NAATBatt INTERNATIONAL

Developing Battery Charging and V2G Infrastructure

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Charging Challenges: Public vs. Private

Public Charging

- Low utilization = Low ROI
- High capital cost
- Charger kW level matters!
  - L2 lower kW = snail pace charging
    - 3kW to 19kW AC (18-28 miles per hour)
  - Higher kW (DCFC) = faster, but more infrastructure challenges with higher kW
    - 350kW = 80% charge approx. 20-40 minutes – this charge rate always realized, however.
- Battery charge rate varys: early OEM models about 50kW, newer ones can accept up to 200 kW
- Inflation Reduction Act: DCFC every 50 miles along highways corridors
  - Minimum 150kW, up to 350kW
- UC- Cal study: public DC chargers only operational 77% of time in CA.

Charging Challenges: Public vs. Private

Private fleet Charging (behind a fence): DIY or CaaS

- Cost directly related to…
  - vehicle type and quantity
  - Battery size and charge rate
  - Quantity and size of chargers
  - Dwell time at location
- Complexity
  - Utility infrastructure coordination
  - Charger selection: avoid overbuilding
  - Need for BES assets? (based on resiliency, back up req's, peak load mngt, etc.)
  - Software integration
  - Managing electric cost and avoiding demand charges
  - Maintenance and operation of EVSE after installed
- Challenges: who to blame when something goes wrong?

Fleet Electrification: Comparing Solutions

	Technology DIY (EVSE + SW)	"Turnkey" (Assisted DIY)	electrada 360 CaaS (End-to-End)
Risk	**HIGH:** customer owns the energy risk	**HIGH:** customer owns the energy risk	**LOW**: fully hedged; no energy risk; comprehensive SLA
Scalability	**LOW**: procurement-based, RFP-driven	**LOW TO MODERATE**	**HIGH**: Long-term commitment to the customer
Relationship	**1-3 YEARS**: purchase and sale	**1-5 YEARS** (depending on financing)	**10+ YEARS,** contracted and predictably-priced fuel
Financial Impact	Hardware and software margins, O&M	Hardware and software margins, referral fees	99% uptime guarantee, reduced cost per mile from day 1

Electrada's 360 Electric Fuel Solution:
100% Integrated, Capitalized, Reliable

Our Charging-as-a-Service (CaaS) Model:

100% infrastructure cost covered:
design, build, operate

+

99%+ uptime guarantee

+

Industry-leading SLA

+

Fixed electric fuel cost

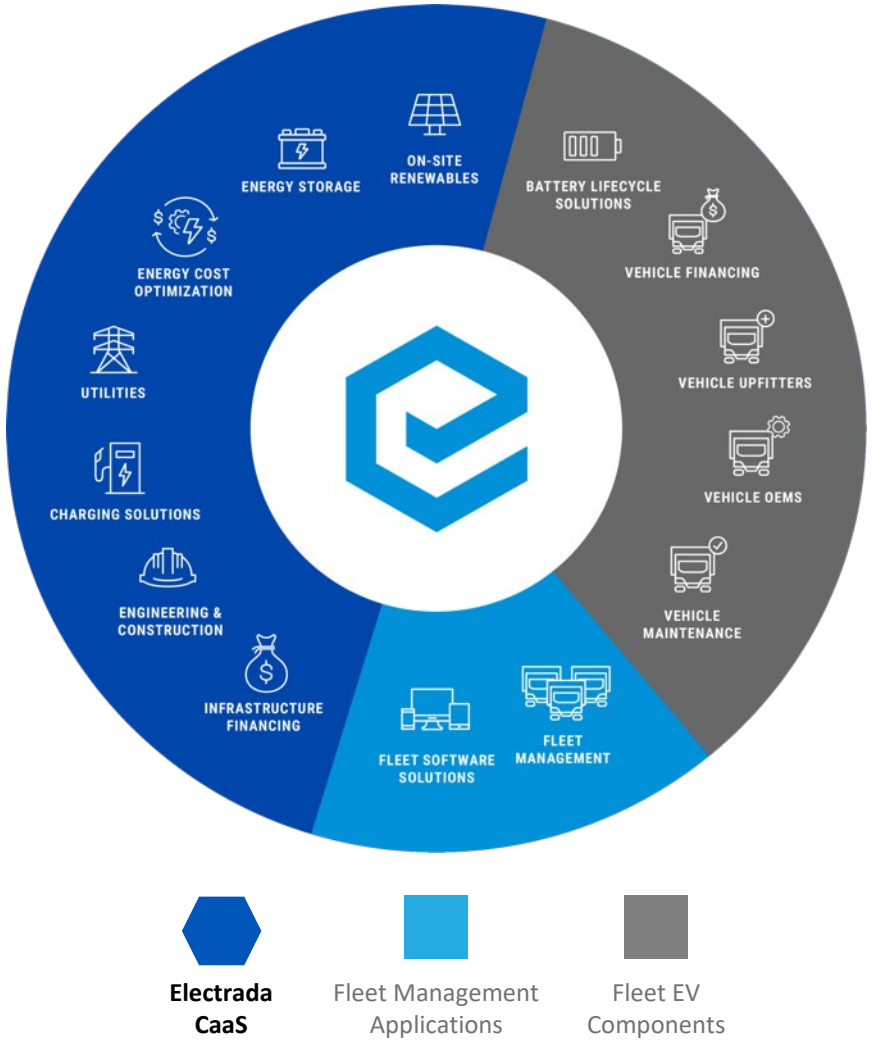
+

100% coverage: maintenance, support, upgrade, scalability

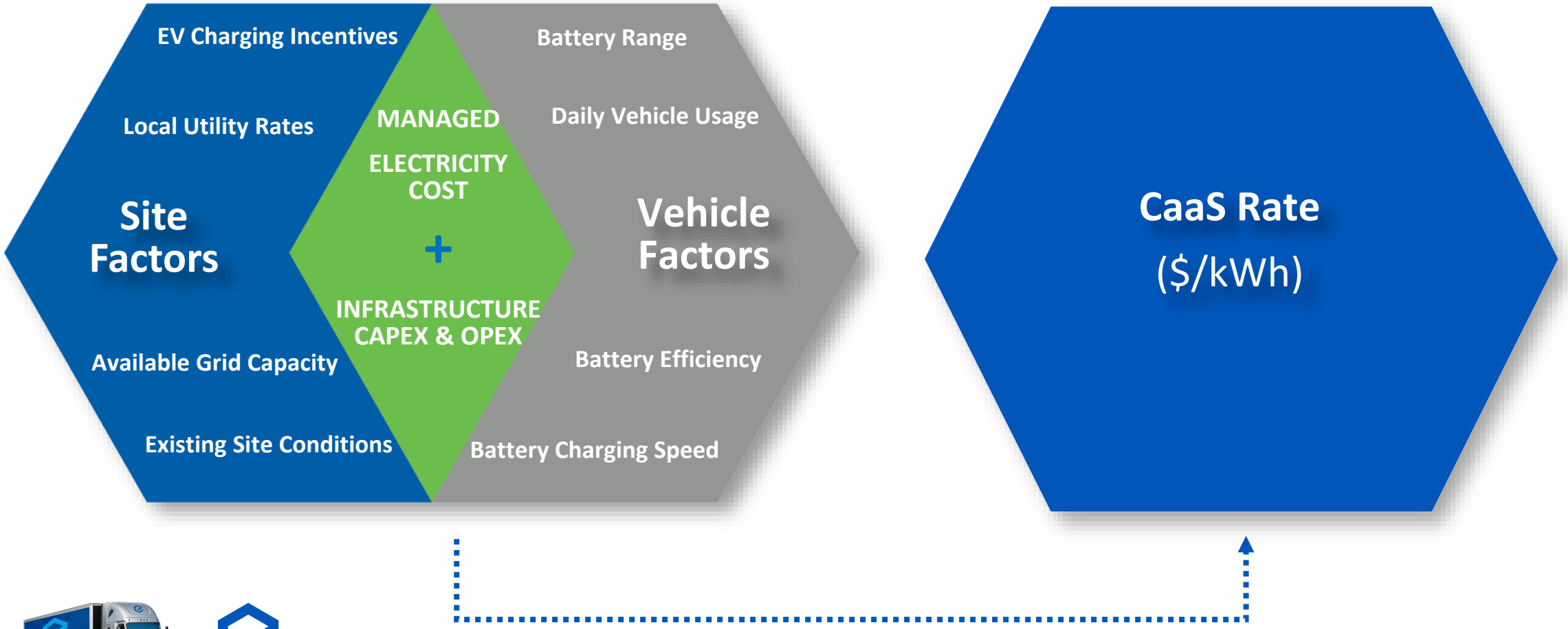
+

Plugged in 24/7: fleet and energy intelligence
dashboard and KPI management

= One, Locational CaaS Price Per kWh



One Fixed CaaS Cost:
How Do We Get There?



Electrada CaaS Fleet Solution Overview

- Electrada designs, finances, installs, owns and operates its Client fleet charging infrastructure solutions
- We install these on client “depot” sites
- We offer our Clients a Charge-as-a-Service (CaaS) solution that will contain:
  - 5 or 10 year financial and performance contract
  - Specified pricing (per mile or per kWh)
  - Operational Service Level Agreements

Electrada's CaaS Fleet Solution Responsibilities

- Procure, own, and support of all onsite equipment
- Purchase of all system and application licenses to operate fleet charging equipment
- Site preparation and utility make-ready development
- Install, commission, operate and maintain on-site charge infrastructure equipment through contract term
- Purchase electricity from the local utility or a wholesale electricity provider
- Ensure seamless integration with the customer's vehicle & fleet management software
- **Provide optimal fleet charging services at the best price ($/kWh) and risk-minimized SLA**

Components of Electrada's Project Analysis

- Vehicle Technical Specifications Analysis
- Vehicle Route/Duty Cycle Analysis
- Site(s) Evaluation/Analysis
- Charger Selection
- Charging Schedule Development
- Energy Load Shape Analysis
- Financial Modeling
  - **Result is a transparent $/kWh pricing structure**

