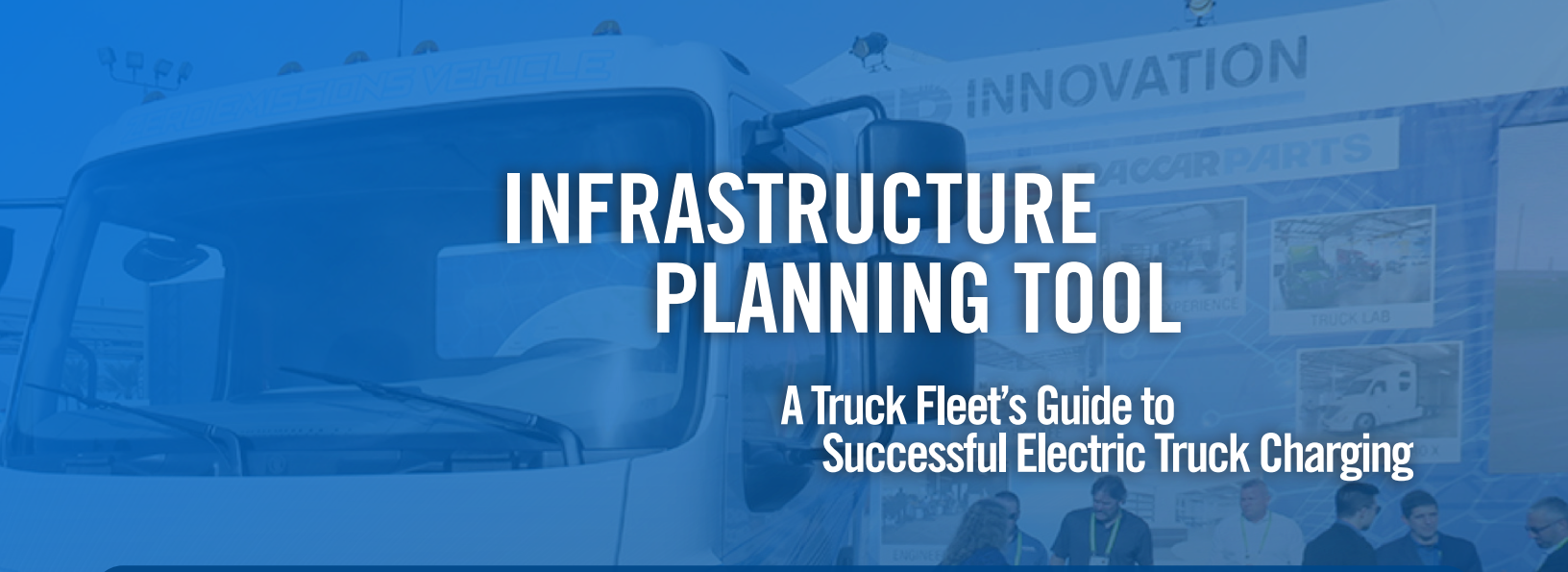

INFRASTRUCTURE PLANNING TOOL

A Truck Fleet's Guide to Successful Electric Truck Charging

Going Electric

Are you a truck fleet that is considering going electric? Start here! As the world becomes more populous, the goods transportation sector is growing to meet increased demand. We need innovative, zero-emission transportation solutions so that we can transport more goods in a more efficient way. Switching to electric can be easy with the right steps, this tool will help you get started by providing guidance on the planning required to implement electric charging at your truck depot.

Infrastructure First

Infrastructure remains to be the biggest barrier to electric vehicle technology adoption. Infrastructure challenges such as deployment lead time, costly upgrades, space constraints, and demand charges are impacting a fleet's ability to effectively own and operate an electric truck fleet. By following this guide, you will learn the basics of how to anticipate scaling needs, build out your depot, and engage with your utility so that your charging infrastructure matches your fleet's needs.

Important Considerations to Infrastructure Deployment

A number of unknowns will need to be evaluated to best determine your electric truck fleet deployment plan.

