



**Track C Session 1: Long Term Planning
for Infrastructure Deployment**

August 15, 2023

V O L V O

opportunities and challenges in fleet Charging and Infrastructure

Sustainable Fleets Technology Conference

Manuel Aguirre | Volvo Energy | Charging & Infrastructure Solutions

August 15, 2023

We are here to drive sustainability and development towards a fundamental breakthrough in electrification.

- 102,000 employees | 190 markets
- 10 business areas | 13 brands



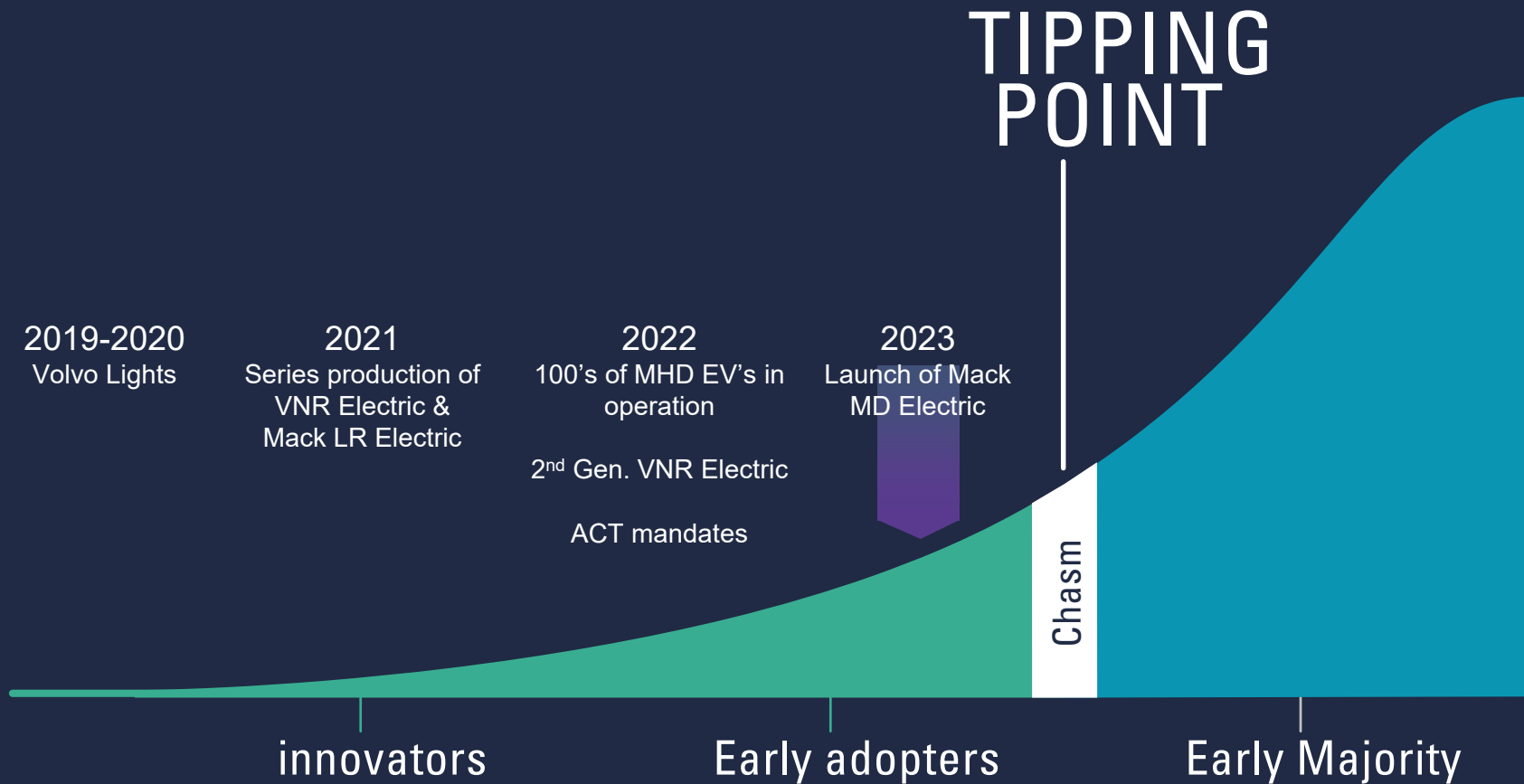
V O L V O

We have come a long way

The products and the technology are already here. The time to act and take the lead in electrification is now!



