Texas Electric Vehicle Infrastructure Plan v079

TxDOT, November 2024

Texas Department of Transportation

Contents

Glossary

AC – Alternating Current

AFC – Alternative Fuel Corridor

BABA – Build America Buy America

BIL – Bipartisan Infrastructure Law

CCS – Combined Charging System or plug type for DC Fast Charging

CFI – Charging and Fueling Infrastructure Program

Connector – Plug that connects the electric vehicle to the charging equipment.

DC – Direct Current

DC Fast Charging – High power charging 400-800 volt, 150-600 amps, 3 phase.

DOE – Department of Energy

DOT – US Department of Transportation

ERCOT – The Electric Reliability Council of Texas

EV – Electric Vehicle

EVSE – Electric Vehicle Service Equipment

FHWA – Federal Highway Administration

GVWR – Gross Vehicle Weight Rating

IIJA – Infrastructure Investment and Jobs Act

IRA – Inflation Reduction Act

Heavy-Duty Vehicle – Vehicles with a GVWR over 26,000 pounds

kW – Kilowatt (1,000 watts)

kWH – Kilowatt Hour (1,000 watts for 1 hour)

Level II – Medium power charging 240-volt, 15-50 amps, single phase

Location – Physical location where electric vehicles charge

Medium-Duty Vehicle – Vehicles with a GVWR of 10,001 to 26,000 pounds

MHDV – Medium and Heavy-Duty Electric Vehicles

MPO – Metropolitan Planning Organization

MWC – Megawatt Charging (standard for heavy duty charging)

mW – Megawatt (1,000 kilowatts)

mWH – Megawatt Hour (1,000 kilowatts for 1 hour)

NACS – North American Charging Standard, DC Fast Charging connector or plug

NEVI – National Electric Vehicle Infrastructure Program

Port – Charging hardware, usually a pedestal design with connectors for charging electric vehicles

PUC – The Public Utility Commission of Texas

TCEQ – Texas Commission on Environmental Quality

TERP – Texas Emission Reduction Plan

TxDOT – Texas Department of Transportation

3 Phase – Electrical supply from 3 power lines

Plan Approval

TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT)

Signed: DocuSigned by: 0E1B35AE191749E... Date: 11/27/2024

Marc Williams P.E., Executive Director

Introduction

The Texas Electric Vehicle (EV) Charging plan is a comprehensive framework to enable passenger EV travel across the state and spur economic development. The network will give Electric Vehicle drivers confidence and flexibility when traveling for work, recreation, or exploration regardless of distance traveled or weather conditions. In accordance with guidance, the plan will focus on interstate routes then transition to off interstate routes and urban areas. The plan was developed in cooperation with the Texas Commission on Environmental Quality, State Energy Conservation Office, Texas Parks and Wildlife, Texas Department of Transportation, the Electric Reliability Council of Texas, Public Utility Commission, Councils of Government, Counties, Metropolitan Planning Organizations (MPOs), utilities, energy service providers, and advocacy groups in Texas.

The EV Plan supports the goals of Optimizing System Performance (economic development, connectivity, mobility, reliability) and Fostering Stewardship of the state's natural, historic, and cultural resources as outlined in the Texas Transportation Plan 2050. The FY2025 update includes additional EV Study Areas, initial plans for MPOs during Phase 2, an updated timeline, review of station progress, a look ahead for EV Freight, and numerous statistical updates.

Initial planning for the network began with the passage of the Infrastructure Investment and Jobs Act (IIJA), Public Law 117-58 (Nov. 15, 2021). In late 2021, TxDOT began internal discussions with planning and legislative staff to understand the law and potential impacts/opportunities. Various scenarios were developed to conceptualize the network and begin the familiarization process on the topic. Early in 2022, existing EV charging stations and corridors from the US Department of Energy Alternative Fuel Data Center were published on the departments Statewide Planning Map to provide a single source of truth for planning, analysis, and education. An EV Dashboard was created to visualize and quantify types of EV charging and track changes over time. In mid-March 2022, TxDOT published EV study areas on the Statewide Planning Map to begin the review and analysis process for industry and interested parties. EV study areas were included in public involvement materials developed by TxDOT and posted to the department's website.

Critical to the Texas EV Charging plan are the Alternative Fuel Corridors. Starting in 2015 and working with planning partners across the state, TxDOT nominated sections of interstate highways to the Electric Alternative Fuel Corridors. In Round 6 of nominations (opened on Feb. 10, 2022), TxDOT took the opportunity to nominate almost all remaining non-business interstate highways as Corridor Pending segments.

TxDOT did not nominate additional highway segments to the Electric – Alternative Fuel Corridors in subsequent rounds and does not plan to expand the Electric – Alternative Fuel Corridors at this time.

Dates of State Plan Deployment, Development, and Adoption

The initial Texas EV Plan (FY2023) was developed in the spring of 2022, following the initial National Electric Vehicle Infrastructure (NEVI) Formula Program Guidance from FHWA. The 2022 EV Plan was accepted by FHWA on September 27, 2022.

The FY2024 plan update included minor changes to the EV Study Area but it expanded sections on contracting method, scoring, and selection. The FY2024 plan was accepted by FHWA on October 2, 2023.

Public review and comment for the FY2024 plan coincided with the first round of applications last year and we felt it was too much to ask from our program participants. So, the review and comment period for the FY2025 plan was delayed until round 1.2 was complete (October 28, 2024).

Exhibit 1 – Timeline of plan development.

Date Range	Description
February - July 2022	• Draft EV Plan • Public Involvement • Nominate additional non-business Interstate Highway segments to the Electric Alternative Fuel Corridors • Texas Electric Vehicle Plan signed by Texas Commission on Environmental Quality (TCEQ), State Energy Conservation Office (SECO), Texas Department of Transportation (TxDOT)
August 1, 2022	Submit Texas Electric Vehicle Plan to Federal Highway Administration
September 27, 2022	Texas Electric Vehicle Plan approved by the Federal Highway Administration
February 3, 2023	Published the Phase 1 Dashboard and added the Phase 1 EV Study Areas added to the STIP
February 15, 2023	Final federal rules for NEVI published
March – June 2023	Negotiations with FHWA Texas Division to open the competitive grant program for applications
June 15, 2023	FHWA Texas Division approved the Texas Electric Vehicle Implementation Plan
August 16, 2023	Texas EV Implementation Plan approved by the Texas Transportation Commission
August 17, 2023	Opened Phase 1 of the Texas Electric Vehicle Infrastructure program for applications
August 17, 2023	Published FY2024 NEVI plan for public review and comment
October 2, 2023	FHWA approved the FY2024 NEVI plan
November 20, 2023	TxDOT opened round 1.1 of applications along the Electric – Alternative Fuel Corridors
October 29, 2024	Published FY2025 NEVI plan for public review and comment
December 2, 2024	Sent FY2025 NEVI Plan update to FHWA/JO

State Agency Coordination

Early in 2022, TxDOT established a cross agency EV Working Group to collaborate on the EV Charging plan. The group met twice a month until the plan was adopted by TxDOT, SECO, and TCEQ. Members attended regular meetings and contributed to the overall creation, review, and final acceptance of the EV Charging plan.

In March of 2022, TxDOT received a lessons learned briefing from the Texas Commission on Environmental Quality covering their experience administering VW Settlement grants for DC Fast Charging in Texas. This information was used to better understand the difficulties of the task and prepare the workgroup drafting the state EV plan. The main difference between the Texas Volkswagen Environmental Mitigation Program for DC Fast Charging and this plan will be the competitive nature of the proposals. TxDOT will develop a scoring mechanism to evaluate proposals and award contracts that provide the best value to the state. Scoring will be based on cost, quality, capacity, and satisfaction of NEVI guidance (categories are listed for reference, not in order of importance).

Each member of the EV Workgroup contributed to the drafting and review of the EV plan. TxDOT members utilized a shared document for review and editing. EV workgroup members outside TxDOT were emailed documents for their review and editing purposes.

The EV plan reflects close coordination between TxDOT, TCEQ and SECO. Coordination was critical to ensure DC Fast Charging stations developed by VW Settlement funds were included in overall network analysis.

EV Workgroup members:

- Texas Commission on Environmental Quality (TCEQ)
- State Energy Conservation Office (SECO)
- Texas Department of Transportation (TxDOT)
- North Central Texas Council of Government (NCTCOG)
- Houston-Galveston Area Council (H-GAC)

TxDOT continues to work with the Texas Commission on Environmental Quality to track progress of VW Emission Settlement progress grants for DC Fast Charging and the State Energy Conservation Office. As part of legislation passed in the 88th Texas Legislative session, TxDOT worked with the Texas Department of Licensing and Registration on standards for EV charging.

Stakeholders Involved in Plan Development

Following passage of the Bipartisan Infrastructure Bill in November 2021, TxDOT met with private sector companies, utilities, advocacy groups, and other interested parties. Information gathered from these meetings helped inform the plan and guide development of the overall Electric Vehicle Infrastructure program in Texas.

Exhibit 2 – Meetings with stakeholders.

Organization Type	Number of Stakeholders Met With
Convenience Store	3
Non-Profit	3
Civil Engineering	4
Motor Vehicle Manufacturing	4
Engineering Consultant	5
Software Services	5
Retail	5
Tribal Government	6
Construction	7
Advocacy Group	11
Government	13
Utility	13
Consultant	17
Lobbyist	23
Miscellaneous	26
EV Charging	28
Grand Total	**173**

Public Outreach

In a short time, the TxDOT Public Involvement team put together a public involvement plan and resources for the Texas Electric Vehicle Infrastructure Plan. The resources included a landing page for the program, social pinpoint site with surveys, map based public input method for suggested charging locations, social media posts, and a virtual public meeting to discuss the plan. These resources opened a line of communication with the public for the program and input from the public was used to draft the plan. TxDOT will maintain these resources going forward as we develop the program. The interactive map for the public to suggest charging stations locations will be left up for the length of the NEVI program in Texas.

Exhibit 3 - Key public Involvement dates.

Date Range	Description
March 25, 2022	Launch of Texas Electric Vehicle Infrastructure landing page
March 25, 2022	Launch of the Online Engagement Site (Social Pinpoint)
May 23, 2022	Facebook and Twitter Announcements of EV Planning Process and Resources
May 23, 2022	Email blast on the Draft Texas Electric Vehicle Infrastructure Plan
June 7, 2022	Virtual Public Meeting on the NEVI plan
June 10, 2022	Public Meeting Announcements (Twitter and Facebook)
June 14, 2022	Multi-state tribal outreach and consultation
June 22, 2022	Comment deadline for Virtual Public Meeting
September 22, 2022	Published first draft of the Scoring Worksheet for review and comment
September 22, 2022	Updated EV Landing page with information for potential site owners and MPOs
December 1, 2022	Application, Request for Grant Applications, Site Host form and Scoring Worksheet posted for review and comment.
January 20, 2023	Added additional EV Study Area based on feedback
August 17, 2023	Opened FY2024 NEVI plan for two-week review and comment period
August 17, 2023	Opened draft awardee contract for two-week review and comment period
September 7, 2023	Present the NEVI Plan - Texas Association of Regional Councils
September 27, 2023	Present the NEVI Plan – San Angelo Chamber of Commerce
September 28, 2023	Present the NEVI Plan – Odessa Chamber of Commerce Present the NEVI Plan – Lubbock Civic Center
October 9, 2023	Present the NEVI Plan – TxDOT Short Course
October 20, 2023	Present the NEVI Plan – Capital Section of ITE
October 26, 2023	Present the NEVI Plan – Texas GIS Forum
November 11, 2023	Present the NEVI Plan – EV Expo Austin
November 14, 2023	Present the NEVI Plan – ACEC Houston Transportation Committee
November 17, 2023	Present the NEVI Plan – Arab American Association of Engineers and Architects
January 29, 2024	Present the NEVI Plan – Beaumont Chamber of Commerce
January 30, 2024	Present the NEVI Plan – Longview Chamber of Commerce
January 31, 2024	Present the NEVI Plan – Texarkana Chamber of Commerce
February 23, 2024	Present the NEVI Plan – TEX-21, Transportation Excellence for the 21st Century
February 9, 2024	Virtual Public Meeting – NEVI Phase 1 Results
March 7, 2024	Present the NEVI Plan – Infraday Austin
April 22, 2024	Present the NEVI Plan – Brownsville Convention and Visitors Bureau
April 23, 2024	Present the NEVI Plan – Rio Grande International Study Center & multiple school districts
April 24, 2024	Present the NEVI Plan – Kerrville Convention and Visitors Bureau Present the NEVI Plan – Alamo Area Council of Government
April 30, 2024	NEVI Phase 2 – Capital Area MPO (CAMPO)
May 1, 2024	NEVI Phase 2 – Longview MPO NEVI Phase 2 – Texarkana MPO
May 2, 2024	NEVI Phase 2 – Wichita Falls MPO
May 22, 2024	NEVI Phase 2 – Amarillo MPO Present the NEVI Plan – ASCE Utility Engineering and Surveying Institute NEVI Presentation - City of Dalhart
May 23, 2024	NEVI Phase 2 – Lubbock MPO
May 24, 2024	NEVI Phase 2 – Laredo and Webb County MPO
May 28, 2024	NEVI Phase 2 – Waco MPO
May 30, 2024	NEVI Phase 2 – Southeast Texas Regional Planning Commission NEVI Presentation - Tyler County Development Commission (Woodville, TX)
May 31, 2024	NEVI Phase 2 – Victoria MPO

June 4, 2024	NEVI Phase 2 – El Paso MPO
June 6, 2024	NEVI Phase 2 – Killeen Temple MPO
June 7, 2024	NEVI Phase 2 – Rio Grande Valley MPO
June 10, 2024	NEVI Phase 2 – Alamo Area MPO
June 13, 2024	NEVI Phase 2 – Grayson County MPO
June 17, 2024	NEVI Phase 2 – North Central Texas Council of Governments (NCTCOG)
June 18, 2024	NEVI Phase 2 – Houston-Galveston Area Council (HGAC)
June 24, 2024	NEVI Phase 2 – Abilene MPO NEVI Phase 2 – Permian Basin MPO
June 25, 2024	NEVI Phase 2 – Corpus Christi MPO
June 27, 2024	NEVI Phase 2 – Tyler MPO
July 24, 2024	Present the NEVI Plan – EV Charging Infrastructure South
July 30, 2024	Present the NEVI Plan – Texas Innovation Invitational
August 6, 2024	Present the NEVI Plan – Electric Vehicles San Antonio
September 3, 2024	Present the NEVI Plan – TxDOT TPP Planning Conference
September 10, 2024	Present the NEVI Plan – TxDOT Environmental Conference
October 8, 2024	Present the NEVI Plan – TxDOT Short Course
October 22, 2024	NEVI Plan & EV Charging – Barton Springs University - Austin, TX

Plan Vision

The Statewide EV plan for Texas is a multi-year plan to enable current and future drivers of electric vehicles to confidently travel across the state for work, recreation, and exploration. One measure of success of the plan for Electric Alternative Fuel Corridors will be how well it meets FHWA requirements of 50-mile spacing for DC Fast Chargers, 1 mile from the interstate exit, rated at 150kW or greater. The same power and minimum port requirements will be applied to stations at or near County Seats but since most County Seats are not on the Alternative Fuel Corridors the minimum spacing requirements do not apply. Spacing off the corridors could be slightly greater (70 miles) in rural counties due to distances between population centers and electrical supply lines in west Texas. Large urban areas could utilize a combination of DC Fast Charging, Level II, and high-power charging for medium and heavy-duty trucks across their respective areas. The mix and location of chargers will be determined based on equipment cost, access to power, community identified needs, and how long a vehicle is parked.

General execution of the plan:

- Expand Electric Alternative Fuel Corridors to include almost all non-business Interstate routes (complete).
- Work with the private sector to install DC Fast Charge stations along Electric Alternative Fuel Corridors according to FHWA requirements (underway). TxDOT will not own or operate the charging equipment.
- Work with Metropolitan Planning Organizations to identify study areas inside urban areas (planning underway).
- Work with rural counties and small urban areas to install DC Fast Charge stations at or near county seats across the state (waiting for Phase 1 buildout complete).
- Collect data from the network to assess usage and identify trends for future development.

High level goals of the EV Charging Network

Redundancy – The density, distribution, and power of the EV network outlined in this plan is targeted to support 1 million electric vehicles when built out. DC Fast charging stations will be 50 miles apart on the Electric Alternative Fuel Corridors (with a small number of exceptions in west Texas) and usually 70 miles apart anywhere else in the state. Drivers will have multiple options for EV Charging along their intended travel route. Each location will have at least four ports with pull through spaces for passenger vehicles pulling trailers or recreational vehicles. When drivers arrive at a location with four or more ports, it is likely a stall will be available even if several ports are occupied, down for maintenance, or otherwise unavailable. Locations will be discoverable online at the US Department of Energy Alternative Fuel Data Center and various third-party applications.

Adequate power – Each individual charging connector on the Alternative Fuel Corridors will be rated to deliver at least 150kW of power to the vehicle (4-port installations would require 600kW per location and scale up proportionally from there). In some cases, the maximum power provided could be higher if supply and costs for that power are not excessively high. In most cases 150kW power can recharge a vehicle from 10% to 80% in 18-30 minutes. Charging speeds will vary by manufacturer, equipment installed on the vehicle, and battery characteristics like age and temperature.

Pull-through capability – Each DC Fast Charge station on the Alternative Fuel Corridors or near county seats can have at least one pull-through space for light duty vehicles pulling trailers or RV campers when space is available at the host location. Locations will not include spaces for heavy duty freight trucks or trailers. Freight charging will be addressed pending guidance from FHWA. Light duty panel trucks or delivery vans could utilize pull through spaces if they can safely navigate the location.

Standardization – Per FHWA requirements for DC Fast Charge stations on Alternative Fuel Corridors, a minimum of 4 ports will be available at each location. Stations at or near county seats are expected to have a minimum of 4 ports but conditions in the area will ultimately determine the number of ports and power levels. Cable length should accommodate vehicles with charge ports in various vehicle locations. Stations will have adequate lighting, signage, and instructions for station usage and reporting inoperable stations.

