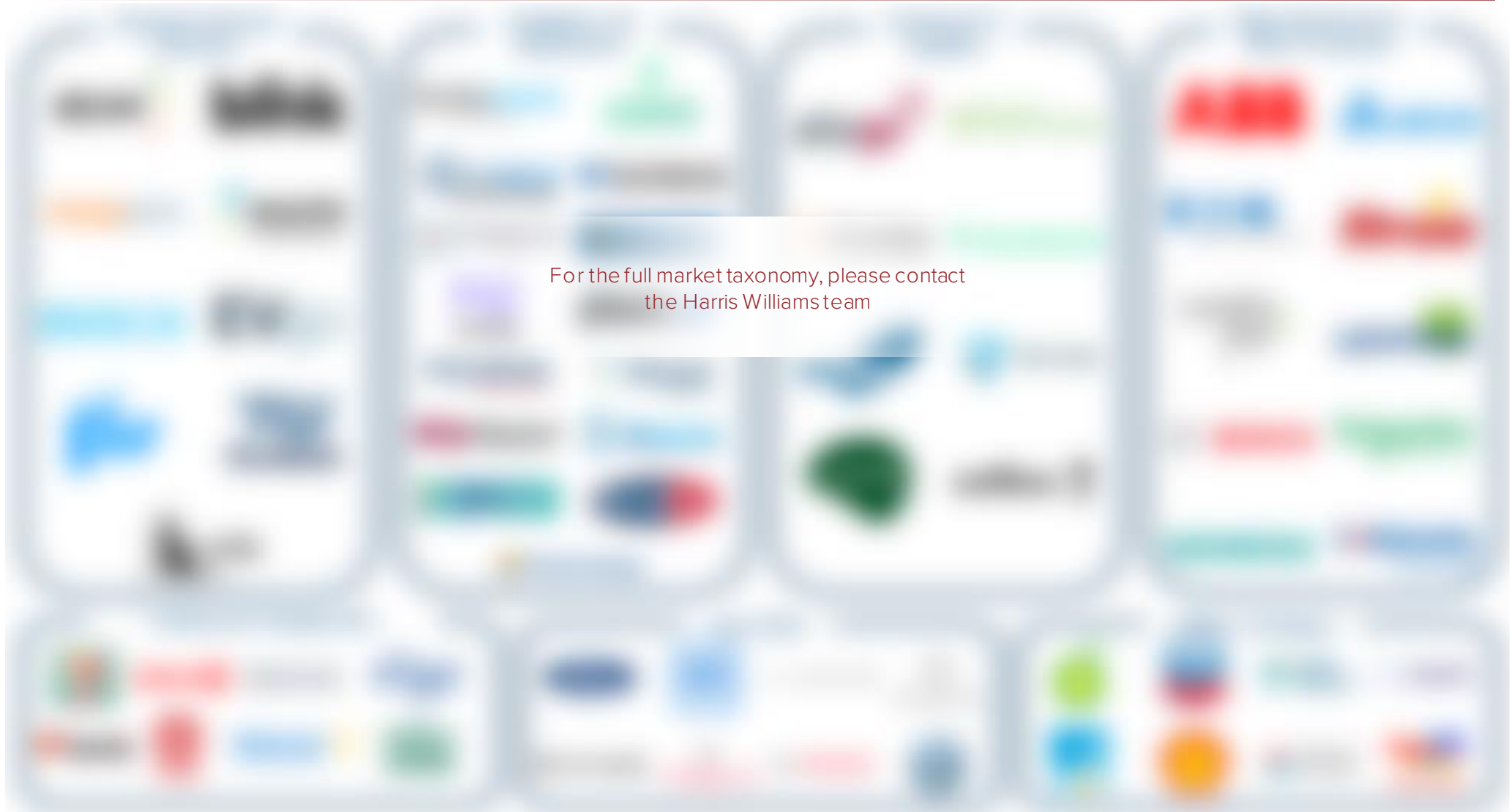
EV Charging Value Chain Participants

	Battery and Component Manufacturers	<ul style="list-style-type: none"> Manufacture and distribution of key components for EVs and chargers, including batteries, converters, inverters, electric motor components, plugs, cables, onboard chargers, and controllers
	Auto OEMs	<ul style="list-style-type: none"> Vehicle manufacturers, including both major ICE OEMs (e.g., Toyota, GM, Volkswagen) and dedicated EV OEMs (e.g., Tesla, Rivian, Lucid)
	Charging Manufacturers	<ul style="list-style-type: none"> Manufacture and distribution of EV charger hardware and software
	Charging Network Operators	<ul style="list-style-type: none"> Network operators install, own, and operate EV charging stations, providing the critical link between the charger manufacturer and the end consumer
	Installation	<ul style="list-style-type: none"> Specialized service providers able to install EV chargers and related hardware
	Maintenance	<ul style="list-style-type: none"> Field technicians that repair and maintain EV chargers and related hardware
	Testing, Inspection, and Compliance	<ul style="list-style-type: none"> Specialists that can inspect field equipment and certify regulatory compliance
	Utilities	<ul style="list-style-type: none"> Utilities manage transmission and distribution of power across the electric grid, including to charging stations
	Businesses	<ul style="list-style-type: none"> Businesses have begun to include EV charging infrastructure in strategic planning as installing EV chargers at retail locations becomes an increasingly common way to draw customers
	C-Stores and Traditional Fueling Sites	<ul style="list-style-type: none"> ICE vehicle fueling sites are natural locations to build charging infrastructure, and C-stores are increasingly exploring hybrid ICE/EV infrastructure as a path to play both sides of the EV transition
	Government	<ul style="list-style-type: none"> Lawmakers and regulators remain impactful in both ICE fueling and EV charging business models as legal guidelines remain in flux and investors closely watch shifting regulatory dynamics

Current EV charging market landscape

The mobility infrastructure market remains fragmented, with market participants ranging from sector-focused players to larger, diversified players across a variety of markets, including industrial technology, utilities, engineering and construction, international energy services, building and facility services, renewables, and professional services.

Mobility Infrastructure Market Participant Taxonomy



For the full market taxonomy, please contact
the Harris Williams team

Acquirers



Overview of private companies in the sector

The EV charging services market remains fragmented with a range of private participants, including regional and local players as well as private equity-backed platforms.

Select Private Mobility Infrastructure Market Participants

Company	Business Description	Ownership	Headquarters
brytemove energy	EV infrastructure design-build	White Deer Energy	Irvine, CA
United FUELING SOLUTIONS	Refueling equipment services	Wind Point Partners	Humble, TX
JF PETROLEUM GROUP	Refueling equipment services	MidOcean Partners	Morrisville, NC
LEVITON	EV charging products and services	Privately Held	Melville, NY
