Providing Truck Charging Solutions in Southern California

June 18, 2024

Speakers

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Founder & CEO
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National Director of E-Mobility
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RMI

NACFE
NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

MISSION POSSIBLE PARTNERSHIP

AGENDA

- Welcome Address, Julia Thayne - RMI
- Roundtable
  - Nocona Sanders – RMI
  - Rick Mihelic – NACFE Run on Less Electric DEPOT
  - Paul Gioupis - Zeem
  - Andrew Hicks – BGIS
- Audience Q&A

The Case for Placing Drayage Truck Chargers Away from Ports

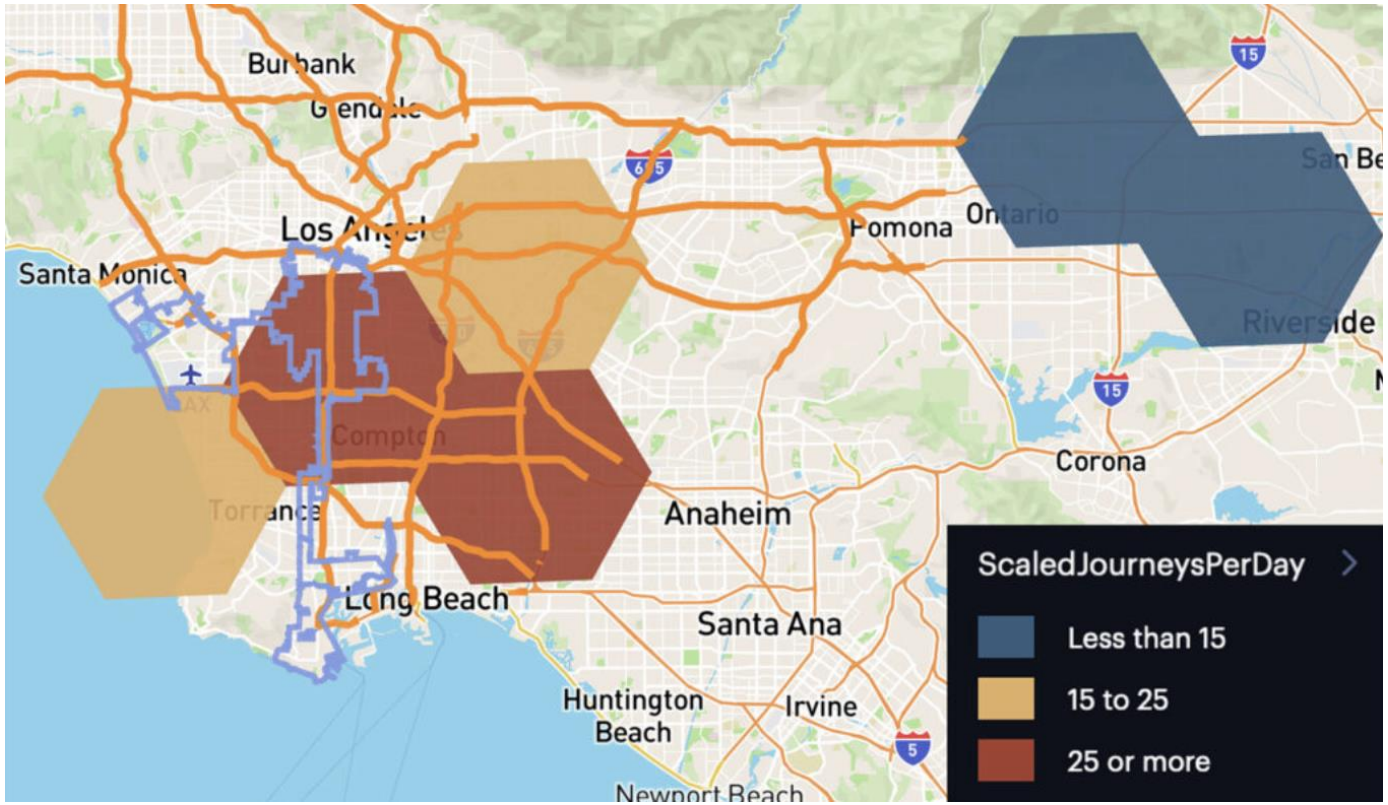
June 18, 2024

Background

- **Los Angeles County is home to the country's two busiest ports (LA and Long Beach) and consistently ranks as one of the nation's most polluted areas**
- **Advanced Clean Fleets (ACF) Regulation**
  - Once enforced, new drayage registrations must be zero-emission
  - All drayage trucks must be zero-emission by 2035
- **Lack of charging availability is a key barrier to implementation**

