CENTER FOR TRANSPORTATION RESEARCH

Quantitatively Assessing Readiness of EV Charging Infrastructure

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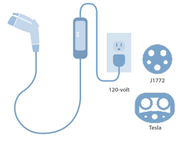
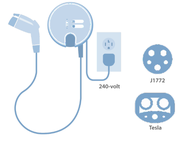
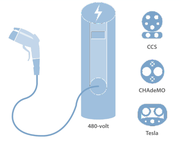
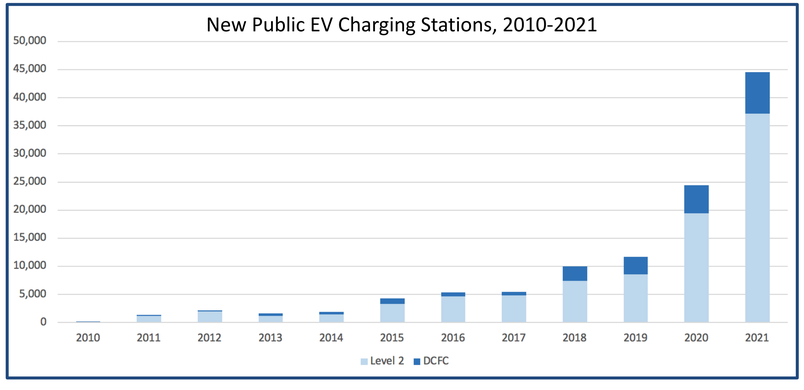
Background

Increased EV adoption and extensive funding opportunities highlight the need for strategic planning of EV charging networks. A readiness index can help stakeholders understand infrastructure gaps and guide investment. This work addresses two related objectives:

- **Develop a framework** to quantify Electric Vehicle Supply Equipment (EVSE) Readiness.
- Conduct a **case study** to test framework.

Level One	Level Two	DC Fast Charge (DCFC)
		
120 V	240 V	480 V
6 - 10 hrs	2 - 4 hrs	30 minutes
Home	Workplace, Multifamily	Highways, Urban cores



Data Sources

Alternative Fuel Data Center

- Database of existing charging stations, updated daily
- Considered only public DCFC stations
- Geolocated to calculate total DCFC stations/zip code

National Renewable Energy Lab

- Required DCFC stations for projected demand in 2030
- 56 DCFC stations per 1,000 sq. mi.

United States Census Bureau

- Geographic, socio-demographic, and environmental characteristics at the zip code level

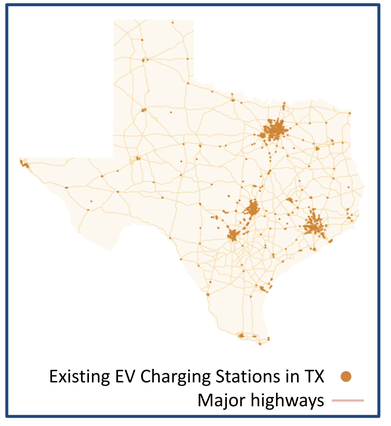
Framework

1. Identify existing EV charging stations
2. Determine EV charging station demand using key socio-demographic indicators and trends
3. Calculate EVSE Readiness Index

$$\textit{EVSE Readiness Index} = \frac{\textit{Existing EV Charging Stations}}{\textit{Required EV Charging Stations}} \times 100\%$$

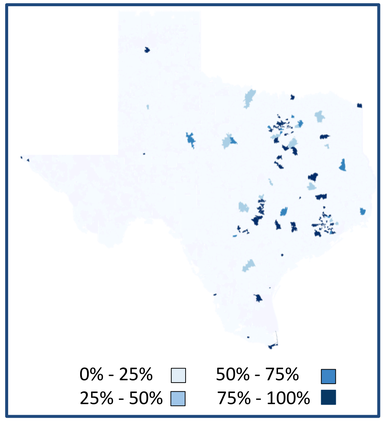
Texas Case Study

Existing EV Charging Stations in TX



- **254** DCFC stations in Texas
- **37%** of all DCFC stations located in Texas Triangle region
- **10%** of zip codes with at least one DCFC station

2030 EVSE Readiness by Zip Code



- **91%** of zip codes have a Readiness less than 25%
- **121** zip codes have a high Readiness
- **94%** of high-readiness zip codes are urban or suburban

Key Takeaways and Future Work

- Significant investment is needed to support projected 2030 EV growth, especially in **non-urban areas**.
- A **readiness index** can be a critical, dynamic planning tool.
- Additional research on key socio-demographic readiness **indicators and trends** can support an equitable charging network.