Charging Depots, Networks & the Economics of Fleet Electrification

May 6, 2025







Advanced Clean Tech News For the Commercial Transport Sector



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Messy Middle Bootcamp Series

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Future Prices & Availability of Existing Infrastructure: What's Next? (March 11th) VIESEL AND NATURAL GAS WORKSHOP (March 25th) VIESEL AND NATURAL GAS WORK AND VIESEL AND V

The Current State of HD BEV: Technologies and Capabilities (April 8th) 🗸

Strategizing Successful HD BEV Adoption (April 27th)

Charging Depots, Networks & the Economics of Fleet (May 6th)

HD BEV WORKSHOP (May 20th)

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Moving Hydrogen from Here to There: The Distribution and Storage of Hydrogen Fuel (June 17th)

The Opportunities and Challenges of Selling Hydrogen to the Industry (July 1st)

HYDROGEN FUEL CELL WORKSHOP (July 15th)

2023 Bootcamp is still available at: https://runonless.com/electric-depot/

Upcoming Webinar



Charging-as-a-Service Report Review: What We Know Now

Tuesday, May 14th

1:00pm – 1:45pm ET

Register Today





2025 Messy Middle Fleets



Update from The Run Planning...



• Work Shirts









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Today's Bootcamp Sponsor

Terawatt





Quiz for Today's Session

Completing Today's Quiz:

- Go to runonless.com and click back into the session
- Click 'Take Quiz' button
- Create username and password to keep track of your progress
- Provide your name and email to enter a drawing for a Run on Less -Messy Middle swag bag





What You Should Know

Q&A

Submit your questions to the host using the Q&A box in the upper right-hand corner

Recording

A recording of today's webinar will be available on runonless.com

Technical Issues

Contact Stephane Babcock at sbabcock@trccompanies.com





Today's Bootcamp Speakers

Charging Depots, Networks & the Economics of Fleet Electrification



Andy Manos Director of EV Fleet Solutions Prologis Allen Nielsen Vice President of Business Development Greenlane Tom Perlin Strategic Capacity Development CH Robinson









C.H. Robinson

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C.H. Robinson



Simplifying logistics—across the world

We solve challenges through our unmatched expertise, unrivaled scale, and tailored solutions







Reducing greenhouse gas emissions for our company, our customers—and the world



- Exceeded emissions intensity goal two years early
- Committed to transparency & accountability by reporting through globally recognized frameworks.
- We continue to earn
 recognition—- like making
 Newsweek's America's Most
 Responsible Companies
 list— for ESG-related efforts

For Customers

- Sustainability &
 efficiency go hand-in-hand as we enable
 improvements everyday
- Emissions IQ provides carbon emissions measurement and analysis technology
- Consulting and optimization to help you achieve your goals
- Integration of EV and Alternative fuel solutions into your supply chain

For the Industry

- Contributes expertise & data to drive industrywide innovation
- Collaborates with leading NGOs & academic institutions to accelerate decarbonization
- Member of electrify I-10 shipper/carrier consortium
- Long-time partner of the U.S. Environmental Protection Agency's SmartWay program





Sustainable Solutions

Measure and Report

- Map global scope 3 emissions from transportation, track progress over time, identify opportunities for reduction
 - Emissions IQ[™]

Optimize for Efficiency

- Take action to reduce emissions through modal shifts, reducing empty miles, consolidation, and route and network optimization
 - Sustainability Profile via Supply Chain Inspection Report
 - Optimizer

Employ Green Solutions

- Alternative Fuel Station Mapping
- Direct conversion to alternative fuels for road and drayage
- Transporting volumes on ZEV carriers
- Book-and-claim Alternative Fuel Program for road, ocean and air

Partner to Drive Innovation

- Identify opportunities to test new solutions and advance industry partnership
 - Disclosure to Smart Freight Centre, EPA SmartWay, EcoVadis, CDP, others
 - · Consortiums to accelerate EV charging infrastructure
 - New CHRF industry sustainability grants



→ ZEV's and 3PL's



Why

- Customer demand. Over 80% of CHR North America shipment volume is attributed to customers with science based targets
- A forecasted growing economy with projections showing a higher % of production of ZEV trucks and ZEV trucks on the road
- Positive social and
 environmental impact

Integration Success

- Collaboration between customers logistics and sustainability teams
- A customer having a sustainability budget for freight/Scope 3 has been helpful, but not always necessary
- Drop trailer freight
- Short haul
- Port/drayage