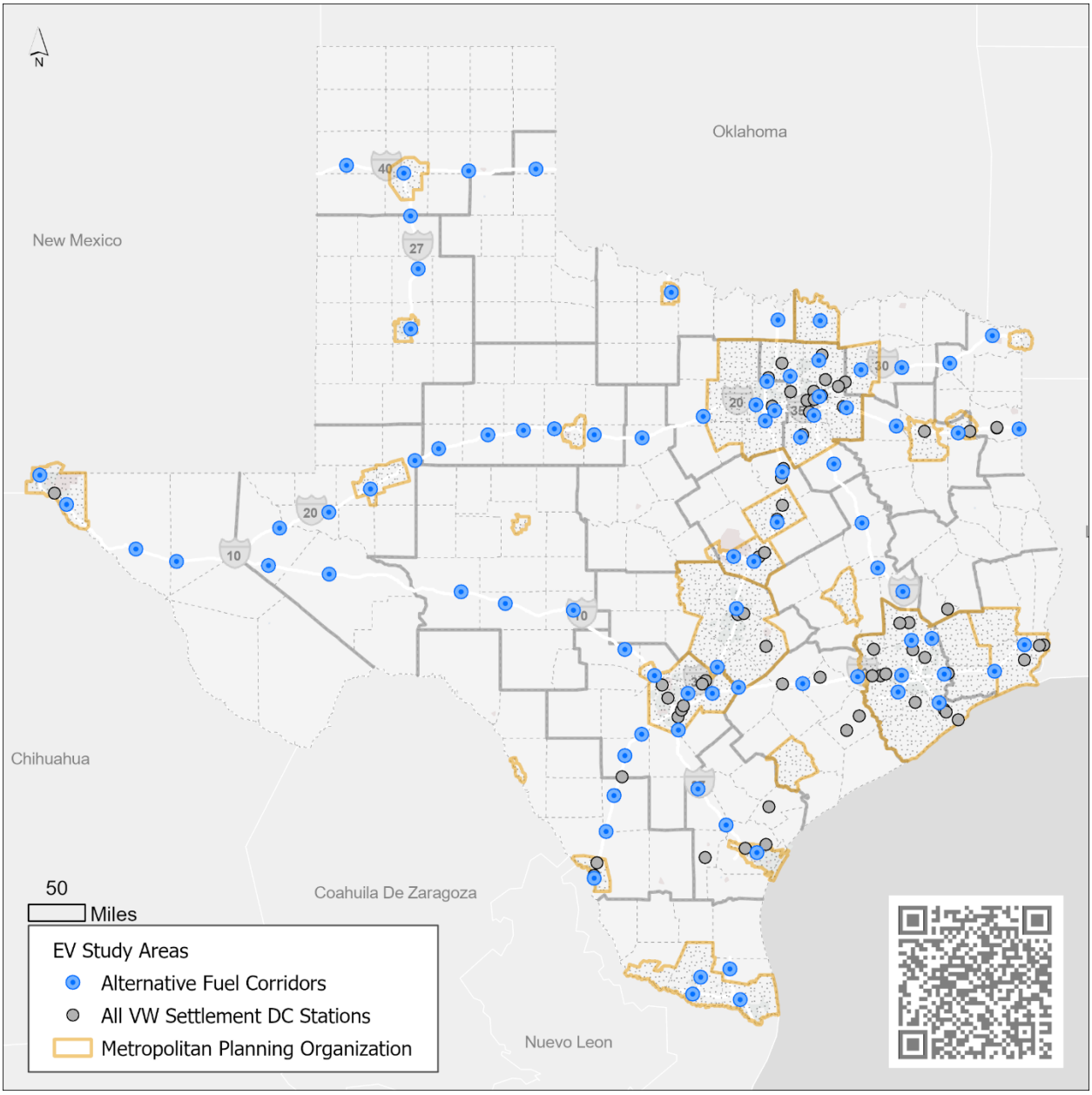
Education – Outreach materials will be developed to educate the public on good charging habits, station location, station usage, equipment capability, and how to provide feedback on the network.

Evaluation – As required by guidance, TxDOT will develop a framework to collect and evaluate station usage information from equipment owners and adjust the network as needed based on this information.

Charging Network Timeline

Phase One will focus on building out the Electric Alternative Fuel Corridors to meet FHWA guidance. Approximately 84 new locations will be needed to satisfy the 50-mile maximum spacing requirements from FHWA. The 84 locations will complement 34 locations resulting from VW settlement grants administered by TCEQ. A full list of Study Areas can be found on page 39.

Exhibit 4 – Phase 1 study areas along the Electric – Alternative Fuel Corridors

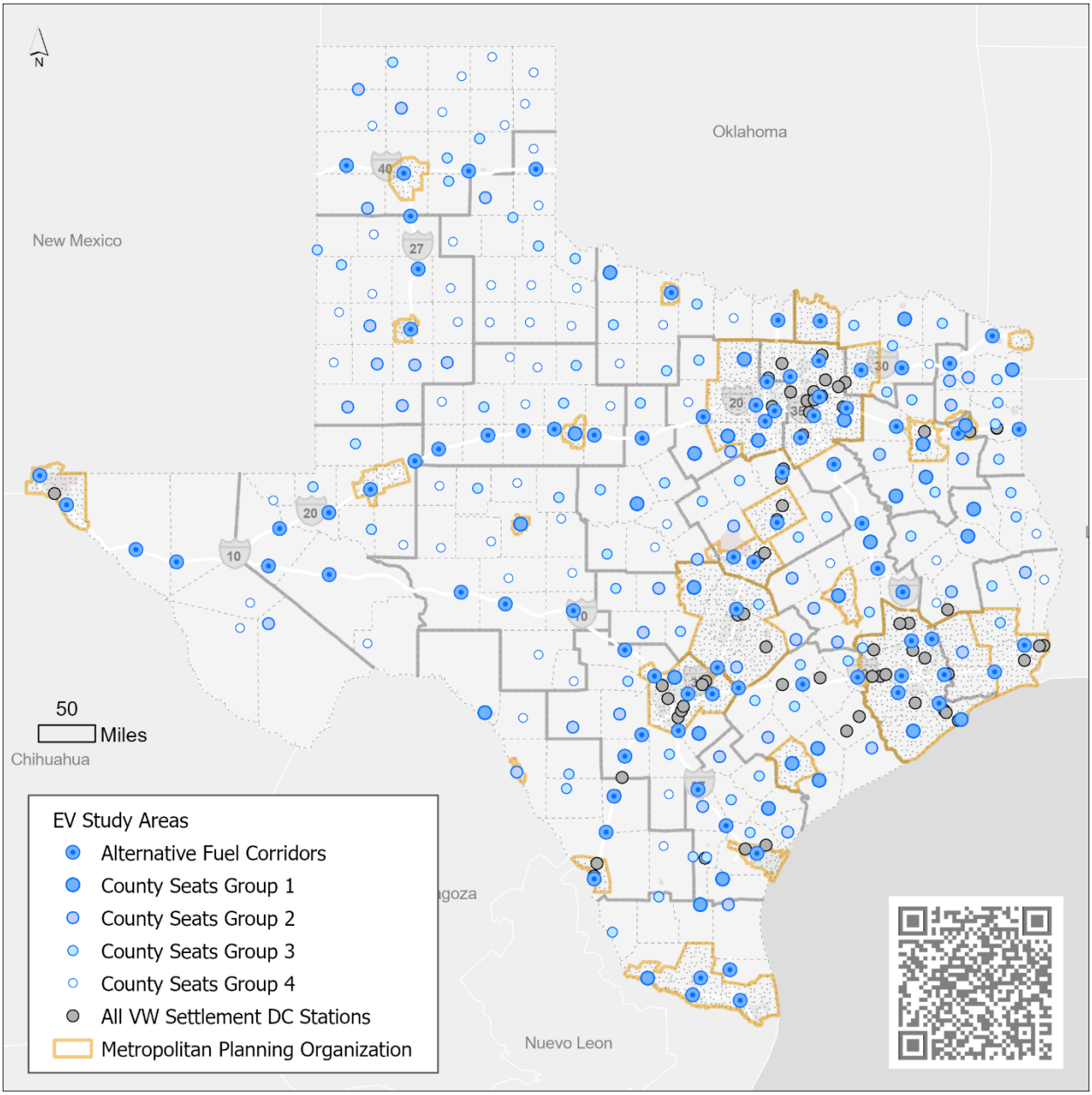


Phase Two; after the Electric - Alternative Fuel Corridors are completed, the program will focus on rural counties, small urban areas, and MPOs. TxDOT will utilize a modified formula from our Unified Transportation Program to estimate funds for EV Charging inside MPOs (not shown on the map). Large urban areas could utilize a combination of DC Fast Charging, Level II, and high-power charging for medium and heavy-duty trucks. Ultimately, study areas will be determined by the MPOs inside their respective boundaries, but the private sector will pick the exact location within study areas.

In rural areas the focus will be installing DC Fast Charging stations at or near County Seats. County seats are usually centrally located in the county (all roads lead to the county courthouse) and provide good spacing between urban clusters in rural areas. Vehicle Miles Traveled (VMT) was used to establish a priority list of most traveled non-interstate routes through rural areas. Installing DC Fast Charge stations at county seats with a power rating of 150kW and minimum four ports will fill gaps across rural Texas for off-interstate travelers and enable local farm and work trucks to access the charging network.

Statewide coverage will improve as the buildout moves into more rural areas of the state. The equipment installed may adjust to accommodate varying power supply in the region. This could include battery backup, solar canopies, or other methods to satisfy the 4x150 NEVI requirement.

Exhibit 5 - Phase 2 expands DC Fast Charging to all counties, MPO locations will be set later.



Contracting

TxDOT manages a competitive grant program to develop EV charging stations across the state. A series of program documents and scoring process were created to manage the program:

- Request for Grant Applications
- Program Manual
- Grant Application
- NEPA Clearance Form
- Site Host Form
- Scoring Worksheet
- Scoring Process
- Grant Agreement

Each grant recipient will work to identify specific installation sites within TxDOT identified EV Study Areas and work with property owners, utilities, and municipalities to complete the installation. This process will also involve identifying and resolving any potential conflicts of interest with the Texas Transportation Commission. The grant recipient will be responsible for all state and federal requirements and working with TxDOT on environmental clearance. It is anticipated that EV Study Areas could shift/expand during the development process to better meet FHWA requirements.

Language will be added to the grant agreement to outline 5 years of operations and maintenance per location. Language will also be added to handle situations where the owner/operator chooses not to continue station operation after the 5-year operation and maintenance assistance ends. This will ensure another operator can be located/contracted to keep the station open and accessible to the public.

Grants have two creation/approval tracks for charging stations depending on whether the location is inside or outside an MPO.

- Alternative Fuel Corridor or Non-Alternative Fuel Corridor Outside an MPO
    - TxDOT determines charging station types and study areas.
    - TxDOT opens a grant application round.
    - TxDOT scores applications.
    - TxDOT selects grant recipients.
- Inside MPOs
    - MPOs choose to develop study areas within their region or elect to make the entire MPO region a study area.
    - MPOs decide the power level they want to pursue.
        - DC Fast Charging
        - Level II
        - Medium and Heavy-Duty (MWC)
    - TxDOT opens a grant application round using MPO preferences.
    - TxDOT scores applications.
    - TxDOT selects grant recipients.
    - MPO updates TIP/STP/MTP

Status of Contracting Process

TxDOT opened Round 1 (56 sites) of the competitive grant program for applications on August 17, 2023. This round closed on October 15, 2023.

TxDOT opened Round 1.1 (6 sites) of the competitive grant program for application on November 20, 2024. This round closed on December 18, 2023.

TxDOT opened Round 1.2 (35 sites) of the competitive grant program for application on September 16, 2024. This round closed on October 28, 2024.

Round 1.2 is being scored at the time of plan update. Results for the 35 study areas in round 1.2 will be added to the Phase 1 Grant Program Results when complete.

Process Workflow

1. Open program for applications.
2. Score applications.
3. Environmental Clearance.
4. Publish results for review on the EV Landing page.
5. Notify applicants.
6. Add projects to TIP/STIP.
7. Execute Grant Agreement.
8. Submit FPAA.
9. Kickoff meetings.

28 sites have made it through all 9 steps at the time of this plan.

Awarded Grants

Rounds 1 and 1.1 results are found in the Phase 1 Grant Program Results.

Exhibit 6 – Phase 1 grant program results, page 1.

Texas NEVI Grant Program Results

ID	EV Study Area	Applicant Name	Ports	Score	Published	MPO	TIP/STIP	Note
1	Sugar Land	Equilon Enterprises LLC dba Shell Oil Products US	4	87	11-Dec-23	HGAC	Sept 2024	Pre-construction
2	Arlington	**Study Area Removed**						
3	Carrollton	**Study Area Removed**						
4	Fort Worth	Impower Connection, Inc.	4	67.6	13-Dec-23	NCTCOG	Sept 2024	Pre-construction
5	Selma	Equilon Enterprises LLC dba Shell Oil Products US	4	82	11-Dec-23	Alamo Area	Sept 2024	Pre-construction
6	San Marcos	Tesla, Inc.	10	88.6	11-Dec-23	Capital Area	TBD	
7	Buda	**Study Area Removed**						
8	McAllen	Tesla, Inc.	5	83.6	11-Dec-23	Rio Grande Valley	Nov 2024	
9	Burleson	Tesla, Inc.	7	86.5	25-Jan-24	NCTCOG	Nov 2024	
10	San Benito	Francis Energy TX, LLC.	8	80.5	8-Jan-24	Rio Grande Valley	Nov 2024	
11	Killeen	Equilon Enterprises LLC dba Shell Oil Products US	4	87	11-Dec-23	Killeen-Temple	Sept 2024	
12	Sherman	Francis Energy TX, LLC.	4	80.5	19-Dec-23	Grayson	TBD	
13	Wichita Falls	Tesla, Inc.	5	86.1	11-Dec-23	Wichita Falls	Nov 2024	
14	Lubbock	SANAVA LLC dba Graviti Energy	4	70	19-Dec-23	Lubbock	TBD	
15	Winnie	Equilon Enterprises LLC dba Shell Oil Products US	4	87	11-Dec-23	HGAC	Sept 2024	Pre-construction
16	Laredo	Circle K Stores, Inc.	8	94	25-Jan-24	Laredo Webb County	Sept 2024	
17	Gainesville	Tesla, Inc.	12	86.1	11-Dec-23	None	Feb 2024	**Construction Started 8/13/2024**
18	Corpus Christi	TBD	4	87	11-Dec-23	Corpus Christi	May 2024	
19	Waxahachie	H&D Realty Investments, LLC	8	78.3	8-Jan-24	NCTCOG	Sept 2024	
20	Corsicana	SANAVA LLC dba Graviti Energy	4	70	19-Dec-23	None	Feb 2024	Pre-construction
21	Odessa	Francis Energy TX, LLC.	8	80.5	19-Dec-23	Permian Basin	TBD	
22	Sulphur Springs	GPM Southeast, LLC	4	72.9	19-Dec-23	None	Feb 2024	Pre-construction
23	Rolling Meadows	Francis Energy TX, LLC.	4	78.5	8-Jan-24	None	Feb 2024	Pre-construction
24	Van	Love's Travel Stops & Country Stores, Inc	4	91.3	13-Dec-23	None	Feb 2024	Pre-construction
25	Mt Pleasant	GPM Southeast, LLC	4	72.9	17-Jan-24	None	Feb 2024	Pre-construction
26	Buffalo	Petroleum Wholesale L.C.	4	84.9	19-Dec-23	None	Feb 2024	
27	New Boston	Circle K Stores, Inc.	4	94.4	19-Dec-23	None	Feb 2024	Pre-construction
28	Fairfield	**Study Area Removed**						
29	Waskom	Francis Energy TX, LLC.	4	80.5	19-Dec-23	None	Feb 2024	
30	Sandy Oaks	Pilot Travel Centers LLC	4	83.6	25-Jan-24	Alamo Area	Sept 2024	**Construction Planned 11/25/2024**

11/15/2024 Page 1

Exhibit 7 – Phase 1 grant program results, page 2.

Texas NEVI Grant Program Results

ID	EV Study Area	Applicant Name	Ports	Score	Published	MPO	TIP/STIP	Note
31	Luling	Love's Travel Stops & Country Stores, Inc	8	89.7	25-Jan-24	Capital Area	TBD	
32	Big Spring	Pilot Travel Centers LLC	4	86.7	19-Dec-23	None	Feb 2024	**Construction Started 11/15/2024**
33	Merkel	Red E Charging LLC	4	73.5	19-Dec-23	None	Feb 2024	Pre-construction
34	IH20 and US281	Francis Energy TX, LLC.	8	80.5	19-Dec-23	None	Feb 2024	Pre-construction
35	Clyde	Francis Energy TX, LLC.	4	78.5	19-Dec-23	None	Feb 2024	Pre-construction
36	Edinburg	Love's Travel Stops & Country Stores, Inc	6	91.3	13-Dec-23	Rio Grande Valley	Nov 2024	
37	Natalia	Love's Travel Stops & Country Stores, Inc	4	89.7	25-Jan-24	None	Feb 2024	Pre-construction
38	Cotulla	Tesla, Inc.	8	89	25-Jan-24	None	Feb 2024	**Construction Started 8/26/2024**
39	Three Rivers	Love's Travel Stops & Country Stores, Inc	4	91.3	13-Dec-23	None	Feb 2024	Pre-construction
40	Mathis	Circle K Stores, Inc.	4	94.4	19-Dec-23	None	Feb 2024	Pre-construction
41	Fort Hancock	**Seek Discretionary Exception**						
42	Colorado City	Francis Energy TX, LLC.	4	78.5	19-Dec-23	None	Feb 2024	Pre-construction
43	Encinal	Love's Travel Stops & Country Stores, Inc	4	91.3	13-Dec-23	None	Feb 2024	Pre-construction
44	Monahans	Tesla, Inc.	5	88.6	11-Dec-23	None	Feb 2024	
45	Plainview	Francis Energy TX, LLC.	4	78.5	19-Dec-23	None	Feb 2024	Pre-construction
46	Sierra Blanca	Impower Connection, Inc.	4	70.1	13-Dec-23	None	Feb 2024	Pre-construction
47	Shamrock	Tesla, Inc.	5	91.1	11-Dec-23	None	Feb 2024	
48	Fort Davis RA	**Seek Discretionary Exception**						
49	Raymondville	Tesla, Inc.	5	86.1	11-Dec-23	None	Feb 2024	
50	Adrian	Impower Connection, Inc.	4	70.1	13-Dec-23	None	Feb 2024	Pre-construction
51	Kerrville	Equilon Enterprises LLC dba Shell Oil Products US	4	89.5	11-Dec-23	None	Feb 2024	
52	Groom	Francis Energy TX, LLC.	4	80.5	19-Dec-23	None	Feb 2024	Pre-construction
53	Sonora	Road Ranger, LLC.	4	80.9	19-Dec-23	None	Feb 2024	
54	Happy	Impower Connection, Inc.	4	70.1	13-Dec-23	None	Feb 2024	**Construction Started 10/21/2024**
55	Iraan	**Seek Discretionary Exception**						
56	Balmorhea	Impower Connection, Inc.	4	70.1	13-Dec-23	None	Feb 2024	Pre-construction
			248					

11/15/2024 Page 2

Scoring Methodologies Utilized

Exhibit 8 – Scoring criteria.

Applications scored against the following criteria
1. Staffing plan and experience installing, operating, maintaining, and reporting usage for DCFC stations
2. Financial plan for site construction until reimbursement
3. Plan to achieve station up time of 97% or greater
4. How the proposed hardware and software will accept payments from the public for DCFC usage
5. Plan to collect usage information by connector and report the data to TXDOT on a quarterly basis
6. Training and certification plan for employees and contractors that install, operate, and maintain DCFC equipment
7. Cyber security plan to protect equipment and user data
8. Number of ports meets the desired number of ports in the TxDOT EV Study Area (minimum of 4)
9. Power rating per port (power sharing is acceptable if each port can charge at 150kW or greater simultaneously).
10. Estimated price per fully functional port installed
11. Estimated Operation and Maintenance price for 5 years
12. Restrooms available to the public (restrooms do not have to be owned and operated by the site host or equipment provider. Charging stations located in the same parking lot of shopping malls, restaurants, convenience stores, or other retail locations are acceptable.)
13. Pull through space for light duty vehicles with trailers when host location will support it
14. Retail agreement in place to host stations
15. Equipment and software ability to enforce Idle Fees when the charging session complete and the grace has period expired
16. Dedicated support with contact information posted on site
17. Buy America Compliant DCFC equipment and construction materials

Data collected from the applications is collected in an ArcGIS Online service and exported to an .XLS document for scoring.

The seven qualitative items from the applications are scored by a five-member TxDOT scoring team averaged and added to scores from the ten quantitative items scored programmatically to produce a total score by applicant for each EV Study Area. The scores for each EV Study Area are ranked and the top three are identified programmatically.