Medium Heavy Duty EV's in NA are approaching a tipping point



VOLVO

The Electromobility Ecosystem

Building the Decarbonization Journey for Our Customers

Electric Trucks

Route
Simulation

Charging
Infrastructure

Financial
Services

Maintenance &
Repair



We are in this together

The entire value chain needs to mobilize to make the shift



Energy supply

Electricity generation

Transmission & distribution

Electricity retailing



Charging & infrastructure

Equipment supply

Installation & Field services

Operation



Vehicle provision



Customer Interface: Sales & services

Vehicles

Charging



Charging & infrastructure



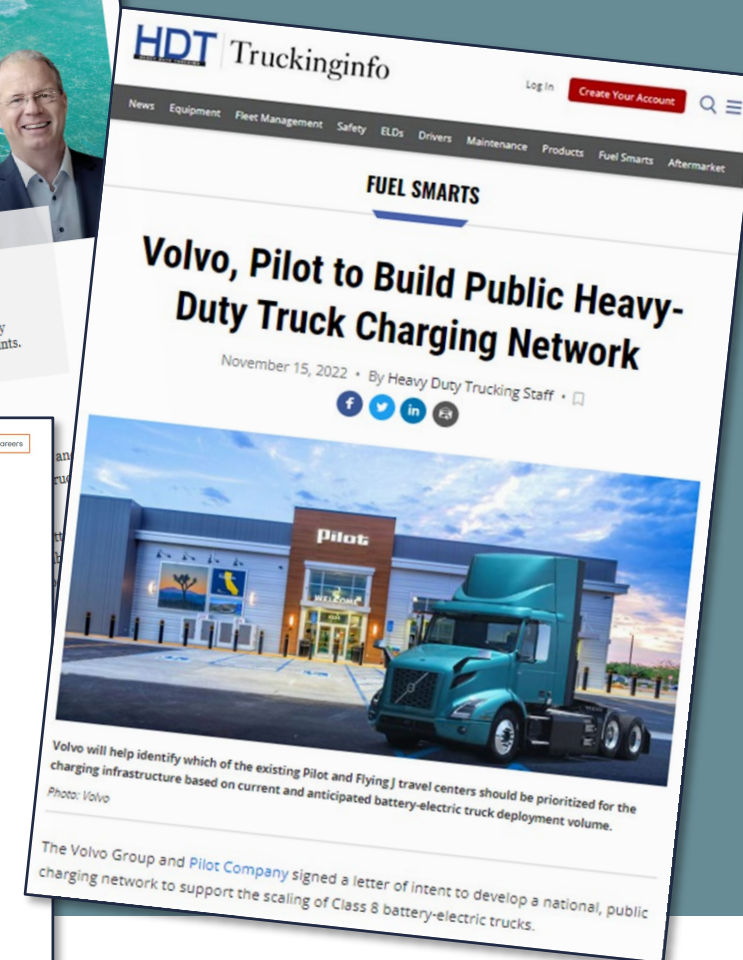
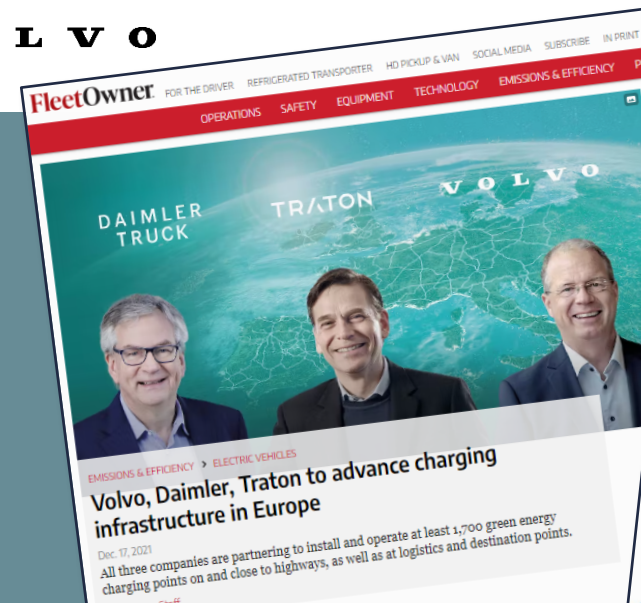
Driving a successful transformation to zero emissions fleets today