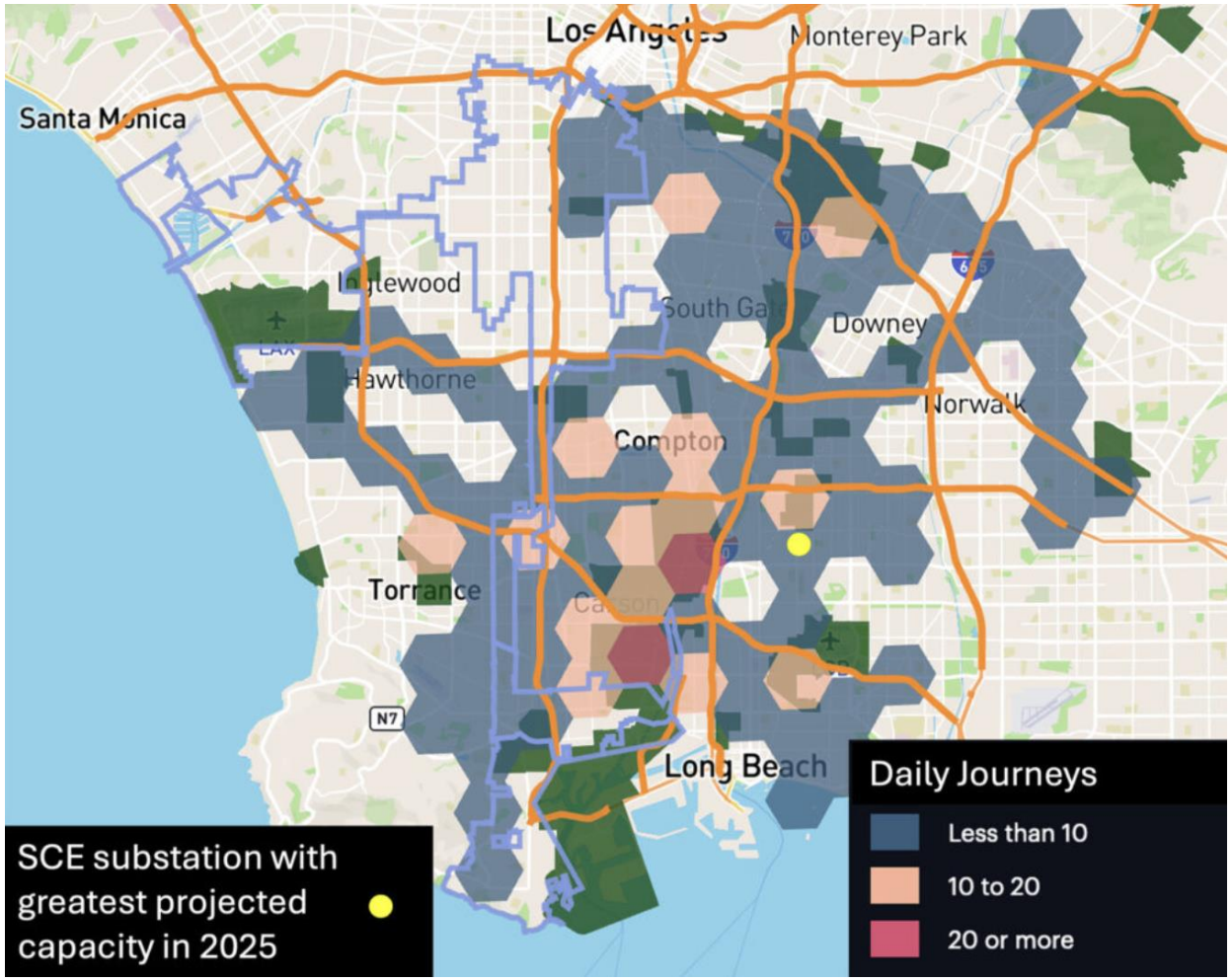
Many drayage destinations are within 25 miles of the Port

- Telematics data from Geotab provides a robust platform for analyzing truck travel
- Current EV models can already run these routes; we just need more charging
- By making chargers publicly available, fleets can help accelerate the electrification of other transportation modes while also saving money