Exhibit 9 – NEVI Application from round 1.2

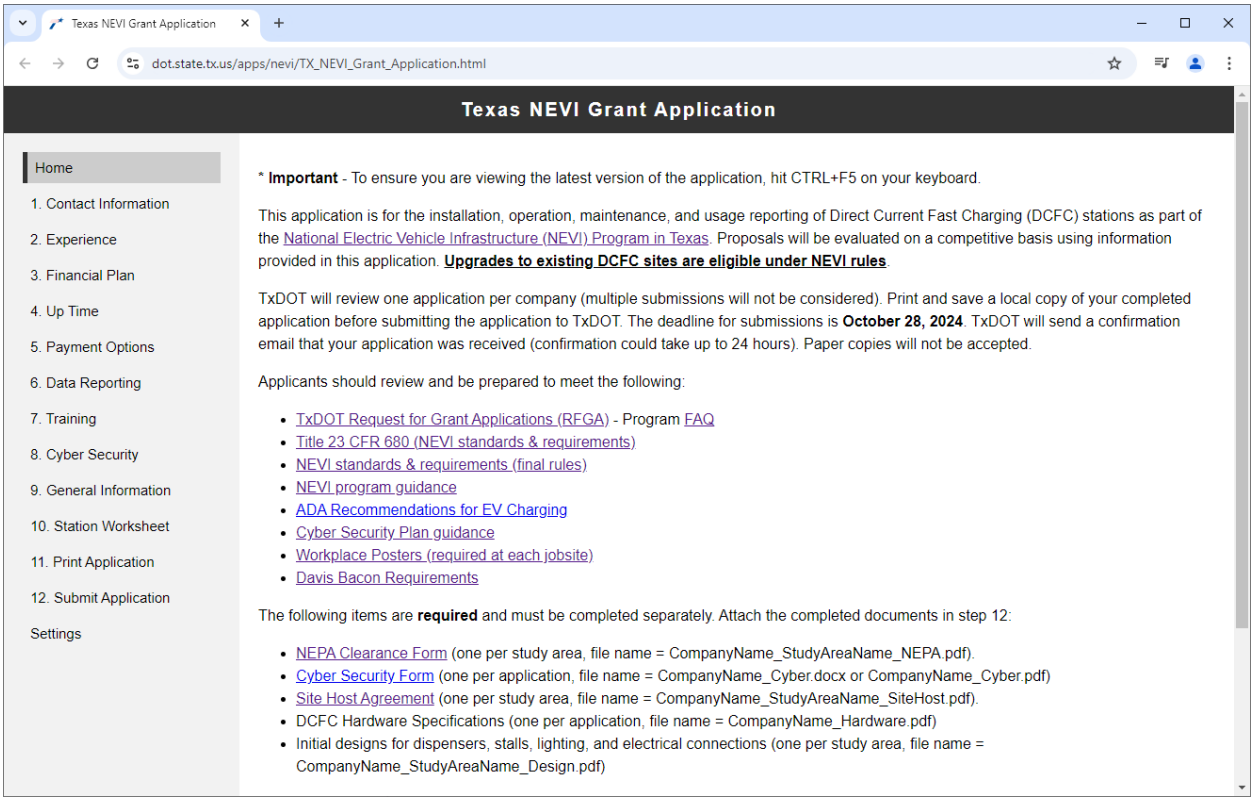


Exhibit 10 – Sample scoring table.

businessName	Qualitative_Total	Quantitative_Total	Overall_Total	Support	Fees	BABA	ports	power	restrooms	pullThrough	hostingAgreement	latitude	longitude	study_area	cstCost	cstGrant	omCost	omGrant	Rank
Business 10	20	44	64	yes	no	yes	6	669	1	0	1	30.123456	-97.123456	Amarillo	1500000	616338	600000	120000	1
Business 33	20	39	59	yes	no	yes	5	1400	1	0	1	30.123457	-97.123457	Amarillo	1208725	700000	362618	18130.88	2
Business 1	20	36.5	56.5	yes	no	yes	8	1400	1	0	1	30.123458	-97.123458	Amarillo	2000000	1006800	1000000	200000	3
Business 4	20	36.5	56.5	yes	no	yes	8	1400	1	0	1	30.123459	-97.123459	Amarillo	1566864	1120000	783432	117514.8	4
Business 34	20	36.5	56.5	yes	no	yes	8	1400	1	0	1	30.12346	-97.12346	Amarillo	1602952	1101576	641181	160295.2	5
Business 96	20	36.5	56.5	yes	no	yes	8	1400	1	0	1	30.123461	-97.123461	Amarillo	1277664	1120000	255533	51106.56	6
Business 3	20	34	54	yes	no	yes	8	770	1	0	1	30.123462	-97.123462	Amarillo	1313688	1120000	262738	52547.52	7
Business 31	20	34	54	yes	no	yes	8	1136	1	0	1	30.123463	-97.123463	Amarillo	2000000	1120000	1000000	150000	8
Business 54	20	39	59	yes	no	yes	5	1400	1	0	1	30.123464	-97.123464	Cisco	1250000	700000	625000	93750	1
Business 36	20	36.5	56.5	yes	no	yes	4	787	1	0	1	30.123465	-97.123465	Cisco	1000000	511784	400000	80000	2
Business 42	20	36.5	56.5	yes	no	yes	8	1351	1	0	1	30.123466	-97.123466	Cisco	1475960	1120000	442788	110697	3
Business 75	20	36.5	56.5	yes	no	yes	7	1400	1	0	1	30.123467	-97.123467	Cisco	1426950	980000	285390	57078	4
Business 79	20	36.5	56.5	yes	no	yes	7	1400	1	0	1	30.123468	-97.123468	Cisco	1074227	980000	322268	80567.03	5
Business 83	20	36.5	56.5	yes	no	yes	5	864	1	0	1	30.123469	-97.123469	Cisco	1250000	665400	375000	75000	6
Business 0	20	34	54	yes	no	yes	6	647	1	0	1	30.12347	-97.12347	Cisco	1500000	840000	600000	60000	7
Business 55	20	34	54	yes	no	yes	8	1137	1	0	1	30.123471	-97.123471	Cisco	1507072	1120000	150707	15070.72	8
Business 73	20	34	54	yes	no	yes	8	1066	1	0	1	30.123472	-97.123472	Cisco	2000000	1120000	400000	20000	9
Business 77	20	34	54	yes	no	yes	8	796	1	0	1	30.123473	-97.123473	Cisco	1708632	1120000	512590	25629.48	10
Business 61	20	39	59	yes	no	yes	5	1400	1	0	1	30.123474	-97.123474	El Paso	1250000	700000	125000	18750	1
Business 85	20	39	59	yes	no	yes	5	1293	1	0	1	30.123475	-97.123475	El Paso	1052020	700000	105202	21040.4	2
Business 19	20	36.5	56.5	yes	no	yes	5	1091	1	0	1	30.123476	-97.123476	El Paso	1003375	700000	501688	50168.75	3
Business 37	20	36.5	56.5	yes	no	yes	8	1400	1	0	1	30.123477	-97.123477	El Paso	2000000	1120000	1000000	250000	4
Business 38	20	36.5	56.5	yes	no	yes	6	1400	1	0	1	30.123478	-97.123478	El Paso	1500000	840000	300000	30000	5
Business 43	20	36.5	56.5	yes	no	yes	8	1400	1	0	1	30.123479	-97.123479	El Paso	2000000	1056536	600000	30000	6
Business 66	20	36.5	56.5	yes	no	yes	8	1400	1	0	1	30.12348	-97.12348	El Paso	1533296	1120000	153330	38332.4	7
Business 5	20	34	54	yes	no	yes	6	883	1	0	1	30.123481	-97.123481	El Paso	1500000	758070	300000	45000	8
Business 9	20	34	54	yes	no	yes	7	1018	1	0	1	30.123482	-97.123482	El Paso	1459185	980000	145919	36479.63	9
Business 47	20	34	54	yes	no	yes	8	1182	1	0	1	30.123483	-97.123483	El Paso	1703736	1092568	851868	85186.8	10
Business 51	20	34	54	yes	no	yes	7	1046	1	0	1	30.123484	-97.123484	El Paso	1750000	980000	700000	35000	11
Business 7	20	36.5	56.5	yes	no	yes	4	860	1	0	1	30.123485	-97.123485	Junction	1000000	560000	100000	20000	1

Qualitative | Quantitative | Log

Note: Scoring for round 1.2 has been simplified and condensed into one worksheet.

Scoring Worksheet

Exhibit 11 – Scoring criteria, description, and points per item.

Criteria	Description	Points
1. Staffing plan and experience installing, operating, maintaining, and reporting usage for DCFC stations.	Evaluation of staffing plan and experience.	10
2. Financial plan for site construction until reimbursement.	Evaluation of the financial plan.	10
3. Plan to achieve station up time of 97% or greater.	Evaluation of the up-time plan.	10
4. How the proposed hardware and software will accept payments from the public for DCFC usage.	Evaluation of the payment methods available to users.	5
5. Plan to collect usage information by connector and report the data to TxDOT on a quarterly basis.	Evaluation of the data reporting plan.	5
6. Training and certification plan for employees/contractors that install, operate, and maintain DCFC equipment.	Evaluation of the training and certification plan.	5
7. Cyber security plan to protect equipment and user data.	Evaluation of the cyber security plan.	2
8. The number of ports meets the desired number of ports in the TxDOT EV Study Area.	Full points for meeting the desired number of ports in the study area, half points for less than the desired ports per study area, no points for less than 4 ports. **Less than 4 = Disqualified**	5
9. Power rating per port.	Full points if 250kW or greater per port. Half points if less than 250kW per port. No points if less than 150kW per port. **Less than 150kW = Disqualified**	5
10. Estimated price per fully functional port installed.	Full points if less than 125K per port, Half points if 125K to 175K per port, quarter points if 175K or greater per port.	20
11. Operation and maintenance estimate for 5 years.	Percentages based on full site installation price estimate. Full points if O&M is less than 25% of installation price, half points if O&M is between 25% and 50% of installation price, quarter points if O&M is greater than 50% of installation price.	5
12. Restrooms available to the public.	Full points for yes or zero points for no.	5
13. Pull through space for light duty vehicles with trailers.	Full points for at least 1 pull through space. No points for any other scenarios.	2
14. Retail agreement in place to host stations.	Full points for entities with signed hosting agreements with property owners to utilize parking spaces open to the public 24/7. No point for any other scenarios.	5
15. Equipment and software ability to enforce idle fees.	Full points for the ability to monitor charging session and enforce idle fees when sessions are complete after a 10-minute grace period	2

	(length of grace period is negotiable). No points for any other scenarios.	
16. Dedicated support with contact information posted on site.	Full points for phone support 24/7, half points for web support 24/7, no points for any other options.	2
17. Buy America compliant DCFC equipment and construction materials.	Full points for 100% compliant. No points for any other scenario.	2
		100

Plan for Compliance with Federal Requirements

TxDOT developed a Grant Agreement (contract) for awardees. The contract lists state and federal requirements that awardees must meet as part of the NEVI program. The Texas EV Program Manual outlines how TxDOT staff will administer the program and monitor the program/awardees for compliance.

Between February and June 2023, TxDOT and FHWA worked closely to meet all federal requirements, including 23 CFR 635 and 23 CFR 636. FHWA and TxDOT looked at the CFRs line by line to address any possible miscommunication and differences in terminology, tackling any areas of discomfort on the federal side while working within the contractual and statutory constraints on the state side.

Among the portions further fleshed out were areas related to reporting and operating requirements:

- Applicants agree to meet Federal reporting requirements to provide charging station location, pricing, real-time availability, and accessibility free of charge to third party software developers through application programming interface (680.116(c)).
- Applicants agree to meet Federal reporting requirements outlined in 680.112 - Data Submittal
- Grant recipients are instructed to see 680.116 for exclusions for total hours of outage.

Among applicable laws and standards, several important additional federal requirements are listed:

- CFR Part 200 Uniform Administrative Requirements, Cost Principles and Audit Requirements for Federal Awards
- 12. 2 CFR Part 200, Grants and agreements
- 13. 2 CFR 200.317, "State procurement policies and procedures"
- 14. 2 CFR 200.333 Fixed amount subawards

Buy America

In April 2022, the Office of Management and Budget (OMB) released a memo, directed at federal agencies titled, "Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure." In part, the memo reads, "This guidance applies to all Federal financial assistance… whether or not funded through IIJA—where funds are appropriated or otherwise made available and used for a project for infrastructure." "Federal financial assistance" refers to aid that non-federal organizations (for example, states or local governments) receive or administer in the form of cooperative agreements, grants, donations of property, loans, etc. In that light, TxDOT will adhere to Buy America requirements issued for NEVI. TxDOT understands that FHWA has continued to interpret and apply Buy America requirements based on a 100% domestic content and domestic assembly threshold for iron, steel, and protective coatings, save for a de minimis threshold of $2,500 or one-tenth of one percent of the total value of the contract, whichever is greater. TxDOT notes that other agencies under USDOT have more flexible/workable definitions of Buy America compliance. While TxDOT hopes for a more flexible definition than what FHWA has implemented to date, or for reasonable allowance of waivers, the agency is prepared to adhere to whatever requirements FHWA issues, both in the initial April 2022 guidance and beyond. It should be noted, however, that the stricter the requirements are, the greater the risk of prompt deployment due to limited equipment availability and/or supply chain concerns.

Current EV Ownership in Texas

329,642 electric vehicles (plug-in hybrid and fully electric) are registered in the state of Texas as of November 19, 2024. Of the 254 counties across Texas, there are electric vehicles registered in 245 counties. Registered EV distribution is 69.34% Battery Electric and 29.66% Plug-In Hybrid Electric. Electric vehicles (plug-in hybrid and fully electric) currently constitute around 1.2% of all vehicles registered in Texas. However, since 2020, the total number of electric vehicles across Texas has increased by a factor of 5 as more people adopt the technology. With rapidly growing adoption rates, it is necessary to ensure Texas will be able to meet the demand of these new vehicles on the road.

For EV registration data, The Texas Department of Motor Vehicles is the authoritative source of current Texas vehicle registrations and publishes an annual report. The North Central Texas Council of Governments uses DMV data and summarizes it to create an interactive EV dashboard that's updated every week (EV Registration Dashboard).

Exhibit 12 – Battery Electric vehicles in Texas.

Full Battery Electric Registrations by Fiscal Year							
FY	2018	2019	2020	2021	2022	2023	2024
Total	18,990	29,540	36,418	60,528	105,807	175,497	248,096

Source: DMV 2024 Alternative Fueled Vehicle Report

Current and Future temperature and precipitation

Texas experiences a wide range of temperatures and extreme weather events, including ice and snowstorms, tornados, hurricanes and tropical storms, and wildfires in dry conditions. Performance during extreme weather events is important, particularly when we anticipate it will affect infrastructure such as power and communications outages, etc. We learned during the February 2021 winter storm that not all electric grids are fully resilient under some conditions. Charging stations need to be reliable for continued travel, and ready to help the public evacuate from extreme conditions, especially in remote areas. We will include the need to plan for emergencies in choosing the sites for charging stations. Keeping stations near interchanges and crossroads that are easily accessible, suitable commercial or public sites, adequate power aligned to priority grid capabilities, communications and security are all considerations not only for operational feasibility, but also to support the public in extreme conditions. Below we identify our general climate conditions. Later in the plan we provide early thoughts on resiliency risk reducing actions, and the need for physical and cyber security.

Current and future temperature and precipitation patterns provided by John Nielsen-Gammon, Texas State Climatologist, Texas A&M University.

Texas has a warm climate, with hot summers throughout the state, mild winters in southern Texas, and cooler winters in northern Texas. Normal July maximum temperatures are typically above 90 °F, while average January minimum temperatures vary from the 20s °F in the north to the 40s and 50s °F in the south. All present-day climate statistics are based on the standard normals period of 1991-2020 unless otherwise noted.

The number of days in which the temperature reaches 100 °F is less than once per year (fewer than thirty times in thirty years) along the Gulf Coast and mountains in West Texas. Most of the state sees on average between 5 and 20 100 °F days per year. More than 30 100°F days per year are common in western portions of South Texas and along the Rio Grande and Pecos River in West Texas. Days reaching 110 °F are extremely rare, with frequencies of once per year found only in West Texas along the Rio Grande and Pecos River and near Childress in northwestern Texas.

The period 1991-2020 was unusual in Texas for the absence of extreme cold compared to the 1980s and 2021-2022. To obtain more representative statistics, extreme cold is examined for the 41-year period 1981-2021. Temperatures drop below freezing less than once per year along the Texas coast and westward to the Laredo area, while in the Panhandle over 90 days per year have temperatures below freezing. Below-zero (°F) temperatures did not occur at all in the southern half of the state, while the extreme northern Panhandle averaged two per year.

Normal annual precipitation varies dramatically from west to east across the state. Low-altitude far western locations, such as El Paso, average less than 10 inches per year, while the southeast corner of the state near Beaumont averages over 60 inches per year. Heavy rain is common in southeast Texas and rare in west Texas. Much of western Texas did not experience a single day with more than 5 inches of rainfall during 1991-2020, while for the Houston and Beaumont areas it was almost an annual occurrence.

Measurable snow is extremely rare at the southern end of the state and quite common at the northern end. Typical annual snowfall totals during 1890-2021 were less than 3 inches in the southern half of the state and over 8 inches in the Panhandle.

According to CMIP6 global climate model simulations and recent historical observations, Texas temperatures may be expected to increase by about 1.25 °F for every 1 °F of global temperature increase, with the relative increase smallest along the coast. If global temperatures increase by an additional 2 °F, which the IPCC assesses could happen in some scenarios around the middle of the 21st century, it could double the number of 100 °F days in most areas of the state and could make 110 °F days considerably more common. The number of extremely cold days could decrease slightly.

Precipitation over the past century has had little trend in western Texas but has increased by about 15% in eastern Texas. Global climate model projections are mixed, with the overall model consensus being a slight decrease in annual precipitation. Rainfall intensity during the wettest days of the year has increased across the state by an average of about 10-15% and is expected to continue increasing at a rate of about 3-4% per 1°F of global rise in temperature. Snow frequency and intensity is expected to decrease, because the amount and frequency of snow in Texas is limited by the frequency of below-freezing temperatures during wintertime storm events.

EV Adoption and Market Conditions

The Electric Reliability Council of Texas (ERCOT) estimates there will be 1 million electric vehicles on the road in Texas by 2028. Using current growth trends for EVs the Texas Department of Motor Vehicles estimates Texas will reach 1 million EVs by 2031. As part of the network evaluation process in this plan TxDOT will monitor the adoption rate of EVs in Texas and adjust/develop the network going forward.

The production of battery electric vehicles and recycling is increasing in the US with notable developments in Texas. Likewise major automakers are rapidly developing battery production/recycling capacity in the US to electrify their vehicle lineups.