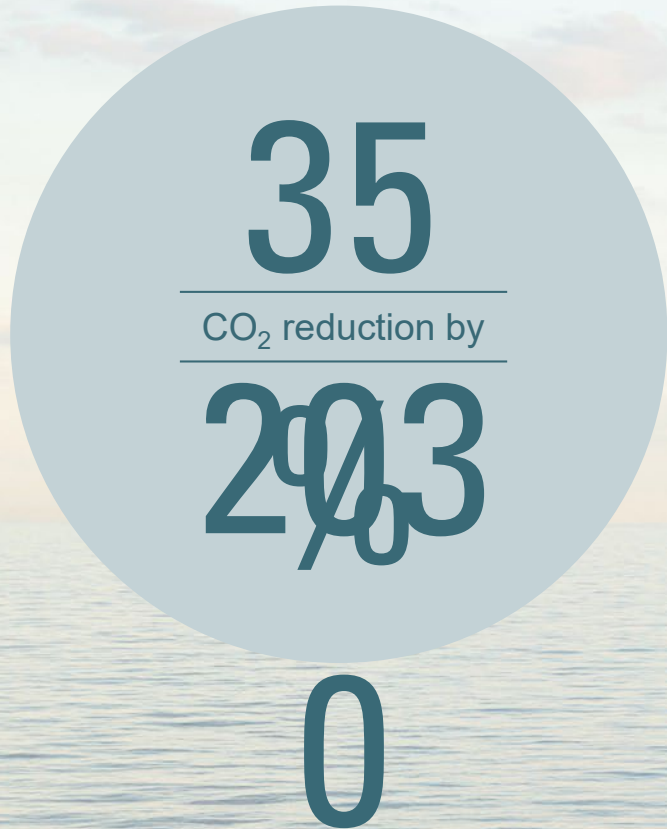
Partnership is the new leadership

Public charging solutions

- Development of high-performance Heavy-Duty public charging networks in Europe and North America
- Market leaders working together to accelerate electrification
- Joint pursuit of available incentives and grant funding
- Open to electric vehicles of all brands



Towards fossil-free transport



V O L V O



NEW DAY HYDROGEN

Hydrogen
and its role in the
transition of fleets to
zero-emissions

Global race to slash emissions

- Hydrogen picks up where batteries leave off
- Diesel fleets
 - Buses
 - Trucks
 - Public works



HYDROGEN – the Zero Emission solution for trucks



Temperature extremes: cold or hot weather – no problem

Steep Terrain: we're ready for the mountains



Heavy duty cycle: long runtime and rapid refueling – we got it

Large loads: carrying more load – isn't that the point!