Distributing charger deployment improves fleet electrification opportunities

- Stakeholders can help relieve grid constraints by distributing chargers over a larger area and further away from ports
- Industrial zoning areas (indicated in green) may have more charging capacity than commercial and residential areas
- Industrial zoning may expedite permitting



Conclusions

- **Talk to utilities sooner rather than later**
  - Some sites require years to get the full amount of power capacity needed
  - There may be areas with existing capacity
- **Consider how other transportation modes could increase utilization rates**
- **Consider community impacts**
  - While quieter and zero-emission, EVs can still disrupt communities through increased traffic if too many trucks queue to charge
  - Communities should be involved in planning processes from an early stage to ensure equity

RMI

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Providing Truck Charging Solutions
In Southern California

Run on Less – Electric DEPOT

Rick Mihelic

June 18, 2024

North American Council for Freight Efficiency

- Unbiased, fuel agnostic, non-profit
- Mission to double freight efficiency
- All stakeholders
- Scale available technologies, guide emerging change and Run on Less demonstrations.

www.NACFE.org

www.RunonLess.com

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NORTH AMERICAN COUNCIL FOR FREIGHT EFFICIENCY

IN PARTNERSHIP WITH

RMI
ENERGY. TRANSFORMED.

Run on Less Electric DEPOT BEVs

10 Fleets
10 Depots
291 BEVs

FORD

FREIGHTLINER

FORD

FREIGHTLINER CUSTOM CHASSIS CORPORATION

ORANGE EV

GM

MOTIV

NIKOLA

FREIGHTLINER

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VOLVO VNR

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RUN ON LESS ELECTRIC DEPOT

RMI – En

February 29, 2024

Run on Less Electric DEPOT Chargers

Performance Team: Commerce CA

Fast 100% EV Conversion in Short Haul

- 16 Gen1 Volvo VNRs (~120 miles and 4 battery packs)
- 6 Gen2 Volvo VNRs (225 miles and 6 battery packs)
- Chargers: 6 x 150 kW modular and 8 x 180 kW standalone

- Synop Charge Management System
- SoCal Edison

Schneider: S El Monte CA

Fast 100% EV Conversion in Slip Seat Operation

- 82 Freightliner eCascadias
- 16 dual cable 350 kW chargers
- Multi-shift operations
- Multiple stop intermodal chassis drop and hook
- 5 MW from Southern Cal Edison

NACFE estimate: up to **52 MWh per day** for the 82 trucks (charging all day long)

WattEV: Long Beach CA

Charging Hub with Truck as a Service (& CaaS)

- Nikola Tre BEV cab-over tractor
- BYD 8TT cab-over tractor
- Each dispenser charges 2 BEVs simultaneously at
  180kW or individually at 360kW.

- Ampcontrol CMS.
- MCS on site!
- SoCal Edison with 5 MW


Zeem
Transition Your Fleet. Seamlessly.
RMI Presentation
June 18, 2024

Who Is Zeem

1

Zeem's Role

Leader in designing, building, and operating zero-emission vehicle depots, charging, parking, and fleet management solutions

2

Locations

Strategically located near ports, airports, and on customer sites nationwide

3

Mission

Accelerating sustainable transportation for all fleets focusing on affordability, scalability, and environmental impact

4

Charging Infrastructure

High-speed stations for Class 1 to Class 8 EVs specifically designed for broad spectrum of fleet needs

5

Impact

Leading nationwide fleet electrification, sustainability, and cost effectiveness for fleets of all sizes

LAX Depot: Full-Service EV Experience for Fleets

Zeem's Impact in 2023 – Over 1M MWh of electricity dispensed, fueling 26,000 charging sessions

- 3.1-acre facility at LAX is one of the largest commercial EV charging hubs in the US
- 78 DCFC, 53 AC ports, 7.5 MW interconnection
- Launched Phase I operations in Dec. 2021
- Finished full commissioning Jan 2024
- Serving rental car, rideshare, passenger shuttling, last mile freight, air cargo, and drayage customers

Zeem's Impact in 2024 – Over 500,000 kWh dispensed, fueling 15,000 charging sessions, 200,000 kg of CO_2 saved