Exhibit 13 - Existing and planned battery factories in North America:

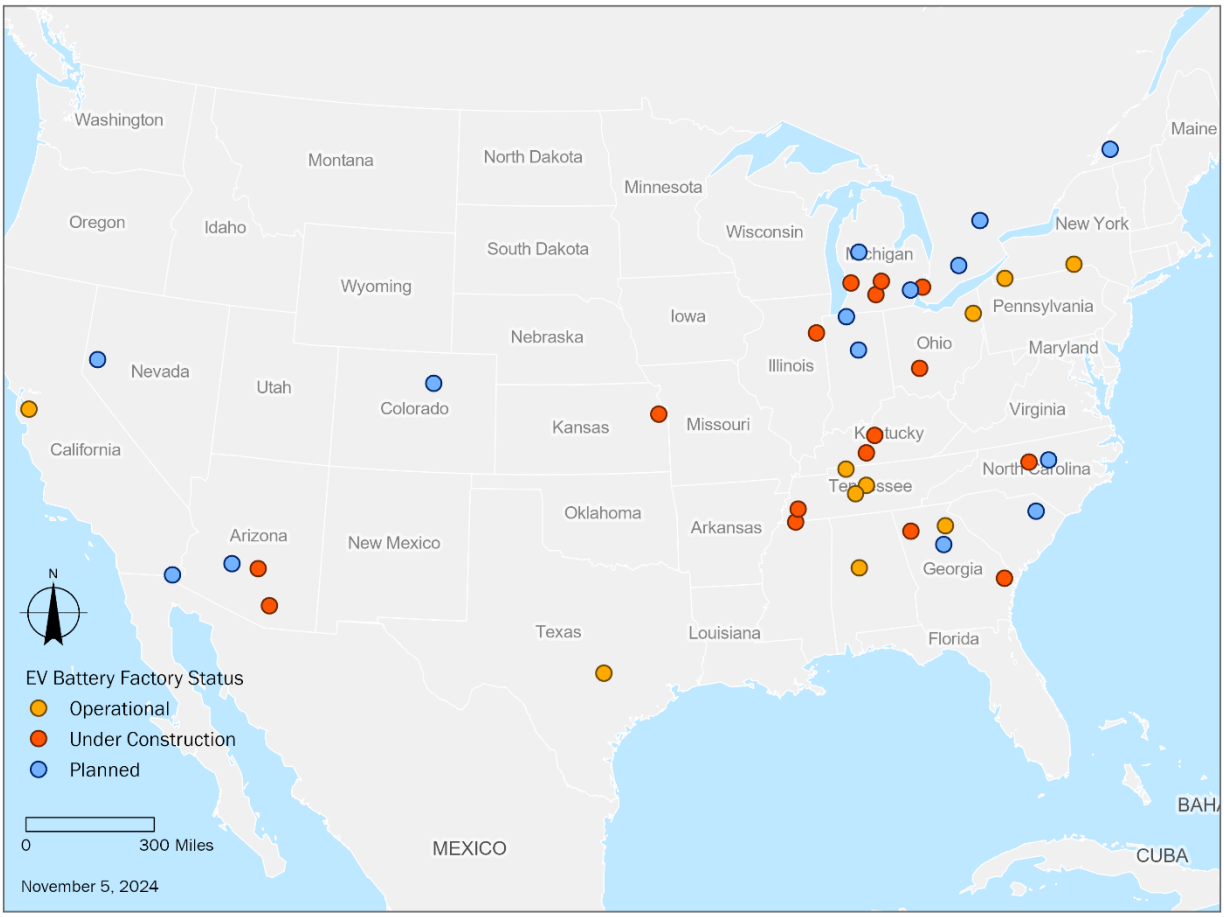


Exhibit 14 - Table of existing and planned battery factories in North America.

Owner/Operator	Location	Annual Capacity	Year
AESC	Bowling Green, KY	30-40 GWh	2025
AESC	Florence, SC	30 GWh (to 60 GWh)	2026
AESC	Smyrna, TN	3 GWh	2018
American Battery Factory	Tucson, AZ	3 GWh (to 20 GWh)	2025
Daimler, Paccar, Accelera, EVE Energy	Marshall County, MS	21 GWh	2027
Amprius Technologies	Brighton, CO	5 GWh	2027
Electrovaya	Jamestown, NY	1 GWh	2023
Ford/SK On	Memphis, TN	43 GWh	2025
Ford	Marshall, MI	20 GWh	2026
Ford/SK Innovation	Glendale, KY	86 GWh (2 plants, 43 GWh each)	2025
Forge Nano	Morrisville, NC	1 GWh (to 3 GWh)	2026
GM/LG	Warren/Lordstown, OH	41-45 GWh	2022
GM/LG	Spring Hill, TN	35 GWh (to 50 GWh)	2023
GM/LG	Lansing, MI	41-45 GWh	2024
GM/Samsung	New Carlisle, IN	30 GWh	2027
Gotion	Big Rapids, MI	TBD	TBD
Gotion	Manteno, IL	50 GWh	2024
Honda	Alliston, Ontario, CAN	36 GWh	2028
Hyundai/LG	Savannah, GA	30 GWh	2025
Hyundai/SK Innovation	Bartow County, GA	35 GWh	2025
iM3NY	Endicott, NY	1.8 GWh (to 38 GWh)	2023
KORE Power	Buckeye, AZ	6 GWh (to 17 GWh)	2024
LG Energy Solution	Queen Creek, AZ	36 GWH (to 53 GWh)	2026
LG Energy Solution	Holland, MI	25 GWh	2025
LG Energy Solution/Honda	Jeffersonville, OH	40 GWh	2025
Mercedes-Benz	Bibbville, AL	25 GWh	2022
Microvast	Clarksville, TN	2-8 GWh	2023
Northvolt	Saint-Basile-le-Grand, Quebec, CAN	30 GWh (to 60 GWh)	2026
ONE Circle	Van Buren Township, MI	20 GWh	2027
Panasonic	De Soto, KS	30 GWh	2025
Rivian	Social Circle, GA	TBD	2026
SK Innovation (SK Battery America)	Commerce, GA	9.8 GWh	2022
SK Innovation (SK Battery America)	Commerce, GA	12.2 GWh	2023
Statevolt	Imperial Valley, CA	54 GWh	2026
Stellantis/LG	Windsor, Ontario, CAN	45 GWh (to 49.5 GWh)	2025
Stellantis/Samsung SDI	Kokomo, IN	23 GWh (to 33 GWh)	2025
Stellantis/Samsung SDI	Kokomo, IN	34 GWh	2027
Tesla - Austin	Austin, TX	5 GWh (to 100 GWh)	2022
Tesla - Fremont	Fremont, CA	10 GWh	2022
Tesla/Panasonic	Sparks, NV	39 GWh	2024
Tesla/Panasonic	Sparks, NV	100 GWh	2027
Toyota	Liberty, NC	17 GWh (to 30+ GWh)	2025
Volkswagen	St. Thomas, Ontario, CAN	TBD (to 90 GWh)	2027
Estimated Annual Capacity by 2027 = 1,105 GWH (min) to 1,500 GWH (max)			
1 GWH = 13,000 electric vehicles with a battery pack of 77 kWh			
Annual Capacity refers to the yearly output of battery capacity produced at each factory			

Exhibit 15 – Map of existing and planned battery recycling plants in North America.

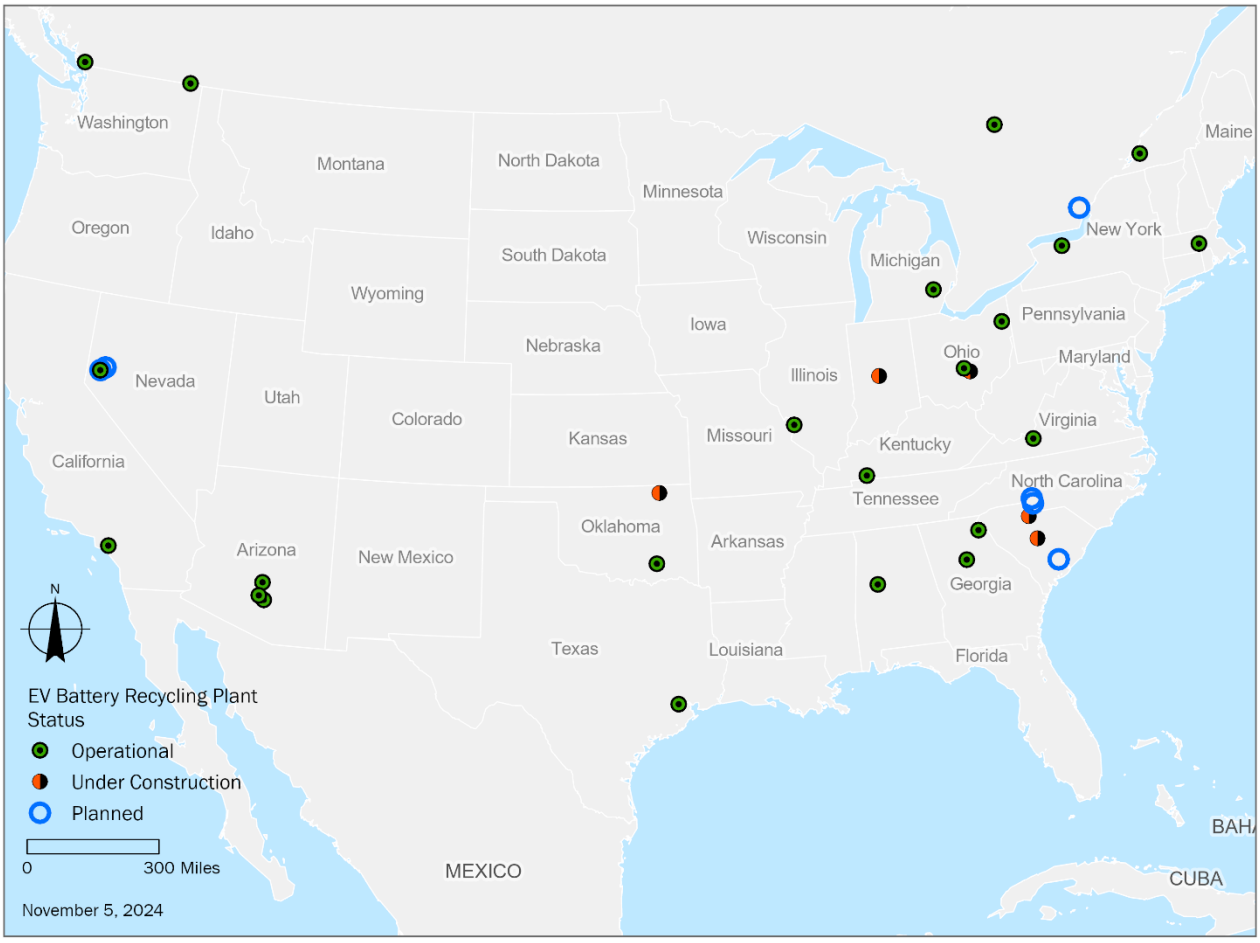


Exhibit 16 – Table of existing and planned battery recycling plants in North America.

Owner/Operator	Location	Metric Tons per Year	Year
Ace Green Recycling	Houston, TX	20,000	2025
American Battery Technology Company	Fernley, NV	20,000	2023
Ascend Elements	Worcester, MA	150	2021
Ascend Elements	Covington, GA	30,000	2022
Ascend Elements	Hopkinsville, KY	107,143	2023
Blue Whale Materials	Bartlesville, OK	14,000 (to 50K)	2024
Cirba Solutions	Wixom, MI	23,000 (to >100K)	2022
Cirba Solutions	Lancaster, OH	>60,000	2026
Cirba Solutions	Columbia, SC	250,000	2024
Cirba Solutions (Retriev/Tovo)	Trail, BC	10,000	2022
Heritage Battery Recycling	Eloy, AZ	21,429	2023
Electra	Toronto, Canada	5,000	2023
Ecobat	Casa Grande, AZ	20,000	2023
Green Li-ion	Atoka, OK	6	2024
Interco	Madison, Il	>24,000	1996
KBI Recycling	Anaheim, CA	20,000 (to 100K)	2005
Li Industries	Blacksburg, VA	10,000	2023
Li Industries	Pineville, NC	500	TBD
Li Industries	Charlotte, NC	1,000	TBD
Li-Cycle	Rochester, NY	18,000	2020
Li-Cycle	Gilbert, AZ	18,000	2022
Li-Cycle	Tuscaloosa, AL	10,000	2022
Li-Cycle	Warren, OH	15,000	2023
Li-Cycle	Kingston, Ontario	5,000	TBD
Lithion Technologies	Saint -Bruno, QC	10,000 (to 20K)	2024
Omega Harvested Metallurgical	Winchester, OH	>100,000	2023
Princeton NuEnergy	Chester County, SC	>10,000	2024
RecycleLiCo (demonstration plant)	Vancouver, BC	912.5	2022
Redwood Materials	McCarran, NV	36,000	2024
Redwood Materials	McCarran, NV	500,000 (to 2.5 MMT)	2030
Redwood Materials	Charleston, SC	1,000,000 (to 5 MMT)	2030
SungEel Recycling Park	Atlanta, GA	30,000	2024
SungEel Battery Recycling Plant	Whitestown, IN	50,000	2025

Grid Capacity and Considerations

Texas has been an energy leader for many years with strong growth in wind generation since 2000 and more recently from solar generation. In 2006, Texas became the #1 state for wind power and is now showing similar rapid growth in solar power. Short-term ERCOT projections show these trends accelerating at least through 2024.

The document titled "Report on the Capacity, Demand and Reserves (CDR) in the ERCOT Region, 2022-2031" published by ERCOT provides power generation estimates from 2022 – 2031.

Exhibit 17 – Five years of projected power capacity.

	2022	2023	2024	2025	2026
Firm Peak Load	74,977 MW	76,542 MW	77,767 MW	78,795 MW	79,819 MW
Total Capacity	92,884 MW	106,684 MW	110,179 MW	110,521 MW	110,683 MW
Reserve Margin	23.9%	39.4%	41.7%	40.3%	38.7%

Theoretical max energy consumption of the EV Charging Network outlined in this plan is 666.7 MW (see page 37 for details).

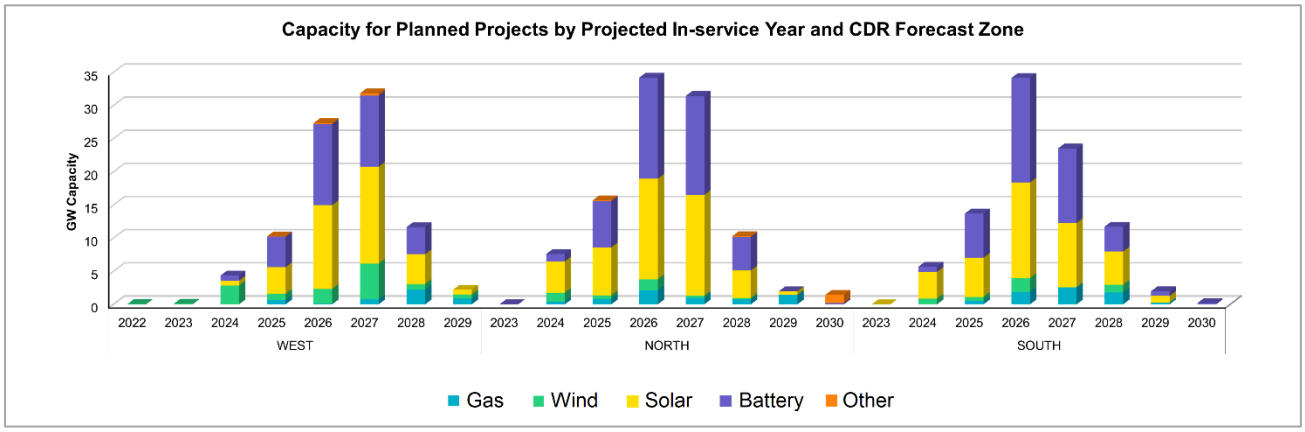
The newest and rapidly growing "source" on the Texas grids is battery storage, breaking 500MW in 2021. Appropriately sited battery storage could reduce variability and congestion issues. More detail can be seen on page 24 from the June 2022 Generator Interconnection Status report provided by ERCOT.

Texas is a unique state in the number and variety of grids to be considered, spanning all three major grids in the contiguous USA.

1. ERCOT is fully contained within Texas and services about 90% of electrical demand. ERCOT is isolated with a few minor connections to the Eastern Interconnect and to Mexico, typically representing around 0.25% of annual net ERCOT electricity.
2. Portions of West Texas are serviced by the Western Interconnect, the portion in Texas by El Paso Electric.
3. Portions of East and North Texas are serviced by two separate Independent System Operators (ISOs) within the Eastern Interconnect- the Southwest Power Pool (SPP) and the Midcontinent ISO (MISO).
4. NOTE: the Lubbock area is in transition from the Southwest Power Pool to ERCOT.

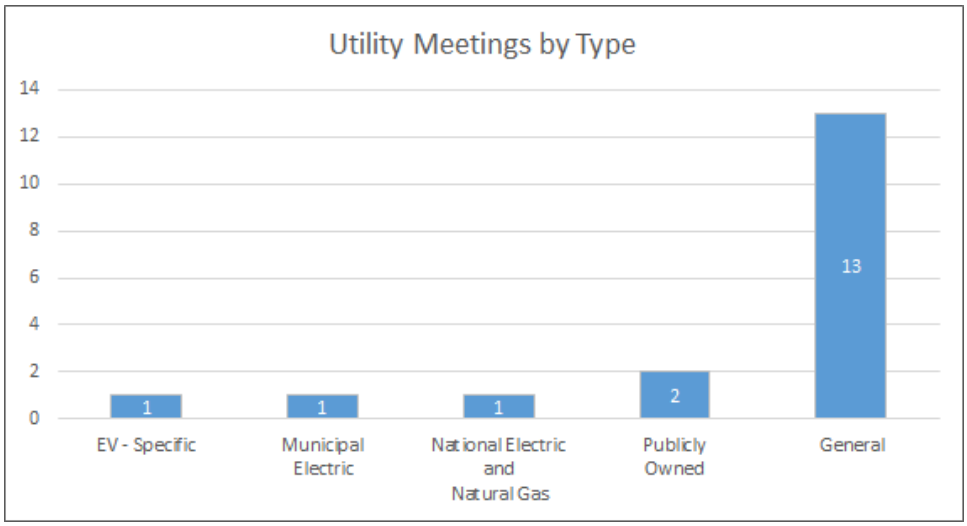
Forecast new installations for Wind, Solar, Battery, and Gas from the ERCOT Generator Interconnection Status Report October 2024.

Exhibit 18 – Forecast capacity by region, source ERCOT GIS Report October 1, 2024.



TxDOT held numerous meetings with utility stakeholders while developing the plan. The topics included estimated power supply, expected usage, demand charges, and sufficient lead time for program roll out in rural areas. Numerous utility stakeholders submitted comments on the plan including the Texas Public Utility Commission and the Electric Reliability Council of Texas. Texas Electric Cooperatives is using the plan to facilitate conversations with rural electric providers about plans for electric vehicle charging.

Exhibit 19 – Utility Meetings.



State Geography, Terrain, Climate and Land Use Patterns

Texas enjoys varied geography across vast distances from the coastal Barrier Islands along the Gulf of Mexico to the Franklin Mountains in El Paso. Each region has its own unique properties and flair that distinguishes itself from equally stunning far-flung reaches of the state. The transportation system is the backbone of the state carrying people and goods between sea and inland ports, agricultural regions, energy sectors, and metropolitan areas. Varied terrain and geography are not a deterrent to travel as Texans move about the state year-round.

Population continues to grow with the majority estimated to occur inside large metro areas. Vehicle miles traveled are expected to rebound following the pandemic as Texans return to traditional travel patterns. The transportation system in Texas will continue to connect people and places in the most remote regions of the state. The addition of infrastructure under the NEVI program will enhance the travel experience and provide options for future growth and development in Texas.

See the Current and Future temperature and precipitation sub section in the Existing and Future Conditions Analysis Section for the Climate summary.

State Travel Patterns, Public Transportation Needs, Freight and Other Supply Chain Needs

Texas has over 3,400 centerline miles of interstate highways, and interstates represent the largest percentage of vehicle miles traveled in the state. TxDOT agrees focusing on Electric Alternative Fuel Corridors and the interstate highways first is the best way to build out a statewide charging network. We look forward to guidance from FHWA on freight and heavy-duty vehicles.