1:1 Replacement makes FCEBs cheaper than BEV, smaller footprint as well

Zero Emissions: only emission is clean, pure water vapor

Fuel Cell Electric Vehicles



*Teva Motors
Med-Duty Fuel Cell Truck*



*Sunline Transit
Hydrogen Fuel Cell Bus*



*US Hybrid
Med-Duty Fuel Cell Truck*



*Stellantis Light
Commercial Vehicles*

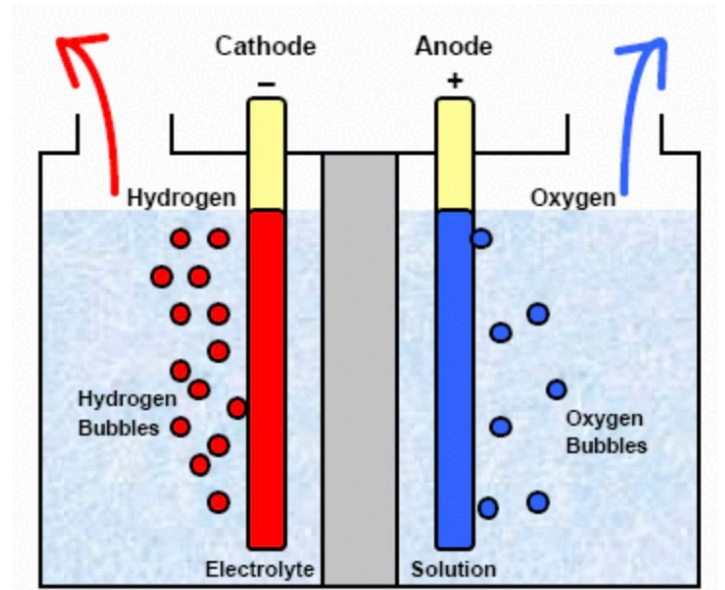
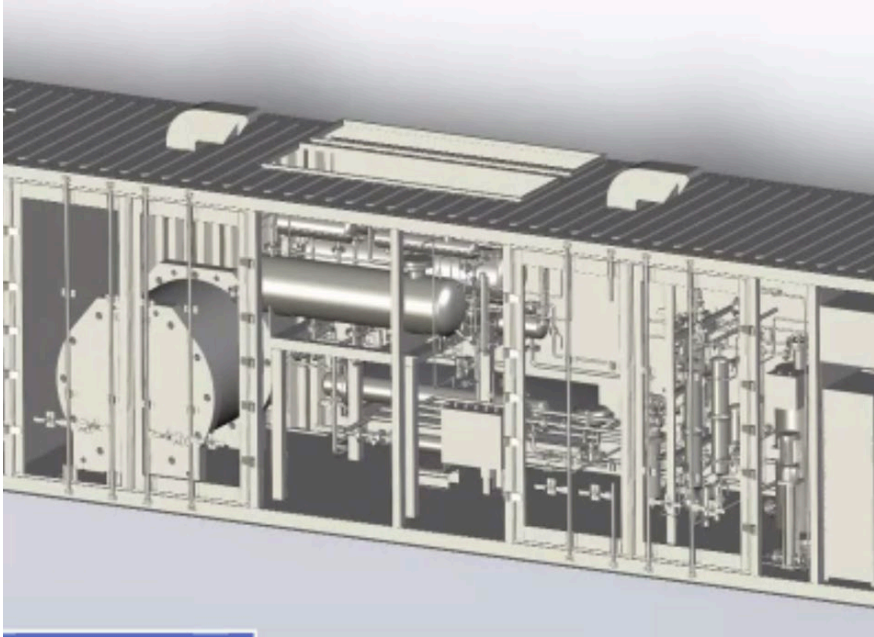


Nikola TRE FCEV Class 8

*Helping fleets reach
zero emissions
in minutes – not hours*

- Seeding micro-hubs – today
- On-site, fossil-free H₂ fuel
- Modular systems
- MD/HD vehicles