Anticipate scaling needs	Though a fleet may initially demonstrate just a few electric trucks to determine fleet and operational suitability, it is critical to anticipate potential scaling needs. Your fleet could grow from 10 to 100 electric trucks sooner than you think.
Infrastructure costs can vary	Depending on fleet size, truck technology, charging equipment, access to the grid and power demand, infrastructure costs can vary with factors such as required utility upgrades, trenching and laying down conduit, and additional energy storage.
Work with your utility	Working with your utility from the onset of the planning process is critical to understand potential build out requirements, cost and development timelines.
Evaluate electric vehicle rates and potential demand charges	Working with your utility to evaluate electric vehicle rates and potential demand charges is important to avoiding high charging costs while operating an electric truck fleet.

STEPS TO GET STARTED

1 CONSIDERATION OF ELECTRIC TRUCK DEPLOYMENT

- Decide if fleet electrification will require electrical upgrades to your facility
- Engage your utility and identify needed technical support.
- Confirm charging requirements, needs and costs from vehicle manufacturer and EVSE supplier.
- Identify energy requirements for various truck types
- Determine fleet scaling potential.

BASELINE PATHWAY (1-5 TRUCKS)

ADDITIONAL CONSIDERATIONS FOR BUILDING TO SCALE

These additional considerations are aimed to help fleets that plan on deploying more than 5 trucks initially or in the future. Following these additional considerations will help your depot be built to scale for fleets larger than 5 trucks.

2 FLEET ELECTRIFICATION

- Plan for phasing and timeline for deployment.
- Understand truck duty cycles and how to integrate new vehicle into rotation.
- Understand Projected energy needs (daily kWh, charging times, and speed).

3 DEPOT YARD ANALYSIS

- Evaluate site infrastructure and utility grid infrastructure needs.
- Identify space availability.
- Consider charging placement and electrical upgrades that allow for addition of electric trucks in the future.

ADDITIONAL CONSIDERATIONS FOR BUILDING TO SCALE

Evaluate renewable energy options.

Evaluate energy storage options.

4 DECIDE CHARGING SPECIFICATIONS

- Identify charger type (AC or DC/Level 2 or 3).
- Develop charging schedule (best window for charging).
- Drawing of EVSE location.

ADDITIONAL CONSIDERATIONS FOR BUILDING TO SCALE

If power needs are significant, discuss electrical rates with your utility.

5 DEVELOPMENT OF ELECTRIC SERVICE PLAN

- Detail requested service voltage and load schedule.
- Identify service drop and transformer locations.
- Develop conceptual electric single line diagram.
- Determine costs for infrastructure requirements & development.

6 BEGIN INSTALLATION PROCESS

Engage Utilities

- Evaluate existing infrastructure incentive programs.
- Determine EV rate structure.
- Plan charging times.
- Evaluate load sharing options.
- Understand utility application requirements.

Technical Support

- ID Electric Engineer (Internal or External).
- Evaluate options for contractor support.
- Build partnership between OEM, EVSE supplier, utility, engineer and fleet and operational staff.

Deployment Timeline

It is important that you factor in the time it will take to plan, develop and deploy your electric charging infrastructure. Full deployment can take up to 1 – 4 years based on fleet size and needed upgrades. The timeline below is based on deployment best practices.

PLANNING:
Steps 1- 5
3 – 12 Months

DEVELOPMENT:
Electric Upgrades & Construction
6 – 48 Months

DEPLOYMENT:
Integrating Electric Trucks
1 - 3 Months

Infrastructure Planning Check List

Before you get started with planning your electric charging infrastructure, make sure you are prepared to know the following and soon, you'll be ready to go!

- ☐ Fleet Deployment Goals
- ☐ Project Team (Internal & External)
- ☐ Utility Point of Contact
- ☐ Staff Electrical Engineer (or External)
- ☐ Estimated Project Timeline
- ☐ Capital Budget for Project
- ☐ Available Battery Electric Truck Technologies
- ☐ Electric Vehicle Supply Equipment Options
- ☐ Smart Charging Software & Networking
- ☐ Available Incentive Programs
- ☐ Permitting Requirements
- ☐ Understanding of Contracting Process

Contact CALSTART for infrastructure planning assistance!

www.calstart.org