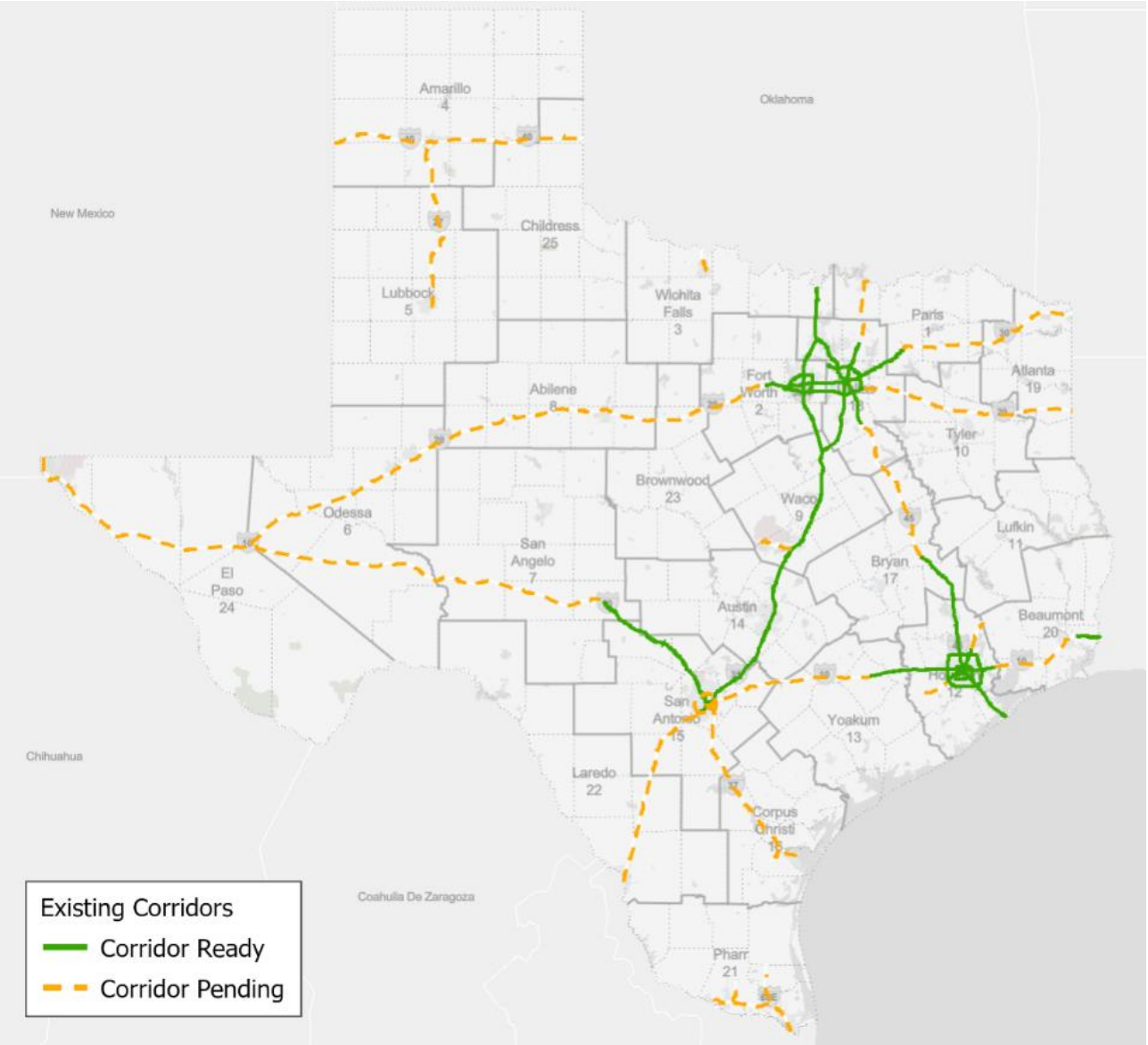
FHWA guidance recommended a minimum of 4 ports rated at 150kW per connector. However, in this plan each location can have up to 8 ports per location depending on traffic volume, urban area size, and special considerations like evacuation routes.

The ongoing equipment, labor, precious metals, and microchip shortages have the potential to lengthen timelines and limit private sector capabilities. TxDOT acknowledges the difficulties brought on by these situations and will do our best to work with vendors and planning partners to complete the network/installation process as soon as possible.

Alternative Fuel Corridor - Corridor Networks

TxDOT expanded the Electric – Alternative Fuel Corridors in 2022 to include almost all non-business interstate routes in Texas. The Texas EV Plan is working to build out the currently designated Corridor Ready and Corridor Pending segments. No additions were requested in 2023 or 2024.

Exhibit 20 - Electric - Alternative Fuel Corridors in Texas.



Existing Locations of Charging Infrastructure Along AFCs

Privately developed sites were removed since they are not eligible to meet fully built out requirements.

DC Fast Charge stations under development with Texas Volkswagen Environmental Mitigation Program funds administered by TCEQ are listed but they are not eligible to meet full built out requirements.

Exhibit 21 – NEW DC Fast Charge stations administered by TCEQ.

Grant ID	Facility Address	Units	KW
2022-24-0008-VW	4080 East Freeway, Baytown, TX 77521	6	150
2022-24-0011-VW	1550 Central Expressway, Melissa, TX 75454	6	150
2022-24-0012-VW	205 I-45, Madisonville, TX 77864	6	150
2022-24-0013-VW	5005 East I-30, Royse City, TX 75189	6	150
2022-24-0014-VW	27700 Katy Freeway, Katy, TX 77494	6	150
2022-24-0016-VW	15901 N Freeway Service Road E, Fort Worth, TX 76177	6	150
2022-24-0017-VW	506 West IH-20, Terrell, TX, 75160	6	150
2022-24-0018-VW	4155 North General Bruce Drive, Temple, TX 76501	6	150
2022-24-0020-VW	40900 US-290, Waller, TX 77484	6	150
2022-24-0021-VW	10484 US-59, Wharton, TX 77488	6	150
2022-24-0022-VW	2760 I-35, New Braunfels, TX 78130	6	150
2022-24-0023-VW	2800 South I-35 East, Denton, TX 76210	6	150
2022-24-0024-VW	1700 Highway 71 East, Bastrop, TX 78602	6	150
2022-24-0002-VW	160 State Highway 77, Hillsboro, TX 76645	4	150
2022-24-0005-VW	496 South Good Latimer Parking, Dallas, TX 75226	4	150
2022-24-0007-VW	6615 North IH-35, Lacy Lakeview, TX, 76705	4	150
2022-24-0019-VW	6170 IH-10 East, San Antonio, TX 78219	4	150
2022-24-0088-VW	3002 East Main Street, Madisonville, TX 77864	4	150
2022-24-0089-VW	1200 League Line, Conroe, TX 77303	4	150
2022-24-0090-VW	1001 FM 1764, La Marque, TX 77568	4	150
2022-24-0091-VW	15900 North Interstate Highway 35, Austin, TX 78728	4	150
2022-24-0092-VW	25200 I-10, San Antonio, TX 78257	4	150
2022-24-0093-VW	306 FM 359, Brookshire, TX 77423	4	150
2022-24-0094-VW	1807 West Grand Parkway North, Katy, TX 77449	4	150
2022-24-0095-VW	17510 Morris Avenue, Manvel, TX 77578	4	150
2022-24-0096-VW	709 La Grange, Flatonia, TX 78941	4	150
2022-24-0097-VW	18040 US Highway 59, Humble, TX 77396	4	150
2022-24-0098-VW	2215 South Highway 71, Columbus, TX 78935	4	150
2022-24-0099-VW	15476 TX-105, Montgomery, TX 77356	4	150
2022-24-0100-VW	2416 North Main, Junction, TX 76849	4	150
2022-24-0101-VW	4700 US-59, Shepard, TX 77371	4	150
2022-24-0102-VW	7100 Garth Road, Baytown, TX 77521	4	150
2022-24-0103-VW	1909 Kelly Lane, Pflugerville, TX 78660	4	150
2022-24-0104-VW	110 East Louetta, Spring, TX 77373	4	150

Additional grants administered by TCEQ under the Alternative Fueling Facilities Program (AFFP) are listed below but they are not eligible to meet full built out requirements.

Exhibit 22 – Additional NEW DC Fast Charge station administered by TCEQ.

Grant ID	Facility Address	Units	Ports
2022-12-0117-AF	2602 NW Loop 410, San Antonio, TX 78230	2	4
2022-12-0121-AF	8690 ERL Thorton Freeway, Dallas, TX 75228	3	5
2022-12-0124-AF	5109 and IH-30, Greenville, TX 75401	3	5
2022-12-0125-AF	10921 Estate Lane at 635 & Plano Road, Dallas, TX 75238	3	5
2022-12-0129-AF	8540 FM 1765, Texas City, TX 77591	3	5
2022-12-0132-AF	2655 IH-10, Orange, TX 77630	3	5
2022-12-0133-AF	1006 West Calton Road, Laredo, TX 78041	3	5
2022-12-0140-AF	815 IH-35 South, New Braunfels, TX 78130	3	5
2022-12-0141-AF	2612 Gillmeister Lane, Temple, TX 76502	3	5
2022-12-0143-AF	720 Spring Valley, Hewlitt, TX 76643	2	NA
2022-12-0146-AF	9350 SE Loop 410, San Antonio, TX 78223	2	NA
2022-12-0150-AF	1062 FM 117, Dilley, TX 78017	3	5
2022-12-0154-AF	5239 Rigsby Avenue, San Antonio, TX 78222	2	NA
2022-12-0159-AF	1614 State Highway 34 South, Terrell, TX 75160	3	5
2022-12-0164-AF	200 North Memorial Freeway, Nederland, TX 77627	3	5
2022-12-0170-AF	6655 Gateway Boulevard West, El Paso, TX 79925	3	5
2022-12-0172-AF	500 South US Highway 281, Alice, TX 78332	3	5
2022-12-0174-AF	10446 IH-37, Corpus Christi, TX 784410	3	5
2022-12-0178-AF	1520 IH-35, Belton, TX 76513	3	5
2022-12-0190-AF	5601 East End Boulevard South, Marshall, TX 75672	2	NA
2022-12-0191-AF	5925 East End Boulevard South, Marshall, TX 75672	2	NA
2022-12-0194-AF	921 North IH-35, Cotulla, TX 78014	2	4
2022-12-0195-AF	1011 Beltway Parkway, Laredo, TX 78045	2	4
2022-12-0196-AF	1815 North Foster Road, San Antonio, TX 78244	2	4
2022-12-0201-AF	7425 Bonnie View Road, Dallas, TX 75241	2	4
2022-12-0202-AF	3000 US 77, Hillsboro, TX 76645	1	NA
2022-12-0203-AF	1876 East Freeway, Baytown, TX 77521	2	4
2022-12-0223-AF	4155 North General Bruce Drive, Temple, TX 76501	48	NA
2022-12-0229-AF	7112 IH-10 West, Orange, TX 77630	2	4
2022-12-0244-AF	12881 FM Road 14A, Tyler, TX 75706	2	4
2022-12-0245-AF	14555 IH-35 South, Vor Ormy, TX 78075	2	4
2022-12-0257-AF	1414 Palacios Street, El Campo, TX 77437	NA	8
2022-12-0275-AF	920 Victoria Highway, Refugio, TX 78377	3	5
2022-12-0278-AF	1801 Highway 181, Portland, TX 78374	3	5
2022-12-0281-AF	100 IH-20, Marshall, TX 75672	3	5
2022-12-0282-AF	160 Lucy Drive, Longview, TX 75602	3	5
2022-12-0286-AF	7220 Broadway Street, Galveston, TX 77554	3	5
2022-12-0287-AF	2020 Regal Drive, Corsicana, TX 75109	3	5

Known Risks and Challenges

TxDOT began tracking the development of DC Fast Charge stations in Texas on February 10, 2022. Existing stations that met FHWA guidance were combined with planned stations from the VW Settlement funds administered by the Texas Commission on Environmental Quality. Gaps were identified and candidate locations were proposed that meet FHWA guidance. It is anticipated that TxDOT will be able to meet or exceed requirements for DC Fast Charge station spacing and power ratings in most locations.

Two sections of IH 10 in far west Texas will be dependent on a small number of private sector businesses hosting stations due to the sparsely populated nature of the region. If during site selection these locations are found unviable TxDOT will update the Discretionary section of the plan.

Any additional deficiencies identified along the corridors during site selection will be documented in the Discretionary section of the plan in the annual update. TxDOT will rapidly re-evaluate the network to assess impacts of private sector non-NEVI stations added to highways that meet FHWA guidance and refine candidate locations accordingly. This will allow TxDOT to better fund other areas and increase the overall density of the charging network.

The ongoing equipment, labor, precious metals, and microchip shortages have the potential to lengthen timelines and limit private sector capabilities. TxDOT acknowledges the difficulties brought on by these situations and will do our best to work with vendors and planning partners to complete the network as soon as possible.

TxDOT acknowledges the risk posed to charging infrastructure from natural and man-made disasters and will rely on our experience working with planning partners, fellow state and federal agencies, and the private sector to mitigate issues. As with the adoption of any new technology, acceptance of infrastructure for electric vehicle charging comes with risks of vandalism and general acceptance that could impact serviceability and user experience of EV charging locations. Methods to mitigate these risks and recover from issues will be evaluated in vendor proposals.

Charging Infrastructure Deployment

TxDOT will partner with the private sector to develop the EV Charging Network. Per FHWA guidance the plan will start with the Electric Alternative Fuel Corridors then work with rural/small urban areas and MPOs across the state. Non-Alternative Fuel Corridors will be ranked by VMT and developed in succession. County Seats will be the primary focus in rural areas with DC Fast Charge stations and MPOs will install a combination of DC and Level II stations determined by the MPOs.

1. The DCFC equipment must be accessible to the public 24 hours per day/seven days per week and have dusk to dawn lighting (without requirements to purchase goods or services from businesses hosting the stations).
2. All permits, regulatory authorizations/approvals, utility service connections, and necessary licenses to legally operate in the State of Texas, along with required insurance coverage, must be obtained before opening the site to the public.
3. Each port must have at least one SAE CCS 1 connector and one NACS connector.
4. DCFC equipment must be rated at 150kW per port or greater.
    a. Sharing acceptable if each port can charge at 150kW or greater simultaneously.
5. Minimum of 4 ports per location.
6. DCFC equipment must support the following:
    a. Open Charge Point Interface (OCPI 2.2.1 within 1 year of final rules).
    b. Open Charge Port Protocol 1.6J or higher (OCPP 2.0.1 within 1 year of final rules).
    c. ISO 15118-2,-20,-3 (-2 Plug and Charge within 1 year of final rules).
7. The proposed station must be inside a TxDOT designated EV Study Area along the Electric Alternative Fuel Corridors (AFC). If after grant award a study area is deemed insufficient to support a four port DCFC station at 150kW per port simultaneously, the grant recipient can identify an alternate location (with TxDOT approval) also on the AFC that does not break the 50-mile spacing, and 1 mile from highway exit, federal requirements.
8. Provide multiple payment options for DCFC users including but not limited to:
    a. Contactless payment method that accepts major credit and debit cards
    b. Payment through either an automated toll-free phone number or a short message/messaging system (commonly abbreviated as SMS).
        i. Payment methods must be accessible to persons with disabilities, not require a membership, not affect the power flow to vehicles, and provide access for those that are limited English proficient.
9. Chargers must remain functional if communication with the charging network is temporarily disrupted.
10. Real-time pricing and fee information shall be displayed on the unit, payment screen, or associated phone or vehicle-based application.
11. Enforce idle fees after charging sessions are complete and the grace period has expired.
12. A mechanism to report issues with charging infrastructure.
    a. The reporting mechanisms must provide multilingual services and be compliant with the American with Disabilities Act of 1990.
13. One pull through space for light duty vehicles with trailers when host location will support it.
14. Work with TxDOT Environmental Affairs division on clearance for the study areas.
15. Provide ADA accessible EV chargers consistent with U.S. Access Board Design Recommendations for Accessible EV Charging Stations.

Funding Sources

TxDOT will develop a program where third parties fund the non-federal share of the NEVI Formula Program. Operations and Maintenance funds will be available for the first five years of station operations. Third parties will collect fees from station operation and be responsible for maintenance from day one.

Exhibit 23 - Estimated cost to develop a NEVI compliant EV charging network in Texas.

Description	Sites	DC Fast Ports *	Level II	Federal	Private Sector	O&M (Fed)
Alt Fuel Corridors	84	380	0	$76.18M	$15.20M	$16.40M
County Seats	190	835	0	$100.20M	$25.05M	$31.31M
Inside MPOs**	TBD	TBD	TBD	$147.12M	$36.78M	$31.52M
Totals	274	1,215	TBD	$323.50M	$77.03M	$79.23M

* 150kW minimum on Alt Fuel Corridors and County Seats, could vary based on situation, estimated at $150K per connector.

**MPOs will propose the quantity of DC or Level II locations in their areas up to the target dollar amount, estimate for DC stations inside MPOs is 50K per connector at 50kW max power, Level II is estimated at 5K per connector at 10kW max power.

2024 Infrastructure Deployments/Upgrades

At the time of this document there are 28 projects along the Electric Alternative Fuel Corridors in the construction or pre-construction phase. We anticipate 3 to 4 station openings in calendar year 2024 followed by a few dozen throughout calendar year 2025.

The first deployments in calendar year 2024 will be in:

- Gainesville along IH 35 close to the Oklahoma border (ribbon cutting December 12, 2024).
- Cotulla along IH 35 between San Antonio and Laredo.
- Happy along IH 27 between Amarillo and Lubbock (ribbon cutting December 4, 2024).
- Big Spring along IH 20 between Abilene and Midland.

List of Stations

The following DC Fast Charge stations deployment map depicts general locations along Alternative Fuel Corridors and County Seats. Dark Blue circles with dots represent proposed charging locations that meet NEVI requirements on the Electric Alternative Fuel Corridors. Dark Gray dots represent planned charging locations from the VW settlement funds administered by TCEQ. Light Blue and White dots represent proposed DC Fast Charge locations at County Seats. Stations inside MPOs will be determined after Electric Alternative Fuel Corridors are built out.

Exhibit 24 – Phase 1 AFC and Phase 2 County Seat locations.

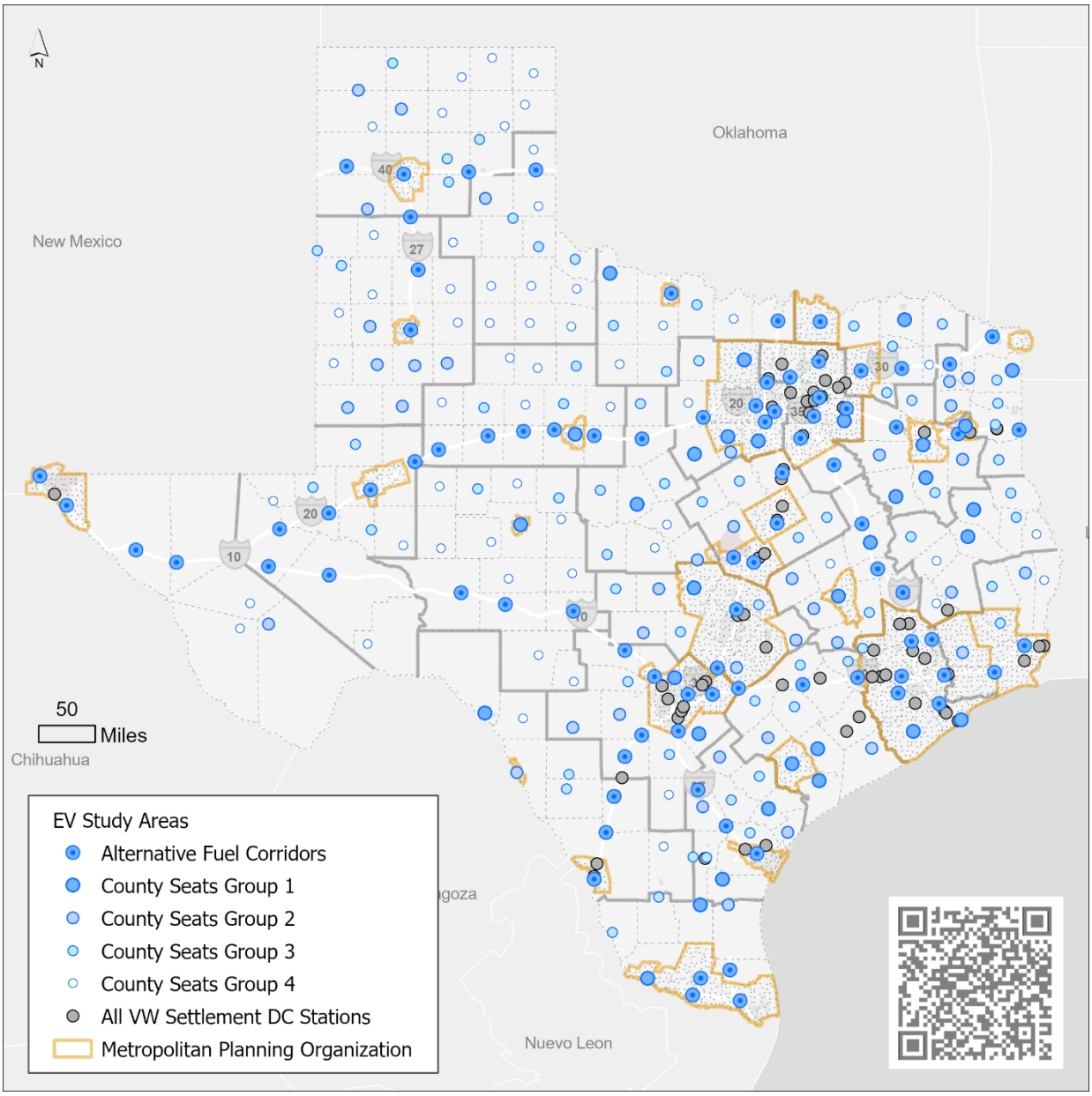


Exhibit 25 – List of Study Areas and Status.