Depot Offerings

Unlocking value in multi-tenant and in-yard projects for fleet charging hubs

	Multi-Tenant Depot	*In-Yard Infrastructure*	*En-Route / Corridor*
Definition:	• Shared charging infrastructure at a dedicated site near key logistics hubs	• Charging infrastructure located at a single customer's site	• Public infrastructure for opportunity charging located along key transportation corridors
Customer Capture:	• Repeat customer base primed for expansion as new depots are built and fleets continue to electrify	• "Land-and-Expand" opportunity once first project is secured and fleets continue to electrify	• Customers not easily captured given more access to multiple public providers
Commercial Agreement Type:	• Long-term, fixed-fee contracts	• Long-term, fixed-fee contracts	• "Pay-as-You-Go"; more opportunistic and variable
Key Strengths:	• Located near airports, ports and logistics centers	• Capital efficient and optimized to the fleet's exact needs	• Built along well-traveled transportation routes
Zeem's Focus:	✓	✓	✗

Long Beach Depot

Centrally located in the Port of Long Beach to facilitate drayage electrification at the two largest ports in the US

- 2.7-acre facility will be largest commercial charging depot in terms of connected chargers and capacity in the US
- 84 high-powered DCFC ports and 15 MW interconnection
- 500 vehicle capacity per 24-hour period
- Projecting Phase I site energization by Q1 2025
- Purpose built to service drayage customers

Over 22,000 trucks in the drayage truck registry serving both San Pedro Bay ports

Newark Depot

Located less than 3 miles from marine terminals at the 3rd largest US port surrounded by intermodal facilities

- 3-acre facility will be largest charging depot on the East Coast
- 84 high-powered DCFC ports and 30 MW interconnection
- 500 vehicle capacity per 24-hour period
- Projecting Phase I site energization by Q4 2025
- Purpose built to service drayage customers and additional use-cases in high volume transportation market

Over 29,000 trucks in the drayage truck registry serving the Port of NY & NJ

Zeem

THANK YOU

Paul Gioupis
Founder and CEO
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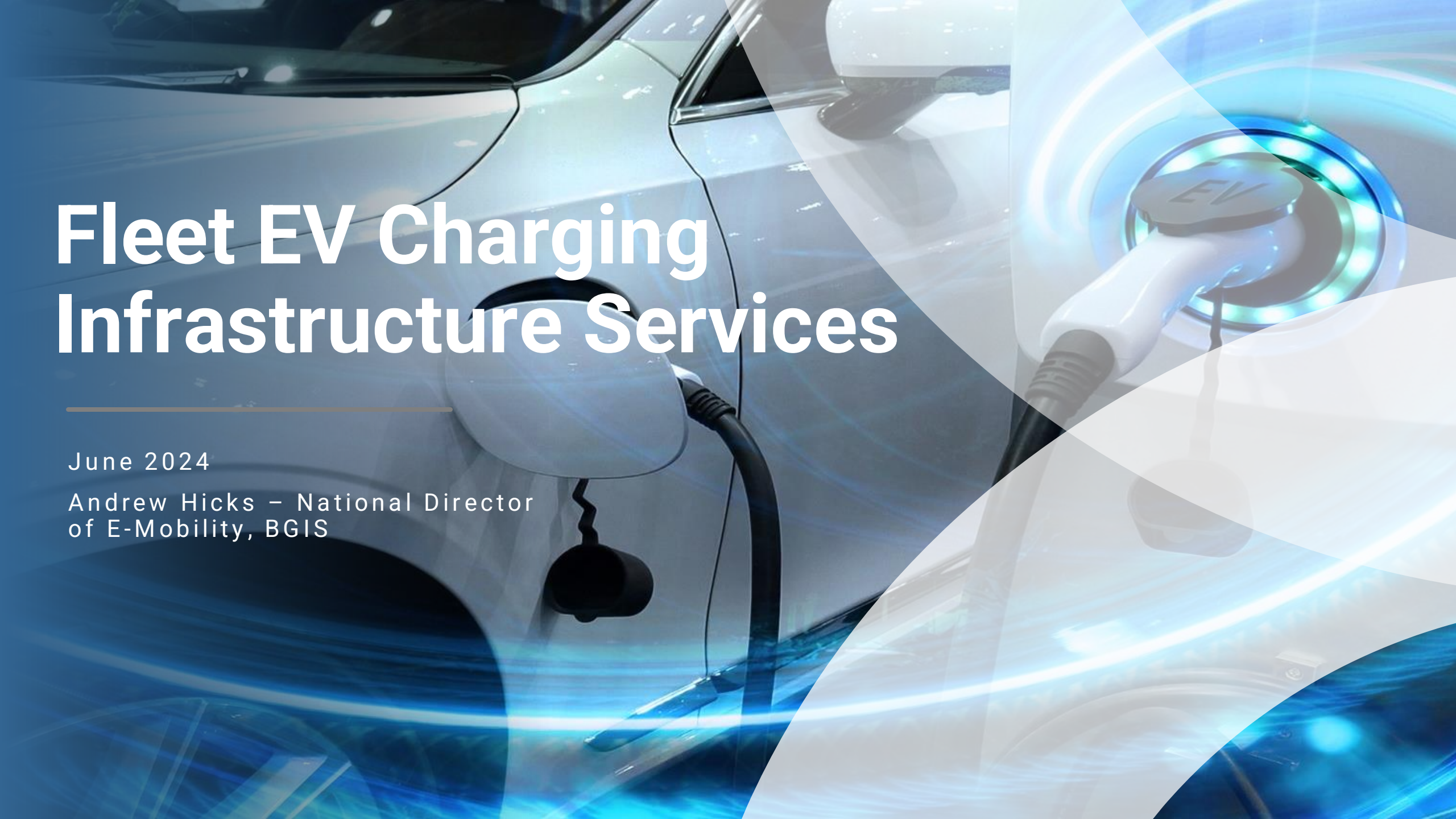