NEW DAY 
HYDROGEN



Electrolysis

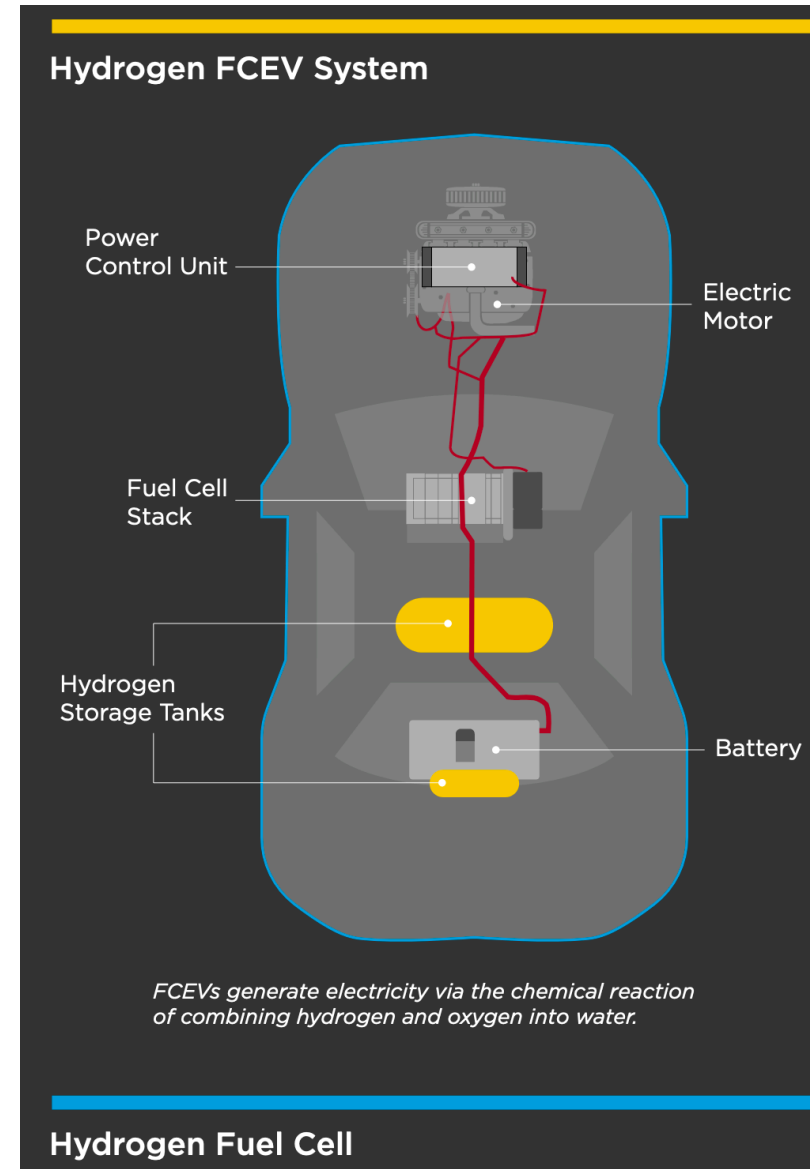
water + electricity = green hydrogen

→ modular → flexible → scalable

How does the Hydrogen Power the Vehicle?

Chemical Reaction

hydrogen gas reconnects with oxygen in the fuel cell
and generates power



Team



Seth Terry, PhD MBA
CEO

*Start-up veteran;
sustainability and
deep tech focus*



Buford Barr
COO

*Energy industry
veteran; project
development focus*





•Questions?

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Transportation Electrification with **EDISON energy**[®]

Long term planning for
infrastructure deployment

We are Innovative Experts

Our data-led analytics and depth of knowledge put us in the unique position to empower your organization to establish cost savings while achieving your fleet electrification and sustainability goals - transforming your emissions reduction challenges into your competitive advantage.

Cost & Carbon & Complex Choices

Edison Energy: Helping Accelerate The Decarbonization Journey

Our Mission

With a commitment to promoting a **sustainable, resilient, and equitable** future, Edison enables organizations to deliver on their strategic, financial, and sustainability goals by addressing today's key energy challenges: carbon, cost, complex choices, and energy justice across communities.

Our Service Lines

Energy Optimization & Implementation

Sustainability Advisory

Renewables Advisory

Transportation Electrification

Distributed Energy Resources (DER)

Supply Solutions

Edison By the Numbers



414M+ fleet miles analyzed for EV suitability



\$263M+ in fleet savings from converting to electric vehicles



51 of the Fortune 500 are clients



280 million metric tons of CO₂e avoided from renewable energy projects

Our Credentials



Partners with leading organizations

Gold Climate Change Consultancy Solutions Provider



Global presence

Headquarters in Irvine, CA, London, UK, and Utrecht, The Netherlands. Regional locations across North and South America, Europe, and Asia