Challenges

- Limited EV capacity
- Finances / budget
- Payload reduction
- Charging times and infrastructure
- Education



→ How do ZEV's Grow

- Increased Legislation
- Lower upfront costs
- Federal funding and grants
- More data collection around operations, charging, efficiency, TCO
- Improved battery density to reduce weight restrictions
- Short term: Customer supply budgets around sustainability match their passion for decarbonization
- Expanding charging infrastructure
- Continuous improvements from OEM's





NACFE Run on Less Messy Middle

Charging Infrastructure to Meet Your Freight Electrification Needs



May 6, 2025

Public fast charging network for ZEV commercial vehicles

Greenlane is a \$675M joint venture focused on building a nationwide network of public charging and H2 refueling stations for zero-emission commercial vehicles.

Join Venture Backed by:

DAIMLER TRUCK North America



BlackRock

Leadership Team







CEO Patrick Macdonald-King

Raj Jhaveri

COO Tannaz Banisadre





CEO

Libby Edgar





VP Government & Utilities Andrea Pratt

Deep expertise in ZEV MHD, DC fast charging networks, utilities and energy.





Recent grants

Keiron Greenhalgh | Staff Reporter September 9, 2024 1:03 PM, EDT

Greenlane Lands \$15M for California Zero-Emission Truck Hub

Colton Facility to Offer Charging for 60 Electric Trucks and Cars



Greenlane's Colton, Calif., site will offer charging stations for more than 60 heavy-, medium- and light-duty zero-emission vehicles. (Greenlane)

[Stay on top of transportation news: Get TTNews in your inbox.]

Truck refueling specialist Greenlane won a \$15 million grant from the South Coast Air Quality Management District to expedite construction of its flagship Colton, Calif., facility.



DOE Invests \$68 Million in Innovative Heavy-Duty Electric Vehicle Charging Solutions

SuperTruck Charge projects will accelerate deployment of large-scale public EV charging infrastructure for medium-and heavy-duty EVs to improve grid resiliency and reliability.

Office of Energy Efficiency & Renewable Energy

January 15, 2025

() 6 min

• Mega Charging the I-15 Corridor, Greenlane Infrastructure, LLC, Santa Monica, CA (\$26 million) will support multiple generations of MHD EV charging on freight corridors, producing real world operational data resulting in the validation of innovative controls all while reducing electric-grid impact. Greenlane will deploy a publicly accessible 10+ MW MHD EV charging station at Greenlane Center in Barstow, California. The site will feature distributed energy resource (DER) systems to help balance the utility load, including solar arrays and energy storage. Additionally, the site will offer combined charging systems and be futureproofed with scalable MCS direct current fast charging MHD EV chargers. The project will create replicable, scalable, grid-integrated high-power charging infrastructure along the I-15 corridor to support widespread adoption of Class 6-8 electric trucks.



Reliability, redundancy and grid strain considerations

Greenlane's Grid-Smart Solution Powering the I-15 Corridor



Public corridor-based approach for charging long-haul fleets

- Fleet depot charging alone isn't enough—long-haul routes require public highway charging corridors.
- Gaps in infrastructure are a major barrier to adoption.
- Greenlane's solution: Build high-power public charging every 60-90 miles along freight corridors.
- Removes fleet-side planning and capital burden—charging is available Day One.



Data-backed site selection process





Challenges on Energizing MHD Sites



Site Design

Physical requirements needed for MHD trucks



Coordination

Timeline coordination with utilities, contractors, OEMs, and stakeholders.



Power Supply

Sufficient, reliable power supply and resiliency



Permitting & Approvals

Complex permitting processes



Cost Management

Total Cost of Ownership doesn't pencil



First hub in Colton opened April 2025

Greenlane Center™

1650 Fairway Dr. Colton, CA 92324



Chargers:

- 12 pull-through lane chargers CCS 400 kW
- 29 bobtail chargers CCS 180 kW
- 30 passenger car parking spaces
- Carports for shade
- Security, gating and lighting for added protection
- Latest in charging tech liquied-cooled cables, SCADA, Trenwa, soon solar/BESS
- Future proofed for MCS upgrade



Best in class customer experience

For Fleets:

- Technology solutions to enable charging operations (Fleet Portal, Driver App, APIs)
- Reporting with charging related data
- Available offices and workstations
- Available truck/trailer overnight parking
- 24/7 Customer Support
- Reduced charging via Memberships





For Drivers:

- Comfortable lounge with food & beverages,
 Wi-Fi, restrooms
- Available workspaces, conference room and leasable offices
- 24/7 Site Attendant and Security Guard
- 24/7 Customer Support



Takeaways

- It's going to take a village
- Total Cost of Ownership gap must be closed
- Public-Private Partnerships are required to seed the market and get infrastructure deployed
- Utilities must be part of the planning stages
- Freight & Logistics companies need a technology ecosystem to electrify
- Collaboration across competition roaming



We're here to help!