Fleet EV Charging Infrastructure Services

June 2024

Andrew Hicks – National Director of E-Mobility, BGIS

BGIS GLOBAL REACH

At BGIS we provide technically led integrated facility management services, with innovative solutions that support our clients in differentiating and successfully growing their businesses.

90,000+
LOCATIONS GLOBALLY

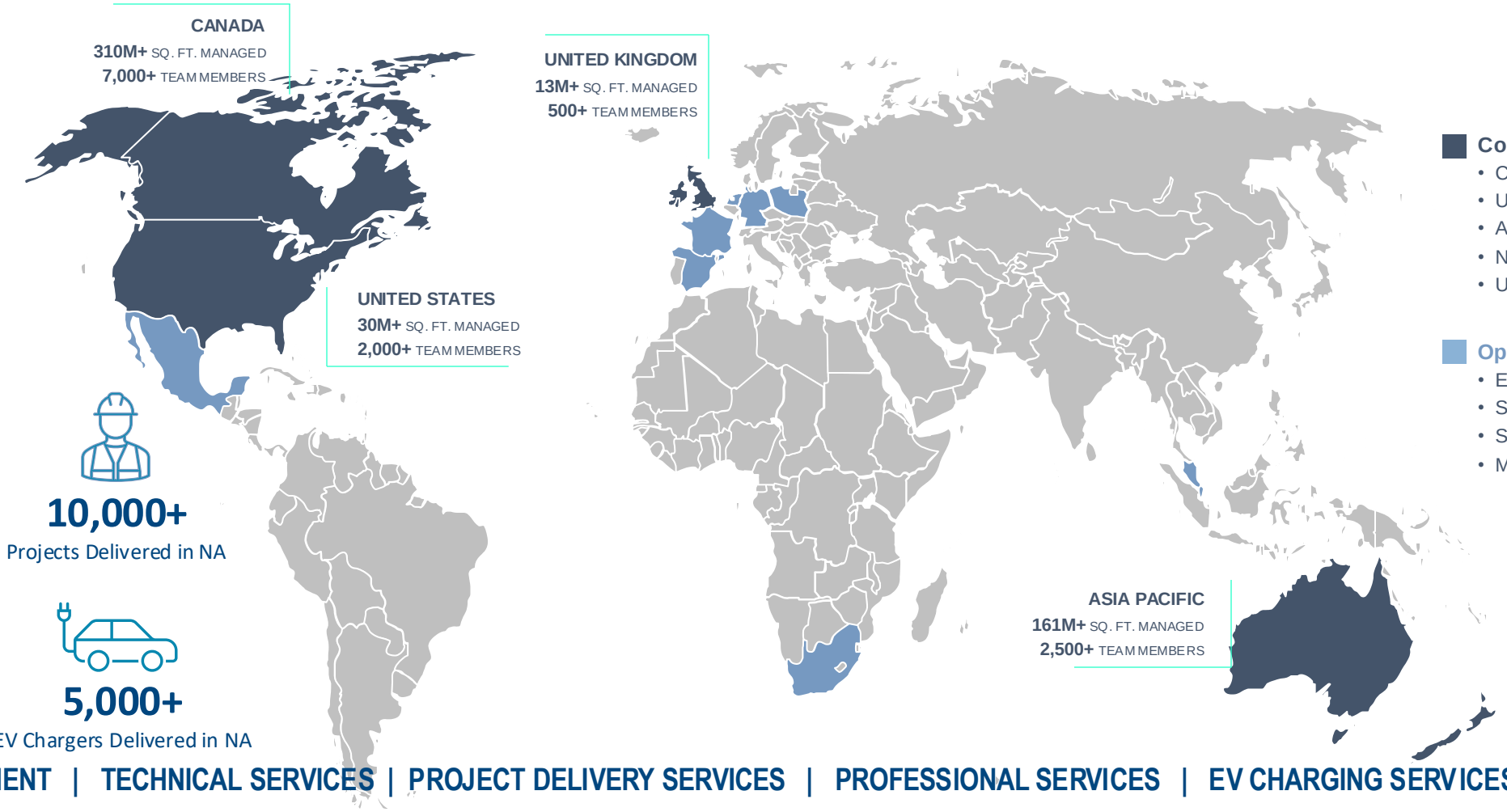
530+M
SQ. FT MANGED SPACE

12,000+
TEAM MEMBERS GLOBALLY

$3B+
Managed Spend

10,000+
Projects Delivered in NA

5,000+
EV Chargers Delivered in NA



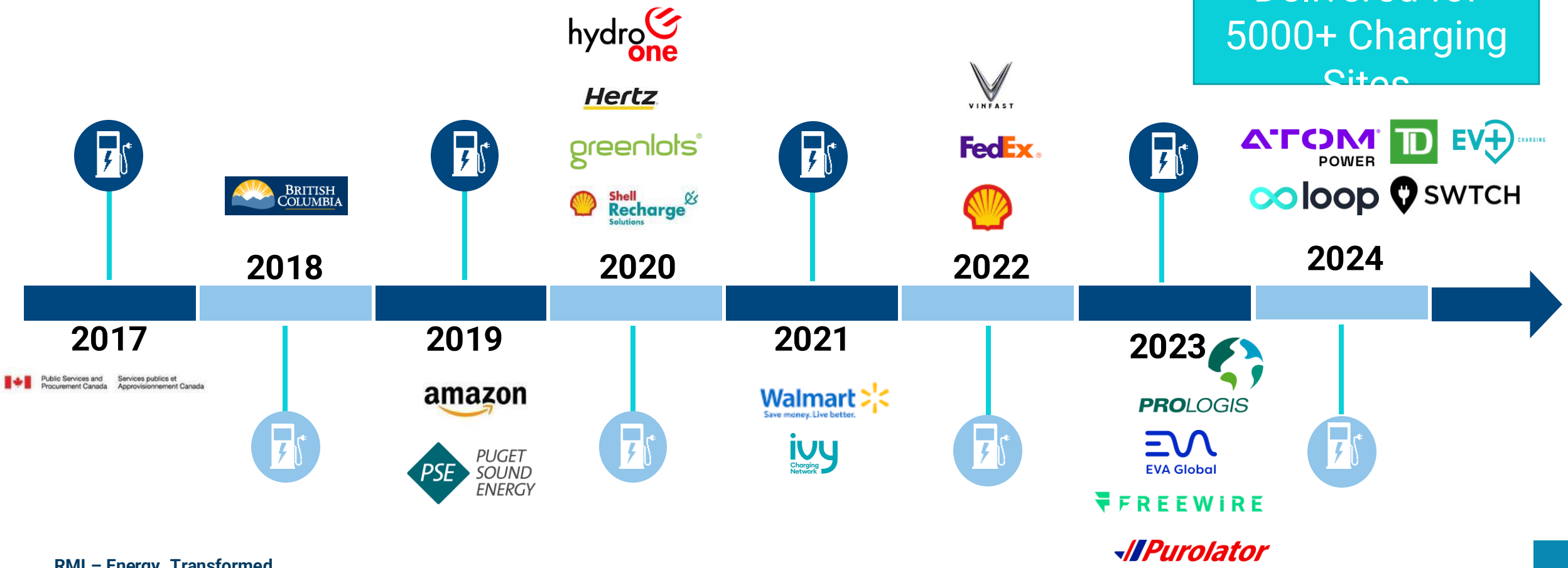
FACILITY MANAGEMENT | TECHNICAL SERVICES | PROJECT DELIVERY SERVICES | PROFESSIONAL SERVICES | EV CHARGING SERVICES

RMI – Energy. Transformed.