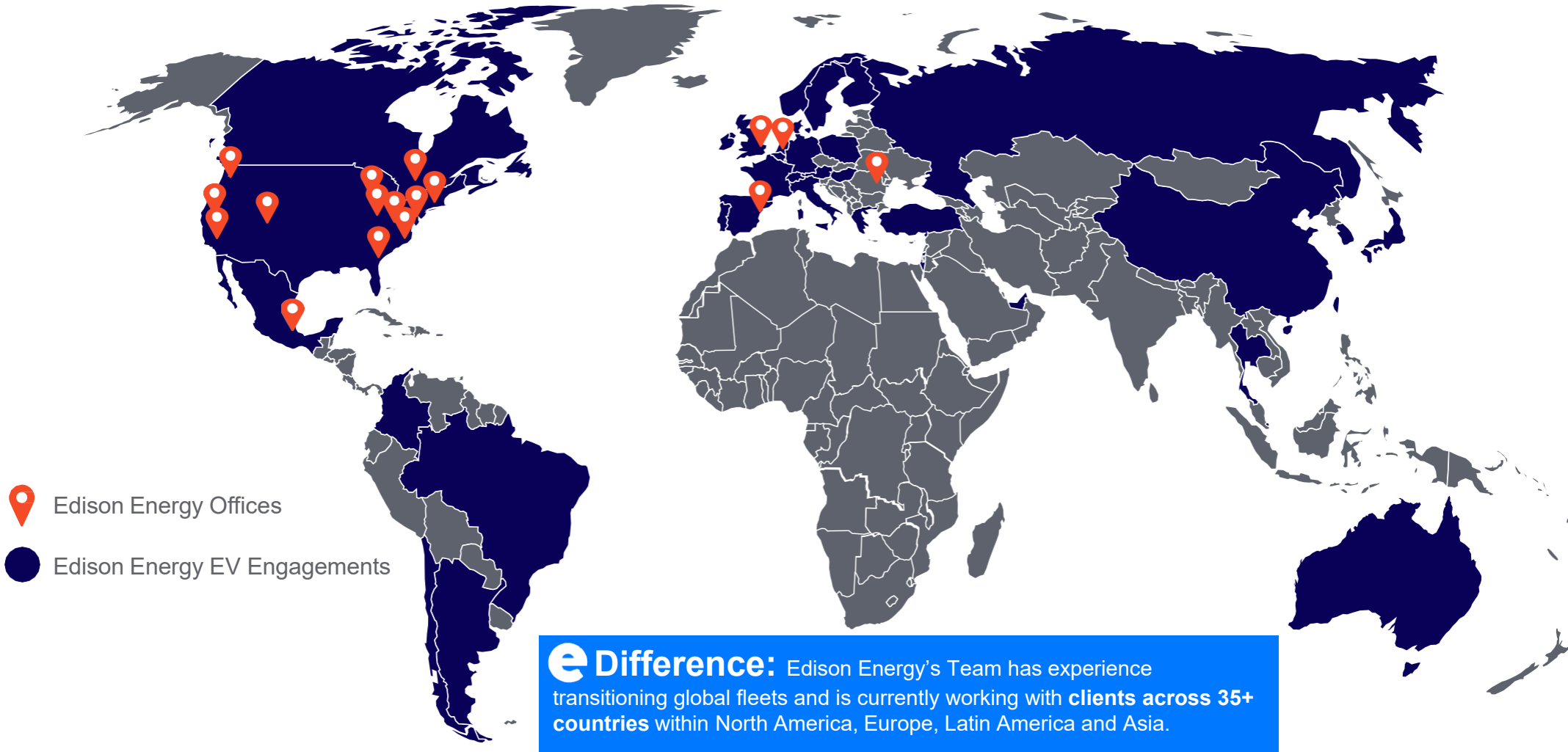
+400 employees

With over 150 years of collective industry experience among leadership



Where We Are

Global Capabilities, Wherever You're Located



Transportation Electrification

As you transition your fleet to reduce emissions, we partner to make the positive business case for incorporating electric vehicles into operations and support you with turn-key solutions in charging installation, design, and optimization by providing:

- Alignment with sustainability goals or carbon emission targets
- Fleet assessments with alternative fuel and electric vehicle technology reviews
- Detailed business case and total cost of ownership
- Roadmaps for geographic, timing, and sequencing of fleet conversion
- Centralized portfolio and project management
- Oversight of fleet program design and charging infrastructure construction
- Charging selection, procurement, and on-site installation support
- Policy analysis identification of funding and incentives for vehicles and charging infrastructure
- Project integration with onsite solar and storage
- Utility coordination, with attention on rates and charging management
- Advisement on optimization of charging and energy software
- Full turnkey engineering, procurement, and construction (EPC)



Helping you navigate the turns

We make the transition to a zero-emissions transportation future seamless and easy by meeting you wherever you are in your electrification journey. We offer full end-to-end turnkey solutions and partner as a trusted advisor in your process.

Strategic Vision

Understand key market topics and drivers that will provide foundational knowledge through the electrification process.



Roadmap Development

Utilize total cost of ownership and policy analyses, emissions reduction targets, pilot site prioritization, and optimized charging strategy to create a strategic roadmap.



Ongoing Inputs

Your roadmap is ever changing. With policy and technology changing rapidly, we make sure to re-run key analyses to update our client's strategy.



Post-Implementation Support

Facilitate workforce transition, manage charger operations and data, incentive follow through, integration of solar and storage solutions, change management, and update clients with new market changes and developments.



Infrastructure Implementation

Execute utility coordination, procurement, design, engineering and construction for charging infrastructure. Serve as your representative to ensure costs, operations, and sustainability needs are met.