Study Area	Status
Big Spring	Construction
Cotulla	Construction
Gainesville	Construction
Happy	Construction
Adrian	Pre-Construction
Balmorhea	Pre-Construction
Clyde	Pre-Construction
Colorado City	Pre-Construction
Corsicana	Pre-Construction
Encinal	Pre-Construction
Groom	Pre-Construction
IH20 and US281	Pre-Construction
Mathis	Pre-Construction
Merkel	Pre-Construction
Mt Pleasant	Pre-Construction
Natalia	Pre-Construction
New Boston	Pre-Construction
Plainview	Pre-Construction
Rolling Meadows	Pre-Construction
Sierra Blanca	Pre-Construction
Sulphur Springs	Pre-Construction
Three Rivers	Pre-Construction
Van	Pre-Construction
Buffalo	Planning
Burleson	Planning
Corpus Christi	Planning
Edinburg	Planning
Fort Worth	Pre-Construction
Kerrville	Planning
Killeen	Planning
Laredo	Planning
Lubbock	Planning
Luling	Planning
McAllen	Planning
Monahans	Planning
Odessa	Planning
Raymondville	Planning
San Benito	Planning
San Marcos	Planning
Sandy Oaks	Pre-Construction
Selma	Pre-Construction

Study Area	Status
Shamrock	Planning
Sherman	Planning
Sonora	Planning
Sugar Land	Pre-Construction
Waskom	Planning
Waxahachie	Planning
Wichita Falls	Planning
Winnie	Pre-Construction
Amarillo	Applications
Baytown	Applications
Belton	Applications
Boerne	Applications
Cisco	Applications
El Paso	Applications
Fort Stockton	Applications
Greenville	Applications
Hillsboro	Applications
Huntsville	Applications
Hutchins	Applications
Junction	Applications
League City	Applications
Lewisville	Applications
Madisonville	Applications
McKinney	Applications
Mesquite	Applications
Northlake	Applications
Ozona	Applications
Patton Village	Applications
Pearsall	Applications
Pecos	Applications
Round Rock	Applications
Schulenmar	Applications
Sealy	Applications
Seguin	Applications
Shenandoah	Applications
Socorro	Applications
Stanton	Applications
Sweetwater	Applications
Terrell	Applications
Van Horn	Applications
Vidor	Applications
Waco	Applications

Study Area	Status
West Houston	Applications
Abilene	Phase 2
Albany	Phase 2
Alice	Phase 2
Alpine	Phase 2
Anderson	Phase 2
Andrews	Phase 2
Angleton	Phase 2
Anson	Phase 2
Archer City	Phase 2
Aspermont	Phase 2
Athens	Phase 2
Atlanta	Phase 2
Ballinger	Phase 2
Bandera	Phase 2
Bay City	Phase 2
Beeville	Phase 2
Bellville	Phase 2
Benjamin	Phase 2
Big Lake	Phase 2
Bonham	Phase 2
Brackettville	Phase 2
Brady	Phase 2
Breckenridge	Phase 2
Brenham	Phase 2
Brownfield	Phase 2
Brownwood	Phase 2
Bryan	Phase 2
Bulverde	Phase 2
Burnet	Phase 2
Caldwell	Phase 2
Cameron	Phase 2
Canadian	Phase 2
Carrizo Springs	Phase 2
Carthage	Phase 2
Center	Phase 2
Centerville	Phase 2
Channing	Phase 2
Childress	Phase 2
Clarendon	Phase 2
Clarksville	Phase 2
Claude	Phase 2

List of Study Areas and Status continued.

Study Area	Status
Cleburne	Phase 2
Coldspring	Phase 2
Coleman	Phase 2
Comanche	Phase 2
Cooper	Phase 2
Crane	Phase 2
Crockett	Phase 2
Crosbyton	Phase 2
Crowell	Phase 2
Crystal City	Phase 2
Cuero	Phase 2
Daingerfield	Phase 2
Dalhart	Phase 2
Decatur	Phase 2
Del Rio	Phase 2
Dickens	Phase 2
Dimmitt	Phase 2
Dumas	Phase 2
Eagle Pass	Phase 2
Edna	Phase 2
Eldorado	Phase 2
Emory	Phase 2
Falfurrias	Phase 2
Farwell	Phase 2
Floresville	Phase 2
Floydada	Phase 2
Fort Davis	Phase 2
Franklin	Phase 2
Fredericksburg	Phase 2
Freer	Phase 2
Gail	Phase 2
Galveston	Phase 2
Garden City	Phase 2
Gatesville	Phase 2
George West	Phase 2
Giddings	Phase 2
Gilmer	Phase 2
Glen Rose	Phase 2
Goldthwaite	Phase 2
Goliad	Phase 2
Gonzales	Phase 2
Graham	Phase 2

Study Area	Status
Granbury	Phase 2
Groesbeck	Phase 2
Groveton	Phase 2
Guthrie	Phase 2
Hallettsville	Phase 2
Hamilton	Phase 2
Haskell	Phase 2
Hebbronville	Phase 2
Hemphill	Phase 2
Hempstead	Phase 2
Henderson	Phase 2
Henrietta	Phase 2
Hereford	Phase 2
Hondo	Phase 2
Jacksboro	Phase 2
Jacksonville	Phase 2
Jasper	Phase 2
Jayton	Phase 2
Jefferson	Phase 2
Johnson City	Phase 2
Karnes City	Phase 2
Kaufman	Phase 2
Kermit	Phase 2
Kingsville	Phase 2
Kountze	Phase 2
La Grange	Phase 2
Lamesa	Phase 2
Lampasas	Phase 2
Leakey	Phase 2
Levelland	Phase 2
Liberty	Phase 2
Linden	Phase 2
Lipscomb	Phase 2
Littlefield	Phase 2
Livingston	Phase 2
Llano	Phase 2
Lockhart	Phase 2
Longview	Phase 2
Lufkin	Phase 2
Marfa	Phase 2
Marlin	Phase 2
Marshall	Phase 2

Study Area	Status
Mason	Phase 2
Matador	Phase 2
Memphis	Phase 2
Menard	Phase 2
Mentone	Phase 2
Meridian	Phase 2
Mertzon	Phase 2
Miami	Phase 2
Montague	Phase 2
Morton	Phase 2
Mount Vernon	Phase 2
Muleshoe	Phase 2
Nacogdoches	Phase 2
Newton	Phase 2
Paducah	Phase 2
Paint Rock	Phase 2
Palestine	Phase 2
Palo Pinto	Phase 2
Pampa	Phase 2
Panhandle	Phase 2
Paris	Phase 2
Perryton	Phase 2
Pittsburg	Phase 2
Plains	Phase 2
Pleasanton	Phase 2
Port Lavaca	Phase 2
Post	Phase 2
Quanah	Phase 2
Quitman	Phase 2
Rankin	Phase 2
Refugio	Phase 2
Rio Grande City	Phase 2
Robert Lee	Phase 2
Roby	Phase 2
Rockport	Phase 2
Rocksprings	Phase 2
Rusk	Phase 2
San Angelo	Phase 2
San Augustine	Phase 2
San Diego	Phase 2
San Saba	Phase 2
Sanderson	Phase 2

List of Study Areas and Status Continued.

Study Area	Status
Sarita	Phase 2
Seminole	Phase 2
Seymour	Phase 2
Silverton	Phase 2
Sinton	Phase 2
Snyder	Phase 2
Spearman	Phase 2
Stephenville	Phase 2
Sterling City	Phase 2
Stinnett	Phase 2
Stratford	Phase 2
Tahoka	Phase 2
Taylor	Phase 2
Throckmorton	Phase 2
Tilden	Phase 2
Tyler	Phase 2
Uvalde	Phase 2
Vernon	Phase 2
Victoria	Phase 2
Wellington	Phase 2
Wheeler	Phase 2
Woodville	Phase 2
Zapata	Phase 2

Estimates for EV Charging inside MPOs – Activities inside MPOs begin after building out Electric Alternative Fuel Corridors (preference will be toward maximizing resources for installation).

Exhibit 26 – NEVI inside MPOs.

ID	MPO Name	Allocation (Fed + Private)	5 YR Operations & Maintenance	Phase 2 Status (Power & Study Areas)
1	Abilene MPO	$1,000,000	$200,000	DCFC, MPO Boundary as Study Area
2	Alamo Area MPO	$18,672318	$4,668,079	Considering Options
3	Amarillo MPO	$1,452,407	$363,102	Considering Options
4	Bryan-College Station MPO	$1,200,824	$300,206	TBD
5	CAMPO	$18,342,083	$4,585,521	Considering Options
6	Corpus Christi MPO	$1,775,402	$443,850	Considering Options
7	Eagle Pass MPO	$1,000,000	$200,000	TBD
8	El Paso MPO	$5,941,734	$1,485,434	DCFC, Defining Study Areas
9	Grayson County MPO	$1,224,867	$306,217	Considering Options
10	HGAC	$50,000,000	$10,000,000	Considering Options
11	Killeen-Temple MPO	$2,324,076	$581,019	DCFC, MPO Boundary as Study Area
12	Laredo Webb County Area MPO	$1,063,244	$265,811	Considering Options
13	Longview MPO	$1,000,000	$200,000	Considering Options
14	Lubbock MPO	$1,486,663	$371,666	Considering Options
15	North Central Texas COG	$60,000,000	$12,000,000	DCFC, MWC, L2, Defining Study Areas
16	Permian Basin MPO	$1,915,692	$478,923	Considering Options
17	Rio Grande Valley MPO	$6,325,223	$1,588,056	DCFC, Defining Study Areas
18	San Angelo MPO	$1,000,000	$200,000	TBD
19	South East Texas RPC	$2,502,701	$625,675	Considering Options
20	Texarkana MPO	$1,000,000	$200,000	Considering Options
21	Tyler MPO	$1,453,176	$363,294	Considering Options
22	Victoria MPO	$1,000,000	$200,000	DCFC, City Limit as Study Area
23	Waco MPO	$1,846,634	$461,658	DCFC, Defining Study Areas
24	Wichita Falls MPO	$1,000,000	$200,000	Considering Options

Note: Minimum for construction was adjusted to $1M and $200K for operations and maintenance.

Estimates are based on a modified Category 2 formula from TxDOT's Unified Transportation Program. Allocation estimates include 20% of private sector funds. Each attribute percentage is calculated based on the sum (inside MPOs) of each attribute. The attributes are 2020 Population, 2020 Vehicle Miles Traveled, Lane Miles, EV Ownership (to June 20, 2023) and Non-Attainment status. Estimates are subject to change and factors will be updated/recalculated before work on Phase 2 begins.

Formula (each attribute divided by sum (inside MPOs) and converted to percent, then averaged)**:**

((MPO POP/POP)*100 + (MPO VMT/VMT)*100 + (MPO LM/LM) + (MPO EV/EV)*100) + Non-Attainment Factor)/5 = MPO %

Abilene Example:

((133449/25617630)*100 + (2775942/555360389)*100 + (2547/309446)*100 + (84/47807)*100) + 0)/5 =.00403

.00403 * $189.45M = $756,303 ($756,303 * .25 = $191,326 for 5 years of O&M)

Energy Usage Estimates

Estimating energy usage is difficult since owners do not charge their cars at the same time and vehicles do not charge at the same rate throughout a battery charging cycle.

Realistically, electric vehicles cannot sustain a high charge rate over the entire session. Batteries with a low state of charge will accept the high rate for a few minutes then start tapering down as battery pack voltage increases. However, it is easy to estimate a theoretical max power usage scenario for illustration purposes.

Exhibit 27 - Estimates for theoretical max power consumption by area and type.

Area	Type	Max Power (KW)	Connectors	Est. Max Power (MW)
Alt Fuel Corridors (50%)	DC Fast	150	154	23.1
Alt Fuel Corridors (35%)	DC Fast	250	107	26.75
Alt Fuel Corridors (15%)	DC Fast	350	47	16.45
Near County Seats (80%)	DC Fast	150	811	121.65
Near County Seats (15%)	DC Fast	250	152	38
Near County Seats (5%)	DC Fast	350	50	17.5
Inside MPOs (50%)	DC Fast	50	637	31.85
Inside MPOs (25%)	DC Fast	150	318	47.7
Inside MPOs (15%)	DC Fast	250	191	47.75
Inside MPOs (10%)	DC Fast	350	127	44.45
Inside MPOs	Level II	10	25,150	251.5
Totals			27,744	666.7

In summary, if all DC and Level II charging stations in this plan were utilized at the same time at their max rate, they would consume 667.3 MW of electricity from the grid. The Electric Reliability Council of Texas hosts an assortment of dashboards displaying near real time grid conditions. On May 3rd Operating Reserves ranged from 3,751 MW to 6,066 MW. The potential impact on the overall statewide grid appears minimal for the type and quantity of EV Chargers outlined in this plan.

Upgrades of Corridor Pending Designations to Corridor Ready Designations

TxDOT did not nominate any routes to the Electric – Alt Fuel Corridors in FY2024. And we do not anticipate adding to the corridors in the future. It should be noted that San Angelo, Bryan-College Station, and Victoria MPOs are not on Interstate routes/corridors, but they will be included in Phase 2. TxDOT was careful not to nominate too many segments to the Electric Vehicle Corridors due to the FHWA requirement to finish the corridors before spending funds on other roadways.

Increases of Capacity/Redundancy along Existing AFC

TxDOT applied FHWA guidance for station spacing, power ratings and number of ports to the Alternative Fuel Corridors. We evaluated the estimated range of an 80% charge from a 30-minute charge session for low and mid-range electric vehicles.

On the low end, a 150-mile range electric vehicle would have an estimated 120-mile range after completing an 80% charge. A 250-mile mid-range electric vehicle would have an estimated 200-mile range after completing an 80% charge. The resulting range from a recommended 80% charge would provide EV drivers ample options to traverse the state when the network is fully built out.

The following map depicts an estimated range of 120 miles and 200 miles resulting from an 80% charge at a proposed DC Fast Charge station in San Angelo. It is clear from the estimated range map that users of the network would have numerous options for traveling across the state.

Exhibit 28 – Estimated rang map with study areas.

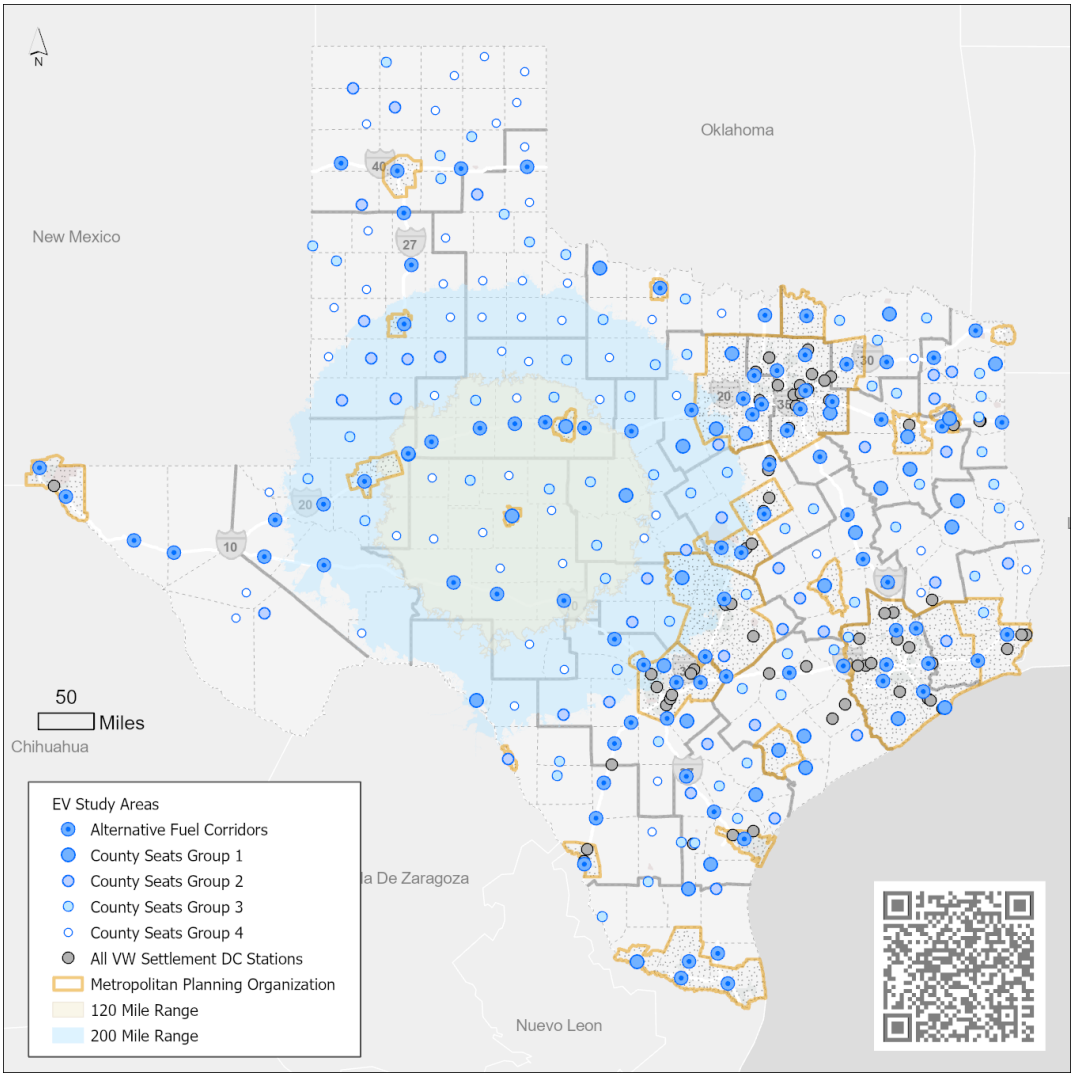


Exhibit 29 - Minutes to Charge for 100 Miles of Range.