LIVINGSTON ENERGY GROUP	EV charging installation and services	Warren Equity	Schenectady, NY
NextEdge	EV charging installation and services	Bow River Capital	Alpharetta, GA
OWL	Refueling and EV equipment services	Trive Capital	Clarkston, MI
PEARCE RENEWABLES	Renewables and EV O&M	New Mountain Capital	Paso Robles, CA
SEAM GROUP	Energy / EV technology and services	Align Capital	Indianapolis, IN
Seneca Companies	Refueling equipment services	Privately Held	Des Moines, IA
SPAN	Residential EV charging services	Privately Held	San Francisco, CA
SPATCO	Refueling and EV equipment services	Kian Capital	Charlotte, NC
STATIONSERV	Refueling equipment services	Rosewood Private Investments	Dallas, TX
TeraWatt INFRASTRUCTURE	EV charging network operator	Privately Held	San Francisco, CA
xeal	EV charging software and services	Privately Held	New York, NY

Considerations for investors in the fueling infrastructure and EV charging market

What Should Investors Be Looking For?



Technical expertise and talent hiring, training, and retention



Breadth of service offering, including EV services



Proven track record of project execution and organic growth



Sales pipeline execution and cross-sell potential



Depth of customer relationships



Strong leadership and clear strategic vision



M&A capabilities



Geographic coverage



Business analytics and reporting



Regulatory landscape expertise

Sector expertise through industry focus

Energy, Power & Infrastructure (EPI) Group



Renewables & Distributed Energy

- Technology, Products & Equipment
- Engineering, Procurement & Construction (EPC)
- Operations & Maintenance
- Professional Services
- Electric Vehicles & E-Mobility
- Software & Climate Tech
- Residential Installers

Business Services Group



Commercial & Industrial Services

- Technician Services
- TICC
- Environmental & Waste
- Fire & Life Safety
- Mechanical Services
- Specialty Facility Services
- Service Aggregators

Transportation & Logistics (T&L) Group



Transportation Infrastructure

- Transportation Equipment
- Road
- Rail
- Marine

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Select Renewables and Distributed Energy Transactions

 a portfolio company of has been acquired by 	Leading provider of equipment and services for fueling stations and EV charging infrastructure across the United States
 has acquired a portfolio company of 	Market leader in maintenance and testing, systems integration, and related distribution services to C&I and renewables customers
 a portfolio company of has been acquired by 	Leading provider of technical building solutions for the C&I facilities market, delivering services through every phase of a building's life cycle
 has acquired portfolio companies of 	Leading integrated electric infrastructure service platform
 a portfolio company of has been acquired by 	A leader in demand response and distributed energy resources in North America

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Business
Services



Consumer



Energy, Power
&
Infrastructure



Healthcare &
Life Sciences



Industrials



Technology



Transportation
& Logistics

70% Revenue from
repeat clients

83% Managing directors
promoted from
within the firm

30+ Year
history



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