- No matter where you are in your sustainability goals and electrification journey, we are here to help!
- Electrification isn't a one-size-fits-all solution but rather a collaborative effort where we can provide a customized approach to based readiness level, offering scalability and flexibility as your goals evolve.
- We'll work with you to develop a tailored mix of charging solutions that align with your company's unique business needs.





Thank You

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Next-Generation Electrification Solutions

Paving the way for EV adoption and charging infrastructure deployment



Andy Manos

Director of EV Fleet Solutions amanos@prologis.com

May 6th, 2025



Prologis Mobility

Providing charging infrastructure to our customers where it's needed most.

Depots

Workplace

Passenger vehicle

charging for distribution

center employees to

empower your team's

Charging

sustainability.

Onsite fleet charging at Prologis and non-Prologis warehouses for drayage, last mile delivery, yard tractors, forklifts and more.

Hubs

Subscription based fleet charging at dedicated sites along common routes and near key locations.

PROLOGIS

Charging As A Service (CaaS)

Simplifying Fleet Electrification



We Have You Covered From A To Zero

CUSTOMER COMMITMENT

No up-front cost, pay only \$/kWh you use to charge

PROLOGIS COMMITMENT

Infrastructure

Upfront development and investment

- Real estate
- Charging equipment
- On-site make ready
- Incentive programs

Energy

- Electricity

Managed on request

- Grid connection

Load optimization

– Energy management

Operations

Reliability ensured

- Operations & maintenance
- Network management
- 24/7 service
- Environmental attributes

Drayage Fleet Depot

Electrification of heavy-duty drayage operations for Performance Team/Maersk in Los Angeles

Key features

- Co-terminous with lease.
- Simple \$/kWh service fee.
- 99% charger performance uptime guarantee.
- Fleet charging manaement software.
- 24/7 maintenance and operations support.

Contracted: December 31, 2021 | Term: 6.75 years Commissioning: Q4 2022 | Location: Los Angeles, California Site Size: 127,000 SF

2.5 MW

22

11

5,695

installed capacity

Class 8 trucks

annual CO₂ saved

4M kWh

annual energy

180kW and 350kW

annual miles electrified

VOLVO

1.76M

consumed chargers
\$3.0M
WAIRE value
created

Last-Mile Van Line

Electrification of fleet for FedEx in Anaheim, California

Key features

- Co-terminous with lease.
- Simple \$/kWh service fee.
- 99% charger performance uptime guarantee.
- Fleet charging management software.
- 24/7 maintenance and operations support.

Contracted: Q2 2022 | Term: 7 years Commissioning: Q1 2023 | Location: Anaheim, California Site Size: 500,000 SF

2.2 MW

installed capacity

5M kWh

annual energy consumed

\$1.4M

WAIRE value created

200 last-mile

delivery trucks

5,829

annual CO₂

saved

200+

L2 and L3 chargers

3.7M

annual miles electrified



Yard Tractors

Electrification of yard tractors for Moreno Valley, California

Key features

- Minimum term of five years.
- No upfront capital required.
- Bundled with Prologis Smart Yard system.
- Monitoring and reporting for ISR compliance.
- 99% charger performance uptime guarantee.
- 24/7 maintenance and operations support.

Contracted: Q2 2022 | Term: 5+ years Commissioning: Q4 2022 | Location: Inland Empire, California Site Size: 800,000 SF

360 kW 258,000 kWh annual energy installed capacity yard tractors consumed 186 MT 10,000 annual CO₂ saved annual hours of 180kW chargers operation **\$887K** WAIRE value created

OnDemand Power

Why wait?

Temporary power takes the wait out of converting your fleet, enabling you to start charging on day one.

Whether you're setting up permanent charging stations or always on the move, our temporary power is a flexible way to get operations going now.