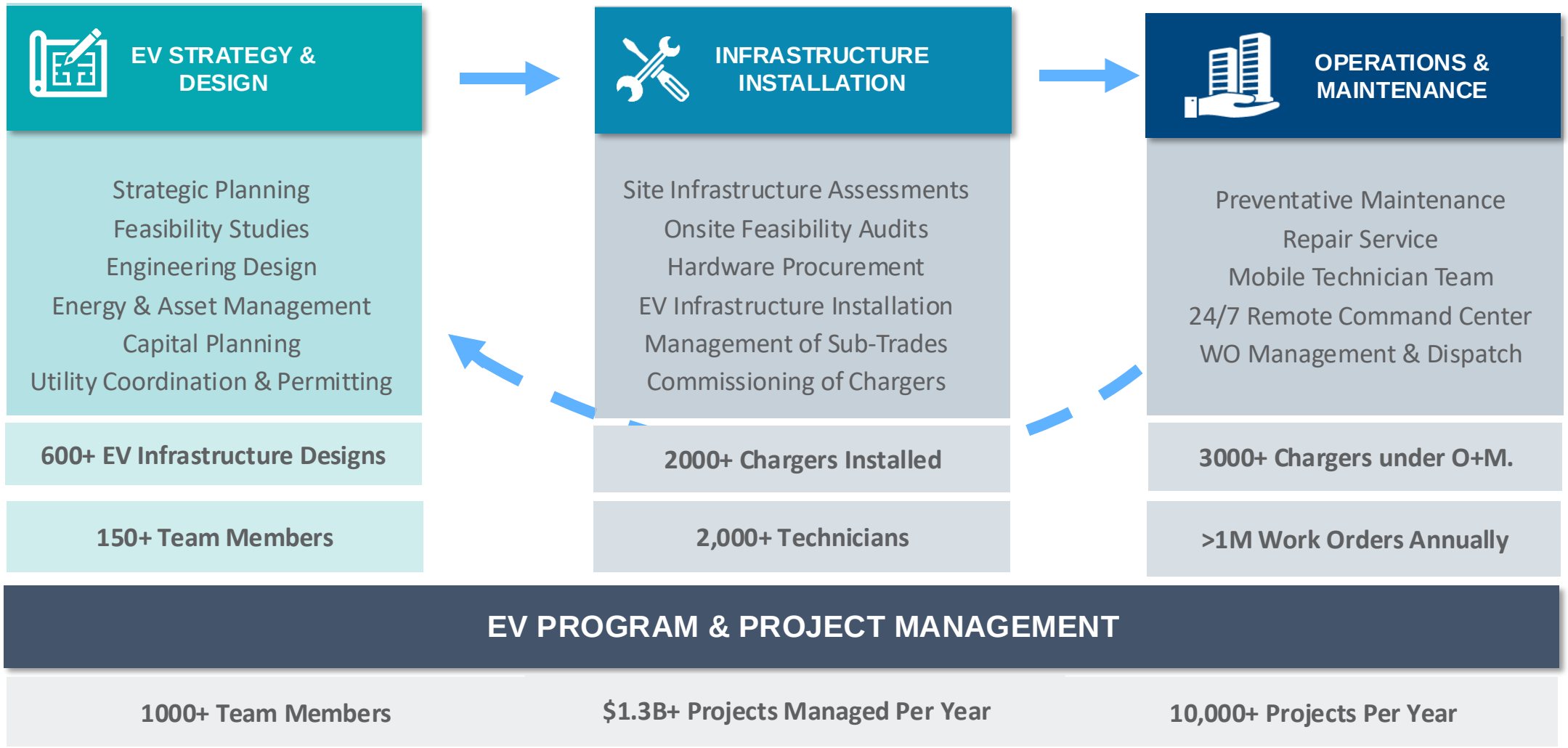
EV CHARGING EXPERIENCE

Our EV Journey

Services Delivered for 5000+ Charging Sites



BGIS SERVICES FOR FLEET CHARGING



OPERATIONS & MAINTENANCE CHALLENGES

20.8% of EV drivers using public charging stations experienced charging failures or equipment malfunctions that left them unable to charge their vehicles – JD Power, 2023

Predictive Maintenance & Performance

- Predicting potential failure
- Subcomponent Performance Monitoring & Fault Detection