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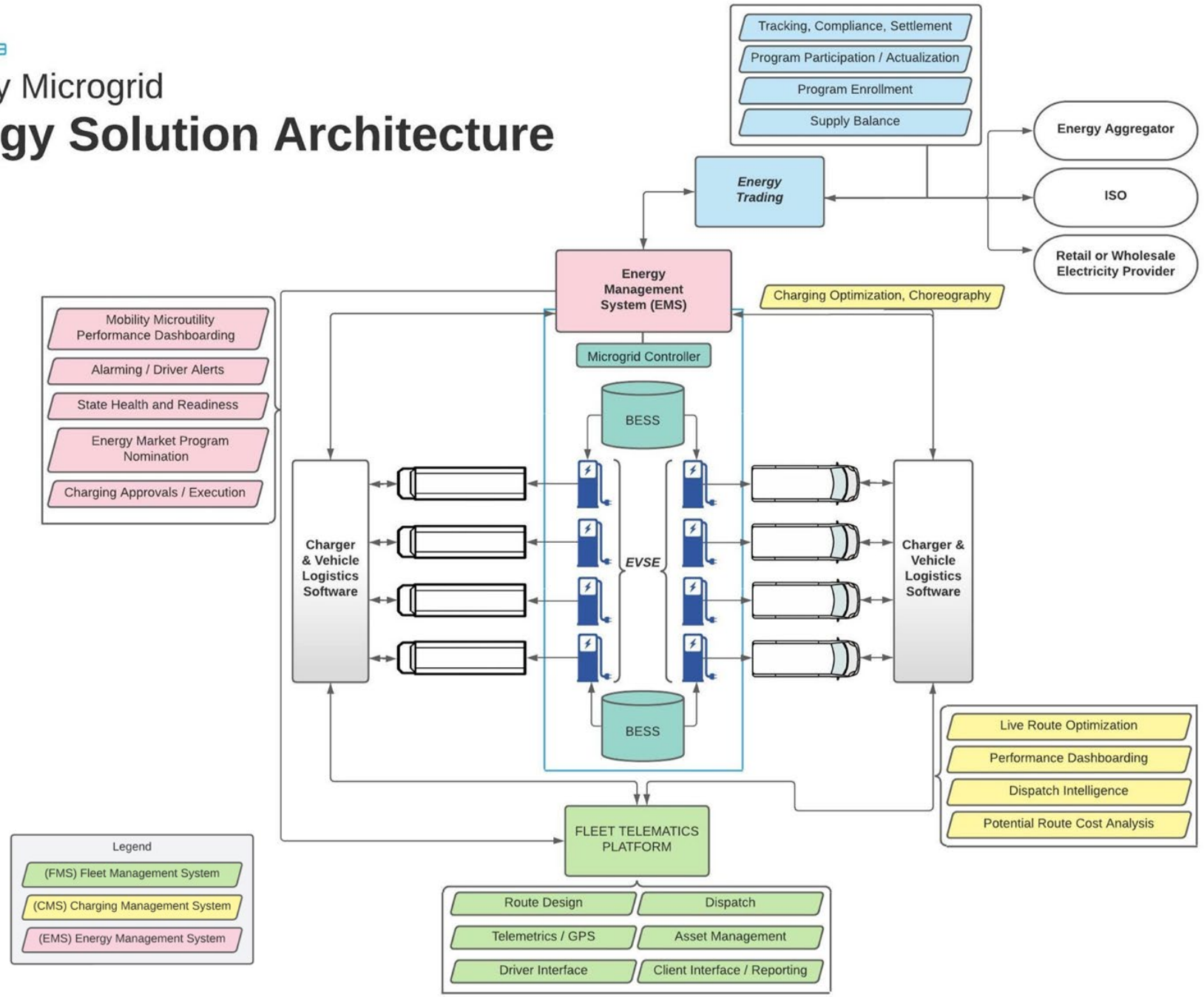
Mobility Microgrid

Energy Solution Architecture



Features include:

- **Integrated charging assets and software**
- **Real-time operational and energy management**
- **Performance reporting**
- **Expansion-ready for additional vehicles at each site**
- **Provides for future participation in utility programs**

DUKE ENERGY®

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Daimler Trucks North America

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Mt. Holly Fleet Electrification Partnership: Depot Overview

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Mt. Holly eHub/Fleet Electrification Opportunity

Mt. Holly Innovation Center: Duke Energy's Emerging Technologies Organization and research functions

- Solar, BESS, microturbines and a natural gas genset utilized in various configurations for their test microgrid

Duke Energy, will develop a first-of-its-kind **fleet depot performance center** that will model and accelerate the development, testing and deployment of charging infrastructure for light, medium and heavy duty commercial electric vehicles (EVs).

- By the end of 2023, fleet operators will be able to utilize and "test out" a best-in-class, commercial-grade fleet depot facility, integrated with energy storage, solar, and optimization software.

The center will be able to be connected either to the Duke Energy grid, charging from the bulk electric system, or powered by 100 percent carbon-free resources through the microgrid located at Mount Holly.

- The microgrid's excess capacity is planned to be used as a power alternative to Electrada's fleet solution on site

Mt. Holly Fleet Solution Vision

- Identifying EV charging technologies and how they are used to power class 1 (pickups) - class 8 (over-the-road haulers) in a real-world model that shows the industry a **clear, integrated and cost-effective path to fleet electrification**.
- Testing various models of charging scenarios will enable **energy load shaping**, which can be used to ensure proper grid or microgrid distribution.
- **The Duke Energy fleet depot** will demonstrate that utilities, emerging fleet charging infrastructure solutions, and vehicles may be planned, deployed, and operated in a **reliable, efficient, and interoperable manner, inclusive of the integration of solar and stationary battery storage**.
- Electrada will install own and operate Mt. Holly fleet depot
- **Daimler Trucks North America (DTNA)** will provide their expertise and assets to site.

Mt. Holly Depot Site Location Recommendation

Thank you!

Electrada is Your Electric Fuel Company

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