	Tesla Model 3	Nissan LEAF	Ford Mustang Mach-E	Ford F-150	Volvo XC40 Recharge	Rivian R1T
Level I	1,080	1,400	1,560	1,560	1,720	2,040
Level II	135	175	195	195	215	255
DC 50kW	35	42	47	47	52	61
DC 150kW	11	14	16	16	17	20
DC 350kW*	5	6	7	7	7	9

Source: Grid Integration of EV Charging Infrastructure: A Workshop to Share Knowledge between the Grid Industry and States (NASEO GridWise Alliance) 3/14/2022 (Ford F-150 added by TxDOT and charges at the same max rate as Mach-E).

*It should be noted that none of the vehicles in this list will support a charge rate of 350kW. At present one electric vehicle on the market can briefly reach a charge rate of 350kW before tapering down.

Electric Vehicle Freight Considerations

TxDOT reviewed guidance from FHWA on May 18, 2023, regarding the establishment of Electric Freight Corridors and did not request modifications to the proposed network. As part of the Phase 2 rollout for EV charging, TxDOT will ask large MPOs (NCTCOG, HGAC, CAMPO, and Alamo Area) to identify 1-3 areas in their regions suitable for medium and heavy-duty freight EV charging. We are expanding this to include MPOs in border regions (El Paso, Laredo, Rio Grande Valley) in the FY2025 plan update. It is envisioned that each charging station will have at least 4 ports rated at 150kW per port or greater to satisfy NEVI requirements then additional MWC ports for medium and heavy-duty trucks. All NEVI rules would apply to the stations.

Public Transportation Considerations

Transit agencies in the metropolitan areas of Texas have already deployed electric buses through grants received through the FTA Low or No Emission Vehicle Program and plan to increase the number of electric buses in the future. Dallas Area Rapid Transit currently has seven transit buses and will purchase up to 10 more electric buses before the end of FY 2024. Trinity Metro, which serves Tarrant County in North Texas, has six transit buses and plans to add eight more electric buses in the future. STAR Transit, a smaller transit provider in the Dallas-Fort Worth area, will deploy eight electric transit vehicles in 2023-2024 with funds received through the Rebuilding American Infrastructure with Sustainability and Equity Grant program.

FY24-27 Infrastructure Deployments

TxDOT will concentrate on the Alternative Fuel Corridors first then move to County Seats and MPOs. The following table outlines approximate years for each region and charging type. This is an early estimate and subject to change going forward. Additional FY would be added until funds are expended.

Exhibit 30 – Deployment estimates.

Year	Description	Locations	DC Fast Connectors	Level II Connectors
FY 2025	Alt Fuel Corridors	84	380	0
FY 2025	MPO	0	0	0
FY 2025	County Seats	0	0	0
FY 2026	MPO	TBD	TBD	TBD
FY 2026	County Seats	80	320	0
FY 2027	MPO	TBD	TBD	TBD
FY 2027	County Seats	80	320	0

State, Regional, and Local Policy

The EV Plan will rely on third party entities to coordinate with local property owners and municipalities on zoning and permitting. Discussions with equipment providers during the development of the EV Plan demonstrated third party providers were well equipped to handle these tasks as part of their normal business practices. TxDOT will monitor developments at the state and local level during the implementation of this plan and provide updates to state and local officials when requested.

Implementation

Strategies for EVSE Operations & Maintenance

Grant awardees will follow agreed-upon requirements for operation and maintenance. Monitoring and service level agreements for station performance will be specified in the contract and TxDOT will monitor station up time through vendor reported usage data and general user satisfaction on publicly accessible third-party charging web sites. Operation and maintenance costs were estimated at 25% of installation cost and will be evaluated per location over time. Enforcement of idle fees will be the responsibility of the station operator.

Strategies for Identifying Electric Vehicle Charger Service Providers and Station Owners

TxDOT will use the EV Landing page, EV contact list, and TxDOT grant opportunities page to advertise, select, and award grants to electric vehicle charging equipment service providers/property owners. As part of the discovery process for EV plan development, it became clear charging equipment companies and private sector entities have the expertise and ability to locate suitable locations for charging stations within TxDOT's recommended EV study areas. TxDOT will monitor progress with regular meetings between the vendor and project team as spelled out in the contract.

Exhibit 31 - Phase 1 electric utility contacts.

Utility	Name	Phone	Email
AEP Texas	Javier P Juarez	361-881-5401	jjuarez@aep.com
Oncor	Jennifer Deaton	817-739-4373	Jennifer.williamsdeaton@oncor.com
CenterPoint Energy	Zachary Henson	281-561-3249	zachary.henson@centerpointenergy.com
Bowie-Cass Electric Coop	Tod Corbin	903-846-2311	todc@bcec.com
City of San Marcos	Raymond Nutall	512-393-8326	rnutall@sanmarcostx.gov
Entergy Texas, Inc.	Chris Hutcherson	409-785-2317	chutche@entergy.com
Lubbock Power & Light	Mike Keen	806-775-2347	CustomerFirst@CityofLubbockUtilities.com
Central Texas Electric Coop	Mitch Elmore P.E.	830-992-2250	mitch.elmore@ctec.coop
Pedernales Electric Coop	Rachel Williams	888-554-4732 ext 6609	Rachel.Williams@peci.com
Rio Grande Electric Coop	Ruben E. Quiroga	800.749.1509 x7011	rquiroga@rgec.coop
Southwest Texas Electric Coop	Chuck Jones	325-853-2544	cjones@swtec.com
Southwestern Electric Power Company	Jeff Thigpen	318-673-3372	jdthigpen@aep.com
United Cooperative Services	Seth Rosser	817-556-4063	seth@ucs.net
Wood County Electric Coop	Tommy Brown	903-763-6555	tommyb@wcec.org

Strategies for EVSE Data Collection & Sharing

Contracts with awardees will include requirements to provide anonymized quarterly usage for analysis. Data and trends from charging station usage will be published on the Statewide Planning Map, and ArcGIS Online dashboards like the EV Dashboard published during EV Plan creation. Data will be reported to FHWA and be available on TxDOT's Open Data Portal for visualization or analysis by the public, researchers, or other interested parties.

Strategies to Address Resilience, Emergency Evacuation, Snow Removal/Seasonal Needs

As stated earlier, charging stations need to be reliable for continued travel, and ready to help the public evacuate from extreme conditions. We will include considerations to address extreme weather, infrastructure degradations, and cyber and physical security. We will explore and establish readiness capabilities to mitigate these risks. It starts with placing charging stations in suitable locations near interchanges and crossroads that are easily accessible, near commercial or public sites, and with adequate physical and cyber security, communications systems, and power aligned to priority grid capabilities. Beyond that, there are several developing capabilities which we will assess and implement when proven capable and needed.

There is a fledgling industry for mobile EV charging for these types of events. AAA currently offers this service to EV drivers in states such as Oregon and Colorado, where it has installed a large battery with Level II or DC Fast Charge capability on a truck. Similarly, Tesla installed super chargers on semi-truck trailers to provide surge capacity at high volume stations, a strategy that state DOTs could adopt in the future to assist motorists during emergency evacuation events.

There are also companies such as Ample that are pioneering modular, building-block-style EV battery technology that allows batteries to be changed in minutes and can accommodate any make, design, model, or driving profile. With a small footprint equivalent to two parking spots, they can be located at gas stations, grocery stores, or the side of the road on an evacuation route.

Strategies to Promote Strong Labor, Safety, Training, and Installation Standards

TxDOT expects vendors selected under this program to emphasize safety in all aspects of station development, installation, and maintenance. Various programs are available to ensure local contractors are knowledgeable and trained on the subject and the selected vendor is expected to take advantage of those resources. TxDOT will add training and certification criteria to the scoring matrix for vendor evaluation in the solicitation process.

Certification programs for EV Charging equipment: https://evitp.org/ or other registered Electrical Apprenticeship program that includes EVSE-specific training.

Civil Rights

All proposed planned guidelines and recommendations for the deployment of Electric Vehicle (EV) charging stations will be created pursuant to all federal, state, and local laws, regulations, and statutes to ensure compliance with the Americans with Disabilities Act (ADA) and Title VI of the Civil Rights Act of 1964 (Title VI). The ADA prohibits discrimination against persons with qualified disabilities regarding the usability and/or participation of all programs, services, activities, or benefits offered by TxDOT. TxDOT ensures that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any program or activity.

To support the assurances provided by the Executive Director of the agency, the following steps should be integral to the deployment and plan:

To comply with the ADA -

1. TxDOT will develop EV charging stations in accordance with ADA standards related to accessible parking spaces, including but not limited to Public Right-of Way Accessibility Guidelines (PROWAG) and Texas Department of Licensing and Registration (TDLR) guidelines.
2. TxDOT will follow the procedures based on the swim lane outlined in the ADA Transition Plan.
3. Procedures require signature authorization outlined in the ADA Transition Plan.
4. Recommend that TxDOT's Design Division (DES) leads the ADA compliance effort as it has with the design of curb ramps, sidewalks, and other accessibility requirements.
5. Public outreach events must be held in accordance with Section 504 of the Rehabilitation Act of 1973 (as amended) to generate public feedback from the disability community.
6. Recommend that the EV charging stations be included in the State Transportation Planning Map and included in the ADA "living" Transition Plan (Web App Viewer Tool).

To comply with Title VI -

1. Develop and complete an environmental checklist to meet program requirements.
2. TxDOT provides training to districts/division personnel regarding EV charging stations.
3. Educate the public regarding the availability of EV charging stations.
4. Conduct necessary public outreach events providing translation and interpretation services as needed to generate public feedback.

Equity Considerations

Identification and Outreach to (DACs) in the State

TxDOT and the state are committed to addressing not only initial EV range anxiety, but to enabling EV growth across the state regardless of location, demographics, or economic levels. Not surprisingly, initial EV growth in the state is largely in urban areas and related to areas with greater wealth, directly correlating with the high prices of initial EVs and the early needs to charge them at home or access limited charging sites. As the vehicle industry grows, and the models and prices decrease, we expect more overall affordability and access to passenger and light truck vehicles, either through direct ownership or shared vehicle services. As cities and metro regions commit local resources and are awarded grants, they will also be able to support transit fleets and local delivery freight.

Texas is aware some of its communities do not have sufficient resources or experience with EV and need both to improve their opportunities and access to their benefits. With the NEVI funding, we are equitably planning for EV charging capabilities between our rural and urban areas. Texas has extensive rural regions not only in the western half of the state, but also along the Texas-Mexico border, and areas along our borders with Oklahoma, Arkansas, and Louisiana. In the rural areas, we understand the initial densities of EVs may be lower but must ensure that the infrastructure reliably enables the long-range travel common in those areas as well as provide assurance that initial charging infrastructure is sufficiently nearby to supplement charging for local needs. To address this, approximately half of the NEVI formula funding for Texas is for proposed locations in rural areas. In addition to the charging stations along our alternate fuel corridors, which are through many of our rural areas, we have proposed charging stations near every county seat in the state. Those locations are at the crossroads of every county and are strong opportunities to support those areas with initial capabilities. This also ensures an expected common level of capability in every county. After the Electric Alternative Fuel Corridors are complete, TxDOT will host public outreach for counties and the communities they represent to validate the county seat approach. We are following a similar approach in the urban areas. We will start by using formulas to plan allocations according to similar approaches used in our infrastructure planning and accepted by our MPOs. This will allocate approximately half of the NEVI formula funding for Texas. We are engaging the MPOs to collaborate with all their communities and develop local needs, that recognize already existing infrastructure and focus on where needs aren’t addressed in underserved areas. In both our rural and urban areas, we will develop those plans with local leaders informed by their communities. Outreach to communities will occur through TxDOT Social Media channels and invitations to community leaders to attend statewide planning and coordination meetings with local governments during site selection and rollout. As we contract for capabilities, we will require the selected vendor to review, evaluate, and site locations within the TxDOT EV Study Area using federal requirements and guidelines made available by the Joint DOT/DOE office.

Process to Identify, Quantify, and Measure Benefits to DACs

TxDOT is experienced with measuring performance and reporting according to FHWA requirements. We recognize the value of performance-based planning and decision-making. As stated above, TxDOT and the state are committed to addressing not only initial EV range anxiety, but to enabling EV growth across the state regardless of location or economic levels. We anticipate the Joint DOE/DOT office or FHWA will establish national standards for measuring the benefits to the public such as air quality or job creation. In the meantime, there are examples from industry, other states, and current practices that we'll adapt to begin to internally track, measure and assess our performance through the lifecycle of managing the EV program. TxDOT will use resources made available on DriveElectric.gov to identify disadvantaged areas across the state. This information will be made available to planning partners and vendors to assist in site planning and analysis.

Benefits to DACs through this Plan

TxDOT acknowledges there may be initial difficulties measuring direct or indirect benefits in this plan. As mentioned earlier, we anticipate the Joint DOE/DOT office or FHWA will establish national standards for measuring the benefits. For example, installing charging stations in disadvantaged communities in both rural and urban areas do little for households with low vehicle ownership rates. However, the presence of charging stations could increase access to locally owned businesses while travelers charge their vehicles, providing additional income to local economies that can translate to overall growth in prosperity and wealth. Further indirect benefits shared by the greater community would be improved air quality due to zero mobile emission rates of electric vehicles. Finally, as electric vehicles become more available to all, access to charging stations will present decreased cost of ownership and operation.

Using resources available from DriveElectric.gov, TxDOT compared disadvantaged census tracts with proposed EV Study Areas on Alternative Fuel Corridors and County Seats. At the time of this draft 161 of 245 (65.7%) EV Study Areas are in census tracts identified as disadvantaged. $135M of $198M (68.1%) of the estimated funds for Alternative Fuel Corridors and County Seats are in census tracts identified as disadvantaged.

Labor and Workforce Considerations

In compliance with 23 CFR 680.106(j) to ensure that the installation and maintenance of chargers is performed safely by a qualified and increasingly diverse workforce of licensed technicians and other laborers, all electricians installing, operating, or maintaining Electric Vehicle Supply Equipment must receive certification from the Electric Vehicle Infrastructure Training Program (EVITP) or a registered apprenticeship program for electricians that includes charger-specific training developed as part of a national guideline standard approved by the Department of Labor in consultation with the Department of Transportation**,** if and when such programs are approved**.**

Texas is quickly becoming a hub of innovation and activity for the EV workforce. On December 1, 2021, Tesla relocated its corporate headquarters to its "Gigafactory Texas" just outside of Austin. As the largest EV vehicle manufacturer in the world and one of the largest owners of charging infrastructure, Tesla's presence in Central Texas has already begun to attract related sectors and corollary activities such as charging infrastructure.

But even prior to Tesla's arrival, Texas had already begun to ramp up its EV workforce. The Texas Advanced Energy Business Alliance (TAEBA) reported that Texas had 48,800 jobs in advanced electricity generation (i.e., solar, bioenergy, natural gas, wind, and nuclear power), 13,200 jobs in advanced grid and energy storage (i.e., battery storage, microgrid, and other grid technologies), 17,300 jobs in advanced vehicles (i.e., hybrid, electric, natural gas, and fuel cell vehicles).[1] More specifically, TAEBA reports that the electric transportation sector specifically employed more than 7,000 workers in more than 1,200 companies across the state in 2019. The number of workers is expected to grow to over 13,000 workers by 2024, and there are more than 5,000 Texas companies and more than 400,000 Texans in industries that could directly benefit from growth in the electric transportation sector.[2] Throughout the NEVI Formula Program, TxDOT expects the capacity of Texas' EV-related workforce to expand greatly and supply TxDOT with increasingly more and better providers to contract work with.

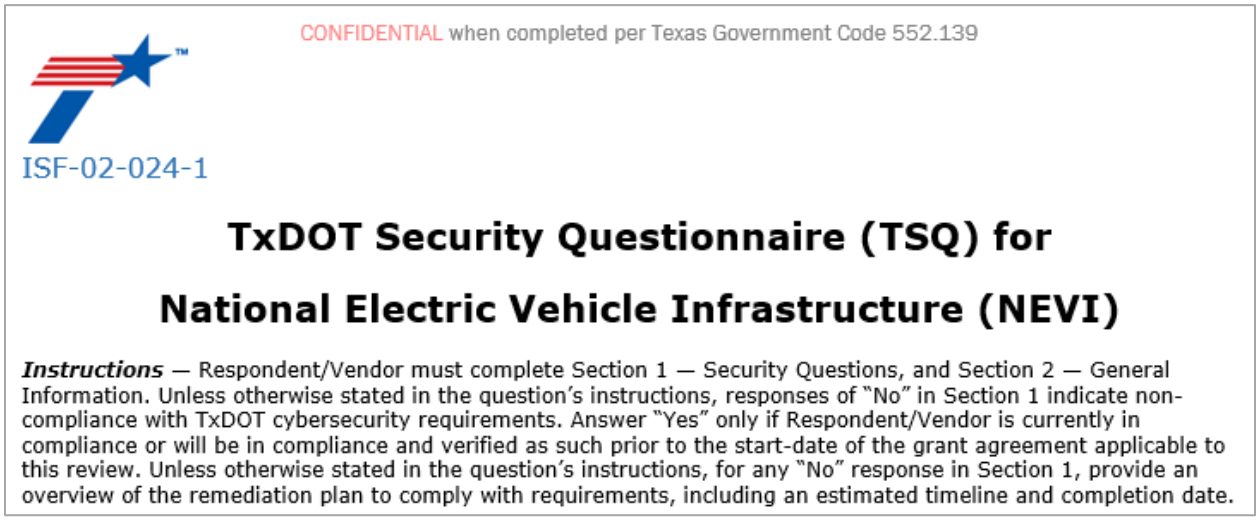
[1] TAEBA, Advanced Energy Jobs in Texas 2020, at https://www.texasadvancedenergy.org/hubfs/TX-Fact-Sheet-2020-TAEBA.pdf.
[2] TAEBA, Electric Transportation Supply Chain in Texas, at https://info.aee.net/hubfs/TAEBA/TAEBA-TX-Supply%20Chain-Study-2020.pdf.

Cyber Security

TxDOT is committed to ensuring that critical infrastructure transportation technologies of the future, including Electric Vehicle Charging Networks, do not pose a cybersecurity or personal privacy risk to Texas or the United States. Third parties contracted will own, operate, and maintain the EV charging stations as well as the data produced. They will be required to provide TxDOT anonymized data on a recurring basis. Third Parties will also be required to publish station location, power ratings, and costs to the various sites tracking EV charging stations, including the US Department of Energy Alternative Fuel Data Center.

As part of the contract, prior to issuance of the award or other funding, the third party will be required to provide a cybersecurity plan that demonstrates the cybersecurity maturity of the recipient and its compliance with applicable Texas, regulatory, and Federal cybersecurity requirements. The plan must also demonstrate how the recipient will maintain and improve cybersecurity throughout the life of the proposed solution. This will include requirements to maintain compliance with current and future cybersecurity requirements as well as alerting TxDOT and the Cybersecurity and Infrastructure Security Agency (CISA) of any known or suspected network or system compromises. At the end of the project the third party must provide evidence that the cybersecurity plan was properly implemented.

Exhibit 32 – TxDOT Cyber Security form for NEVI



CONFIDENTIAL when completed per Texas Government Code 552.139

ISF-02-024-1

TxDOT Security Questionnaire (TSQ) for

National Electric Vehicle Infrastructure (NEVI)

Instructions — Respondent/Vendor must complete Section 1 — Security Questions, and Section 2 — General Information. Unless otherwise stated in the question's instructions, responses of "No" in Section 1 indicate non-compliance with TxDOT cybersecurity requirements. Answer "Yes" only if Respondent/Vendor is currently in compliance or will be in compliance and verified as such prior to the start-date of the grant agreement applicable to this review. Unless otherwise stated in the question's instructions, for any "No" response in Section 1, provide an overview of the remediation plan to comply with requirements, including an estimated timeline and completion date.