Developing a strategy for fleet electrification



Toolkit of policies and incentives that impact the geography and affordability for fleet conversion from a regulatory lens

Policy & Incentive Toolkit



Specific and detailed data is leveraged to determine vehicle replacement options, total cost of ownerships, and charging strategies

Fleet & Facility Analysis



Understand, pinpoint, measure, and direct the many benefits of an electric fleet towards the communities in which they operate

Environmental Justice



Actional plan including short-, medium-, and long-term strategies that identify emissions reductions, costs, and operational impacts

Sustainable Roadmap



Organizational buy-in from suites of workshops and implementation of a robust change management plan

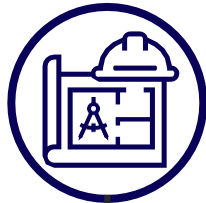
Change Management



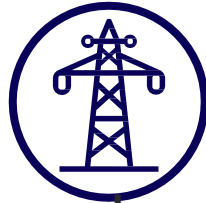
Pilot planning but determining the right starting location and the costs associated with transitioning and charging

Pilot Planning

Full Turnkey Design & Delivery



Site planning & EVSE design
Conduct on-site assessments of client sites for optimal charging equipment conceptual site layout, operational needs, and charging strategy



Utility & permitting coordination
Work with utilities and authority having jurisdictions for timely utility connection and permit authorization to ensure smooth timelines



Incentive & funding program management
Identify and help navigate the application process for incentive and additional funding opportunities that can offset the cost of your fleet's vehicles and charging infrastructure



Construction Management
Oversee charging infrastructure project engineering, design, and construction to maintain high quality work with minimum site disruption

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Integrating fleet operations with charging strategies
Analyze how you use your vehicles to develop a strategy and site layout for charging that doesn't interfere with your operations



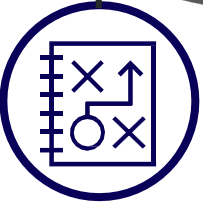
High power utility service connections
Determine methods of service for multimewatt projects including medium voltage service connection with client owned distribution systems if necessary



Charging infrastructure & technology selection
Determine the proper charging equipment requirements to assure the selected infrastructure is right for your fleet's charging needs



Aligning vehicle delivery & charging transition plans
Create a phased charging plan to ensure charging equipment procurement and construction is aligned with vehicle delivery schedules to avoid vehicle downtime



Edison Energy's delivers independent advisory and tailored solutions

Our Team's Electric Vehicle Experience



Edison Energy's Transportation Electrification team is comprised of industry veterans with deep expertise in [vehicles, charging, and energy](#)



The team has experience [across a variety of fleet types](#) including [light, medium, and heavy-duty vehicles](#). Our team members have helped with the deployment of many vehicles including fleet charging infrastructure planning & the deployment of [medium and heavy-duty trucks](#)



Edison Energy is currently working on several projects to help our clients manage the deployment of charging infrastructure for [class 8 vehicles](#)



We bring comprehensive knowledge from our support of [more than 120 unique fleets](#) in their conversion to electric vehicles



We understand the complexities of installing charging from [over 3,000 electric vehicle chargers](#), in a variety of power requirements and project complexity

Simply put, we're different



Transparently Independent

Our advisory leverages data-driven and experienced perspectives to find the right solutions while exploring and supporting emerging technologies aligned with your company's goals.



Partner in Complex Challenges

Challenging problems are our favorites! From strategy through implementation, we provide your company holistic recommendations from vehicles, to chargers, to battery storage and renewable energy.



Dedicated Policy Experts

Our team of experienced industry experts are actively monitoring changing regulations, incentives, and policy – all to make sure your company is informed of impacts to your business.



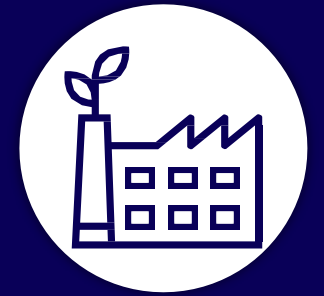
Inclusive Change Agents

We are deeply committed cultivating a culture of equity and inclusion in our partnerships. Our team empowers clients to become experts, leaders, and engage employees in their electric fleet transition.



Cost Effective & Efficient

We deliver solutions that provide cost savings, expedite decision-making and focus on what is most important to your company and the impacts of the transition to electric vehicles.



Commitment to Decarbonization

We envision a decarbonized energy future and want to help reach that reality. We will support your company's goals in transitioning to electric vehicles.

Thank you.

For case studies visit: [Case Studies Archive | Edison Energy](#)

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The Edison Energy logo is displayed within a large white circle on the right side of the slide. The word "EDISON" is in a bold, grey, sans-serif font, and the word "energy" is in a bold, orange, sans-serif font. A registered trademark symbol (®) is located to the upper right of the "y" in "energy".

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