Parts Storage & Logistics

- Supply lead times on components
- No local parts shop – Need a parts storage plan

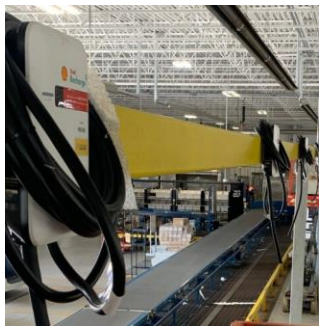
Specific OEM Requirements

- Technician Training on Multiple OEM's
- Ensuring skill development & Consistency in delivery

Lowest Capital & Lifecycle Costs

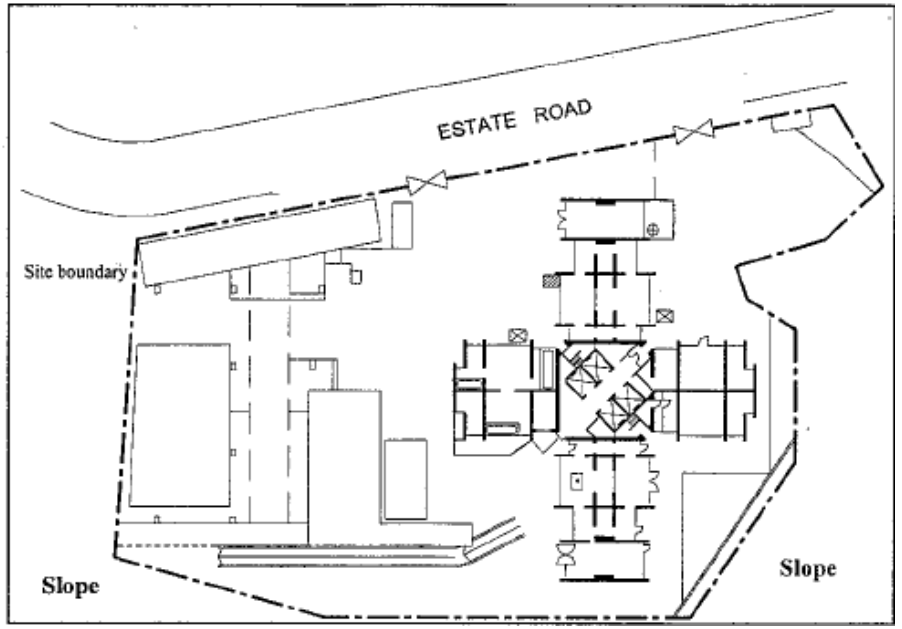
- Impact of HW quality on uptime
- Design of HW for ease of service and maintenance





RMI – Er

DESIGN WITH OPERATIONS IN MIND



Equipment Maintenance & Management

- Flexibility of Control & Interoperability
- Equipment Serviceability
- Parts & Equipment Supply Chain
- Hardware & Software Specification

Site Layout & Installation Location

- Visibility to prevent vandalism
- Connectivity Strength
- Parking Space Allocation (balance with visibility to drivers)

Supporting Infrastructure

- Protection (bollards, canopy, etc.)
- Connection Quality & Network Infrastructure
- Backup Power & Charger Redundancy
- Onsite Parts Storage

O+M STRATEGY

An EVCI Operations and Maintenance Program should deliver **Efficient, Resilient, and Scalable 24/7 Operations** and leverage **Trained & Certified Technical Expertise**

Asset & Performance Management Approach

O+M Configuration & Setup

Technicians, Parts, & Safety

Preventative Maintenance Plan

Standardized WO Dispatch & Tracking

24/7 Operations & Monitoring

3 ELEMENTS OF A SUCCESSFUL EV STRATEGY

Create a **Reliable and Scalable** Charging Program that supports your **Core Business** and delivers **Exceptional Charging Performance** and **User Experience**

Support Core Business Success & Operations

- Deliver value for customers
- Rightsize infrastructure based on goals
- Consider Brand, Image, & User Experience

Design and Implement a Flexible & Open Approach

- Future Proof Electrical Infrastructure
- OCPP Compliant Hardware & Software
- Ensuring flexibility with market changes

Plan and Integrate your O&M Strategy Early

- Design with Operations in Mind
- 24/7 Monitoring & Repair Services
- Asset Management & Performance

Thank you!

Andrew Hicks, MASc., P.Eng., LEED AP
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Q&A

Thank You!

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