Program Evaluation

Using tools developed to draft the EV plan, TxDOT will re-evaluate the network on an annual basis. This includes monitoring private sector development, examining usage data returned from installed equipment, and working with our planning partners to develop new locations and make necessary adjustments to existing locations.

Charging statistics and summaries will be included in the annual roadway inventory report found on TxDOT's website. Charging locations will be found in the departments Statewide Planning Map, and the EV Dashboard will continue tracking charging stations with weekly data updates from the Alternative Fuel Data Center.

Discretionary Exceptions

There are five sections along the Electric – Alternative Fuel Corridors that TxDOT is requesting an exception to the 50-mile spacing requirement.

1. IH 10 – 69.3 mile gap between Socorro and Sierra Blanca study areas.
2. IH 10 – 72.1 mile gap between Van Horn and Balmorhea study areas.
3. IH 10/IH 20 - 87.4 mile gap between the Pecos and Van Horn study areas.
4. IH 10 – 106.8 mile gap between the Fort Stockton and Ozona study areas.
5. IH 37 – 52.9 mile gap between the Sandy Oaks and Three Rivers study areas.

Items 1-4 are in west Texas with minimal private sector capacity to host stations. There are two safety rest areas that could remedy items 2-4, but federal law prevents this type of activity.

Exhibit 33 – Exception 1, IH 10 between Socorro Sierra Blanca.

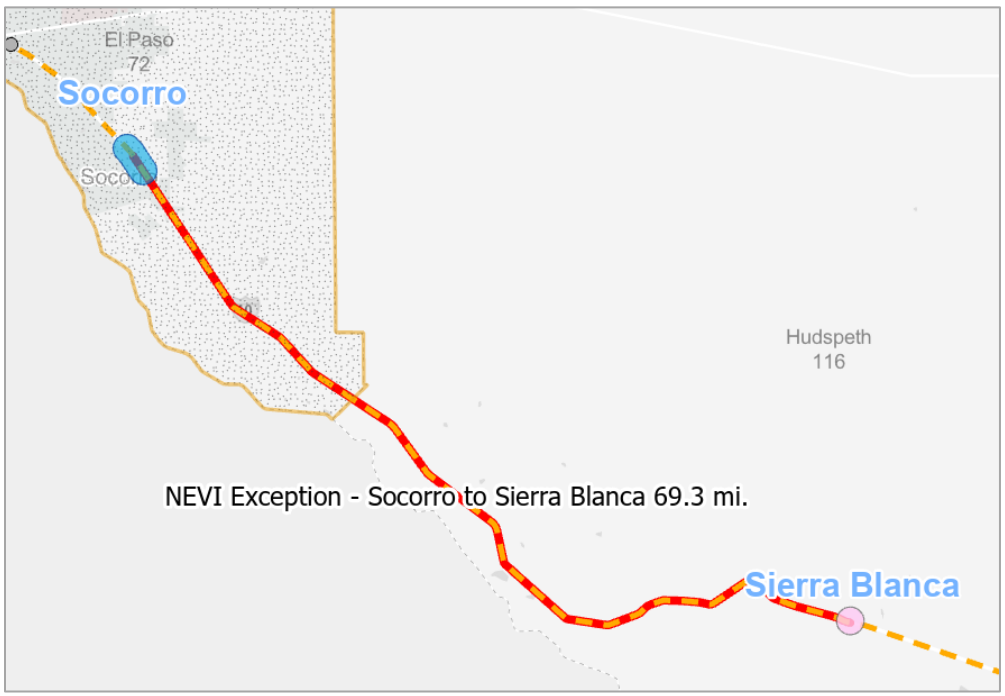


Exhibit 34 – Exception 2, IH 10 between Van Horn and Balmorhea.

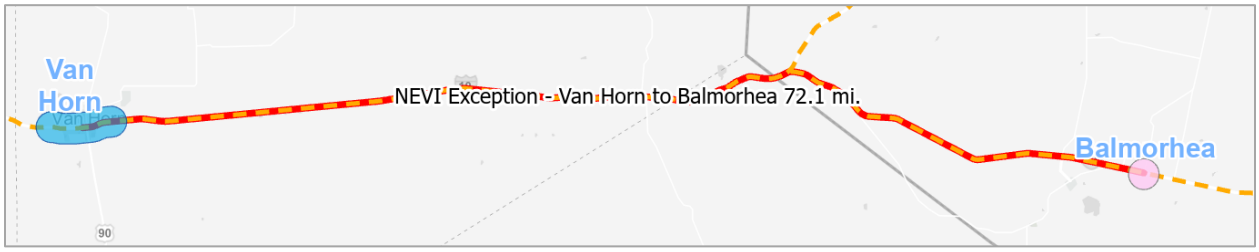


Exhibit 35 – Exception 3, IH 10/IH 20 between Pecos and Van Horn.

Exhibit 36 – Exception 4, IH 10 between Fort Stockton and Ozona.

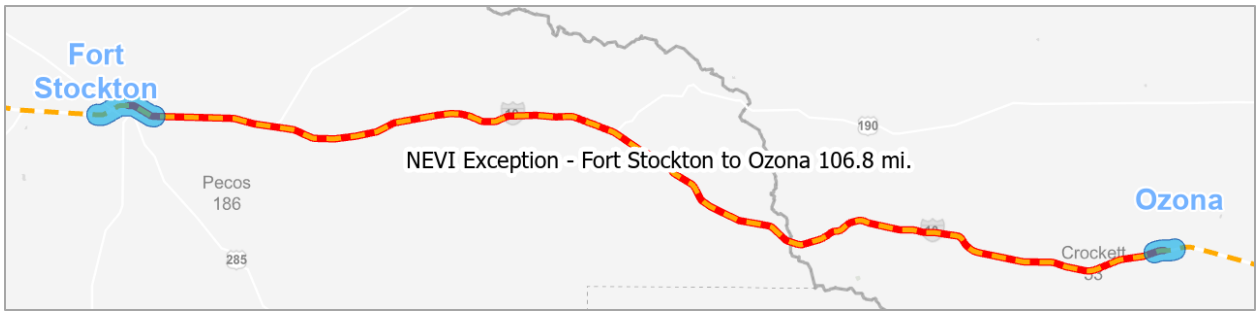
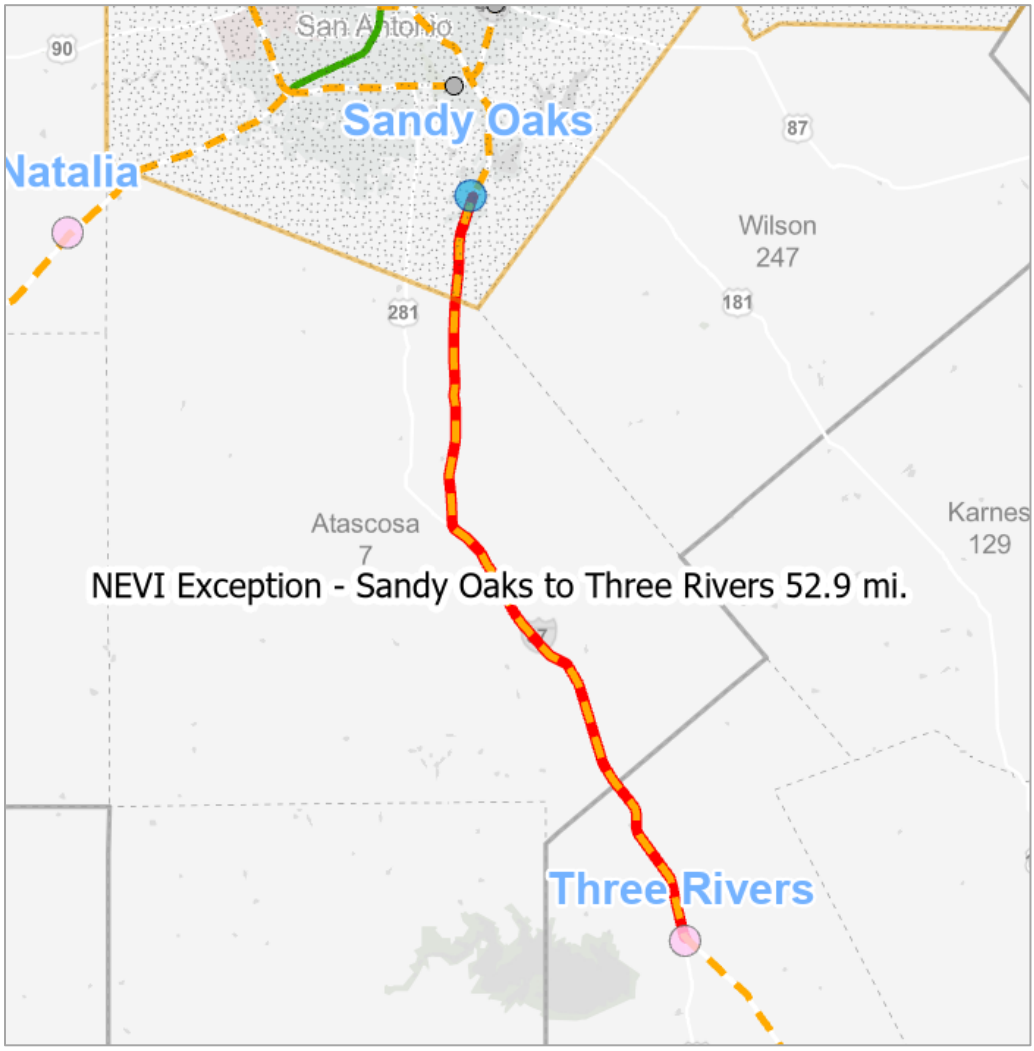


Exhibit 37 – Exception 5, between Sandy Oaks and Three Rivers.



Characteristics of Medium and Heavy-Duty Electric Trucks

Texas has seen a gradual increase in the adoption of medium and heavy-duty electric trucks, driven by companies desiring cleaner fleets and utilizing economic incentives. According to September 10, 2024 VIN data from the Texas Department of Motor Vehicles (provided by the Dallas-Fort Worth Clean Cities EV Registration Tool), there are approximately 3,438 electric delivery vans and 108 medium and heavy-duty electric trucks operating within the state. The ERCOT EV Allocation Summary forecasts medium and heavy-duty vehicles to grow significantly by 2029 to 225,000[3] *"adding 1.36% of load to ERCOT's electric load forecast in 2029, up from 0.14% in 2022".*

Medium-Duty Electric Trucks (Class 2B-5)[4]:

- Range: Typically, 100 to 200 miles on a single charge, depending on the battery size and load.
- Battery Size: Commonly range from 100 kWh to 200 kWh.
- Usage Scenarios: These trucks are often used for urban delivery services, utility work, and regional transport. They are favored for their reduced emissions in densely populated areas and lower operating costs over time.
- Availability: As of September 2024, an estimated 51 MD electric models were available from 30 EMs for the U.S. market, according to the Zero-Emission Technology Inventory[5]
- Examples: Models like the International eMV, the Freightliner eM2 and the BYD 8TT are popular choices in this category.

Heavy-Duty Electric Trucks (Class 6-8):

- Range: Typically, 200 to 350 miles on a single charge, with advanced models achieving up to 500 miles.
- Battery Size: Ranges from 300 kWh to 850 kWh, depending on the model and manufacturer.
- Usage Scenarios: These trucks are primarily used for long-haul freight, port drayage, and intercity transport. They are integral in reducing emissions in logistics hubs and along major transport corridors.
- Availability: As of September 2024, an estimated 59 HD electric models were available from 25 OEMs for the U.S. market, according to the Zero-Emission Technology Inventory[6]
- Examples: Prominent models include the Tesla Semi, Volvo VNR Electric, and Peterbilt 579EV.

Stops and mileage are provided to evaluate the typical range of medium and heavy-duty EVs, with scenarios of potential MHDV charging stops enumerated for illustration purposes.

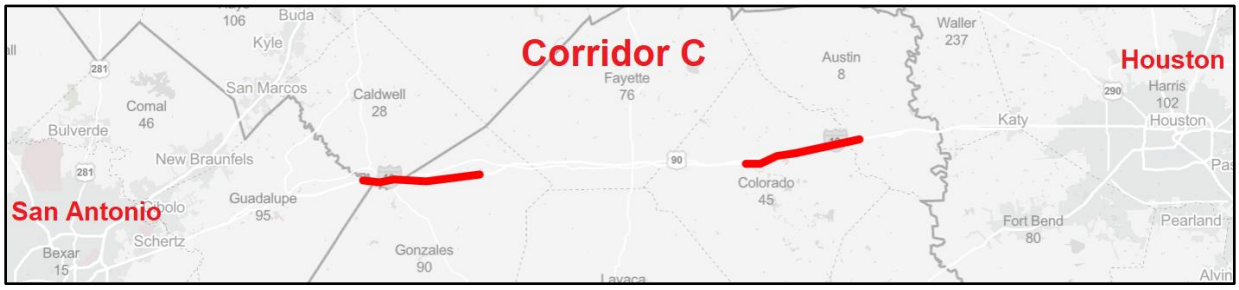
---

[3] https://www.ercot.com/files/docs/2023/08/28/ERCOT-EV-Adoption-Final-Report.pdf
[4] Medium and Heavy-Duty Truck Classes
[5] Global Commercial Drive To Zero Program — Zero-Emission Technology Inventory (ZETI) (globaldrivetozero.org)
[6] Global Commercial Drive To Zero Program — Zero-Emission Technology Inventory (ZETI) (globaldrivetozero.org)

Exhibit 38: Corridor lengths (from city center), mileage between stops, and potential charging stops.

Name	From	To	Corridor Length (mi)	Potential MHDV Charging Stops	Miles Between Stops
Corridor A	San Antonio	Laredo	150	2	50
Corridor B	San Antonio	Corpus Christi	136	2	45.3
Corridor C	San Antonio	Houston	200	2	66
Corridor D	San Antonio	DFW	250	3	62.5
Corridor E	San Antonio	El Paso	550	5	91.6
Corridor F	DFW	Houston	230	3	57.5
Corridor G	DFW	EL Paso	605	5	100.8
Corridor H	DFW	Texarkana	190	2	63.3
Corridor I	DFW	Shreveport	195	2	65
Corridor J	Lubbock	Amarillo	118	1	59

Exhibit 39: Illustration is provided to show distance between urban centers and spacing between two potential MHDV charging stops along a corridor; it is not a recommendation for EV truck stop locations.



Typical Usage Scenarios

Urban and Regional Delivery:

Medium-duty electric trucks are ideal for urban delivery services due to their range and payload capabilities. Companies like Amazon and UPS have integrated these trucks into their fleets for last-mile delivery, benefiting from the lower emissions and noise levels.

Utility and Municipal Services:

Electric trucks are increasingly used by utility companies and municipal services for tasks such as waste collection, maintenance, and infrastructure development. Their ability to operate quietly and with zero emissions is particularly beneficial in residential areas.

Long-Haul Freight:

Heavy-duty electric trucks are being adopted by logistics companies for long-haul routes. Although their range is currently shorter than diesel counterparts, advancements in battery technology and the expansion of charging infrastructure are making them more viable for longer distances.

Port Drayage:

Electric trucks are particularly well-suited for port drayage operations, which involve short-distance transport of goods between ports and nearby warehouses or distribution centers. This reduces the environmental impact in port areas, which are often heavily polluted.

Construction and Mining:

Both medium and heavy-duty electric trucks are being tested and adopted in the construction and mining industries. Their ability to provide high torque from standstill is advantageous for heavy lifting and hauling in these sectors.

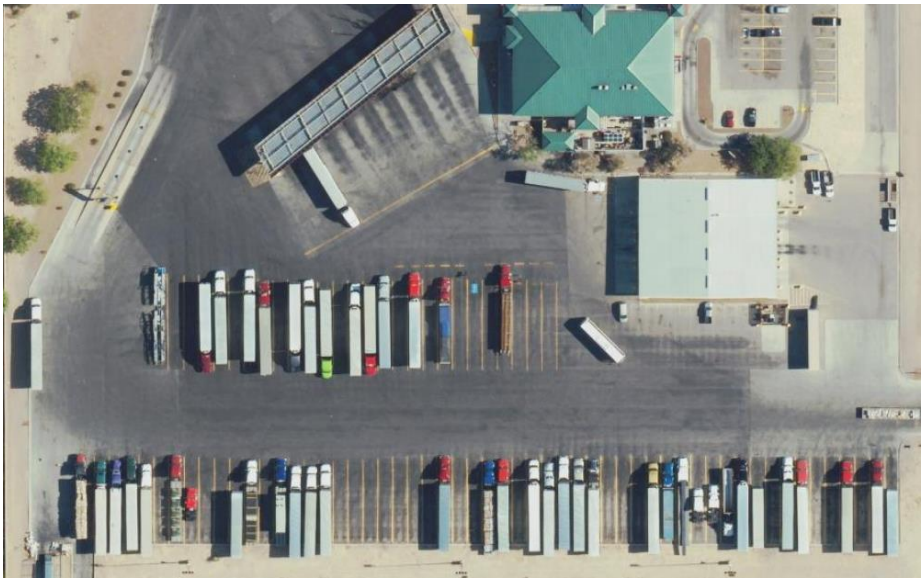
Single Truck Stop Conversion Estimate

This sample is based on a truck stop along I-10 in El Paso[7]. At the sample location there are 12 pull through diesel pumps. In this scenario the 12 diesel pumps are replaced with 12-megawatt class Direct Current Fast Charge (DCFC) dispensers and all necessary electrical/utility equipment for operation.

The maximum power rating for the truck stop after electrification conversion would be 12 MW. As a point of reference, the peak load for the Empire State Building is approximately 9-10 MW[8], and a typical data center is approximately 100-300 MW[9].

- Twelve (12) One MW rated DCFC dispensers and necessary electrical equipment/upgrades
  - 12 MW (max power if all dispensers used at their max rate at the same time)
  - $6M construction cost estimate for stations, equipment, dispensers, etc.
    - Use of federal funding, which typically requires BABA could increase costs
  - $3M construction cost estimate for electrical substation/distribution network upgrade
    - Lead time 3-5 years

Exhibit 40: Sample Truck Stop



[7] Sample Truck Stop
[8] Figure 21. *Electric Highways: Accelerating and Optimizing Fast-Charging Deployment for Carbon-Free Transportation.* November 2022. https://www.nationalgrid.com/document/148616/download
[9] Data Center Power

Mass Conversion Estimate

Extrapolating the single conversion estimate above to all 2,791 diesel pumps identified at 462 public truck stops in the Texas Delivers 2050 - Texas Freight Mobility Plan[10], we can develop a hypothetical estimate for the required power and cost of electrifying truck stops.

- 2,791 One MW rated DCFC dispensers and necessary electrical equipment/upgrades
    - 2.719 GW (max power if all dispensers used at their max rate at the same time)
    - $1.39B construction cost estimate for stations, equipment, dispensers, etc.
    - $1.3B construction cost estimate for electrical substation/distribution network upgrade

Max Power estimate: ((2,791 dispensers * 1000 kW) /1,000 MW)/1,000 GW = **2.791 GW**

Construction Cost estimate: (2,791 dispensers and equipment * $500,000) = **$1,395,500,000**

Electrical substation/distribution network upgrades cost estimate (1 for each of the sites identified in the Texas Freight Mobility Plan): (462 locations * 3,000,000) = **$1,386,000,000**

Note: *This estimate is for illustration purposes only and does not represent any professional analysis of what a mass conversion could require. Truck stops in Texas, today, only maintain a 78% utilization rate. Electricity costs will vary by region and can change significantly over time, as will the power needed to charge batteries that are projected to become more efficient and powerful in the future.*

[10] https://www.txdot.gov/projects/planning/freight-planning.html