Any large load request is almost guaranteed to be three to five years for power.

- SCE at ACT Expo 2023





DEPOT CASE STUDY

Building California's largest heavy-duty truck charging project in 12 months

Combining real estate prowess with EV expertise at Denker

Term: 10 years **Location:** Torrance, California

Key features

- Adding EV Charging capacity to existing outdoor storage facility
- Using innovative microgrids for resiliency and schedule acceleration
- Contracting structure de-risked the business



96 DCFC Ports

charging capacity

9MW

18MWh energy storage

3MW Onsite Generation



The Prologis charging network will deliver unparalleled flexibility

Network alignment with the National Zero-Emission Freight Corridor Strategy*





Energy Sustainability Mobility

How Offsite Charging Drives Value for Fleets



<u>Receiverente</u>

Emilia Sibley General Manager, Heavy Duty emilia@terawattinfrastructure.com

Charging installations take up precious time and resources.

The challenge grows exponentially as fleets expand.



Offsite charging hubs can be an "easy button" for fleets across a range of use cases

- To avoid capex
- No dedicated yard or not enough space at yard
- Short term lease or unwilling landlord
- Lacks team resources to manage the immense upfront planning or ongoing operation
- **Top-up charging** if EV range is insufficient
- Temporary charging while waiting for depot power
- Backup charging for depot



Terawatt's charging sites in the LA Basin



Terawatt charging hubs for commercial fleets can drive better EV economics

- Fleets pay for electric 'fuel', not infrastructure Shared, private charging sites. Only pay for the kWhs you need.
- Oharging at the right speed 350 kW chargers, pull-through stalls
- Charging in the right places
 Conveniently located sites where fleets need to be.
 - For high performing fleets
 98% uptime. Zero wait with reservations. Highly secure sites.
 Interoperable across MD/HD models.



Charging reliability hits fleets' bottom line

The hidden cost of unreliable chargers	What it takes to achieve 98% uptime
 \$75 - \$150 for every idle hour \$100 - \$500 per load for late- delivery penalties Lost time to reroute driver to working charger Driver dissatisfaction & turnover Emergency diesel rentals 	Interoperability lab with proactive vehicle testing and partnerships OEMs Network Operations Center to monitor chargers with proprietary software Licensed field service team prevent & fix issues without calling charger OEM Deliberate charger procurement based on quality and verified in-field testing Network of sites that creates redundancy and resiliency Continuous improvement culture



Range Extension Example

Case Study: Fleet uses Terawatt's site for range extension

Fleet profile:

- Domiciles at Fleet Depot near the Port
- Vehicle: Volvo VNR Electric, 565 kWh battery
- Depot Charger: 100kW, bobtail stall
- Terawatt Charger: 350 kW, pull through stall
- Route: Port of Long Beach \rightarrow Fontana DC

Loads per Day:

- With Depot charging only: 1 trip per day
- With Terawatt site: 2+ trips per day



Offsite charging unlocks a faster payback on EV assets by enabling more miles per day.

Case Study: Fleet uses Terawatt's site for range extension

Driver starts the day at Fleet Depot; Drives to Port to pick up loaded trailer



Case Study: Fleet uses Terawatt's site for range extension

Drives to from Port to Distribution Center to deliver goods



Case Study: Fleet uses Terawatt's site for range extension

Drives back to Port



Case Study: Fleet uses Terawatt's site for range extension

Dwell time at Port to drop off empty trailer, and pick up loaded trailer



Case Study: Fleet uses Terawatt's site for range extension

Drives back to DC



Case Study: Fleet uses Terawatt's site for range extension

Charges at pull through stall at Terawatt's Rialto site for 45m



Case Study: Fleet uses Terawatt's site for range extension

Drives back to Port to drop off empty trailer



Case Study: Fleet uses Terawatt's site for range extension

Drives back to Fleet Depot to slow charge the truck overnight



Case Study: Fleet uses Terawatt's site for range extension

...Or use Terawatt's Rancho Dominguez site to charge while slip seating, then start driver 2nd shift.



Thank you

Emilia Sibley General Manager, Heavy Duty emilia@terawattinfrastructure.com





Charging Depots, Networks & the Economics of Fleet Electrification





Allen Nielsen Vice President of Business Development Greenlane

Tom Perlin Strategic Capacity Development CH Robinson









Let's Stay Connected...



NACFE (& Spanish: <u>NACFE LATAM</u>)





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