

Electric Utility and Local Government Electric Vehicle Working Group

Bailey Muller, Senior Planner

North Central Texas Council of Governments

August 27, 2021



Dallas-Fort Worth
CLEAN CITIES



North Central Texas
Council of Governments



WORKING GROUP GOALS & OBJECTIVES

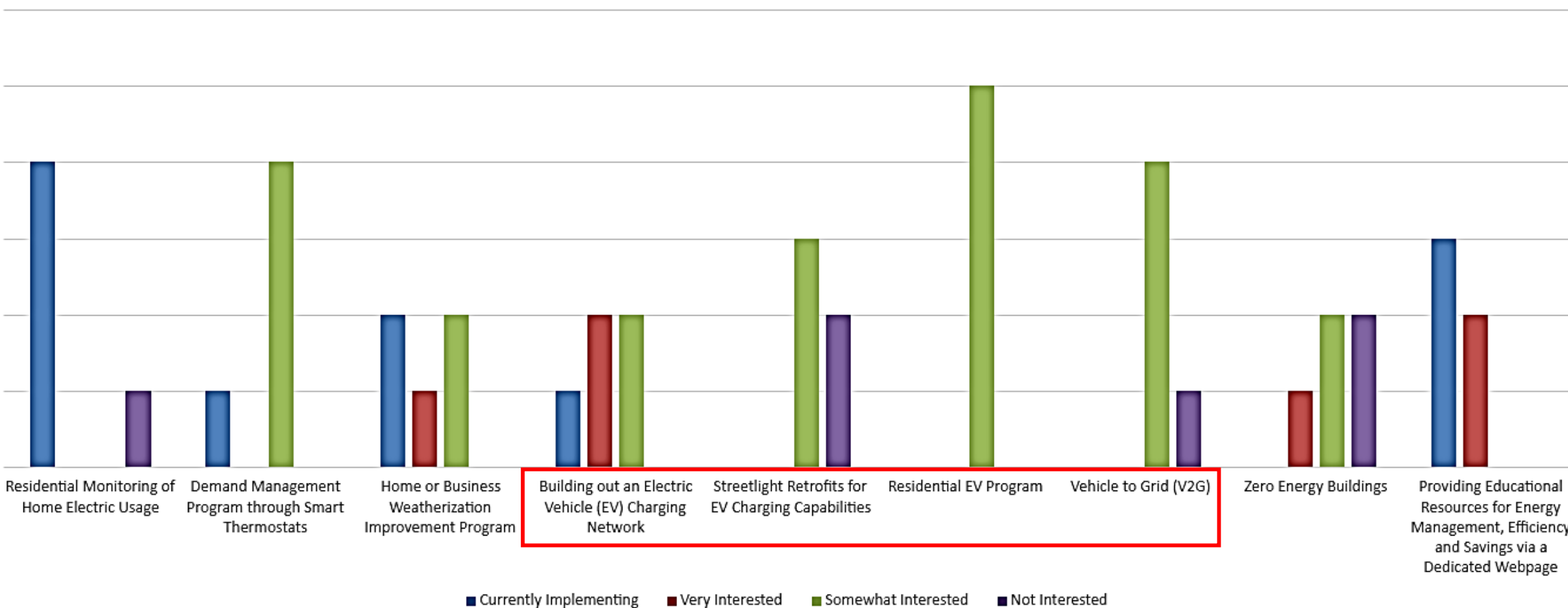
GOAL: Facilitate a working group of regional electric utilities and local governments to expand utility roles with electric vehicle (EV) incentives, rates, policies, and programs through a facilitated peer exchange

OBJECTIVES:

- Address challenges related to electric utilities and transportation electrification
- Provide support and resources to guide utilities forward
- Identify solutions, strategies, and best practices using the collaborative feedback from the working group

UTILITY SURVEY RESULTS

Utility Interest in Designing and Implementing Energy Efficiency or Management Programs for Residents or Businesses



WHY ITS IMPORTANT

Many Utilities are Facing Significant Changes Given the Increased Focus on:

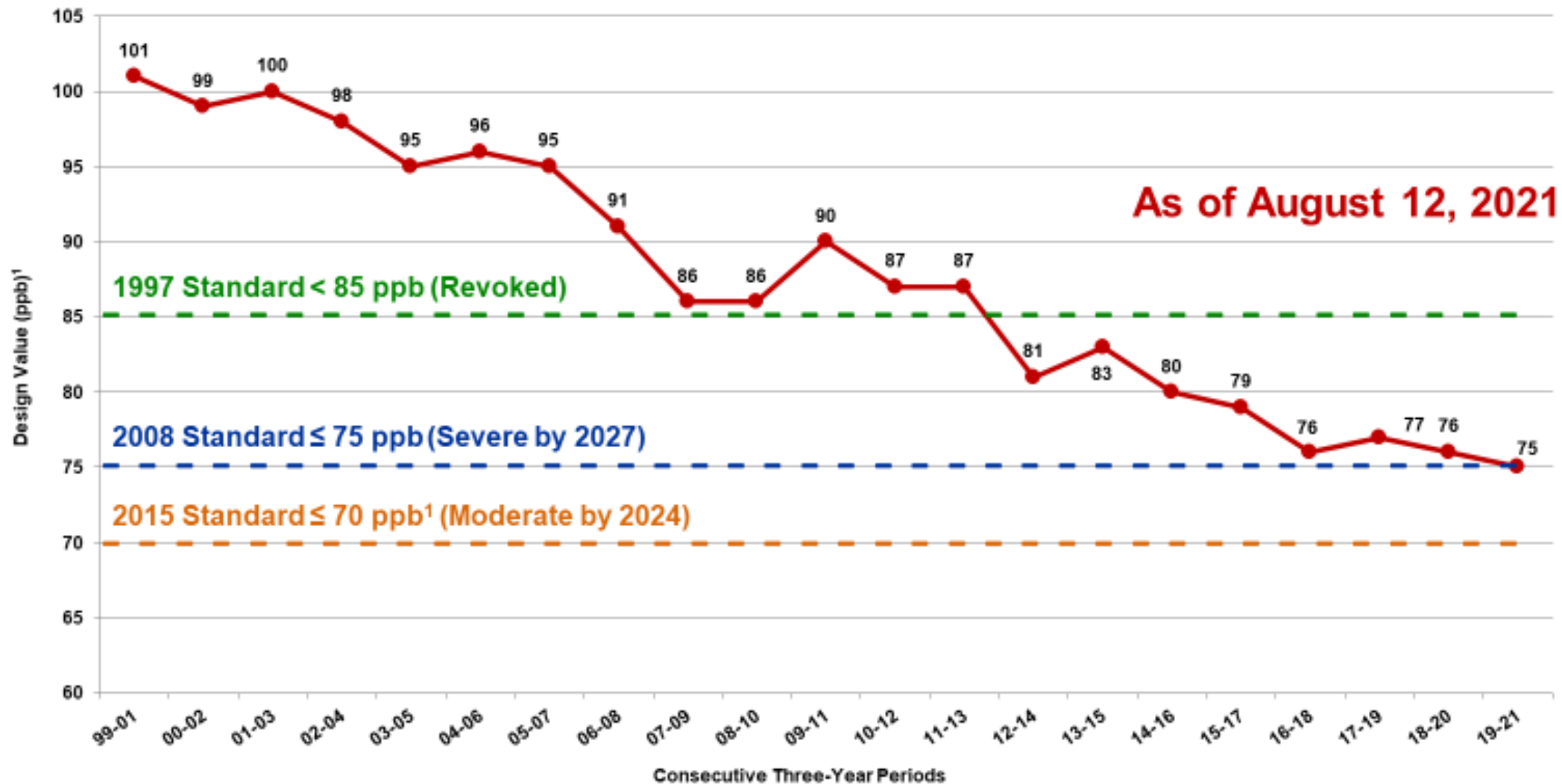
- Environmentally Conscious Operations (Ex: Reducing Overall Emissions)
- Distributed Generation (Ex: Solar)
- New Loads (Ex: EVs)
- New Customer Technologies (Ex: Smart Homes)

Utilities Can Play a Critical Role in EV Success by:

- Incentivizing Consumers
- Protecting and Modernizing the Grid
- Implementing Charging Infrastructure

EVS IN NORTH TEXAS

8-HOUR OZONE NAAQS HISTORICAL TRENDS



As of August 12, 2021

¹Attainment Goal - According to the US EPA National Ambient Air Quality Standards, attainment is reached when, at each monitor, the Design Value (three-year average of the annual fourth-highest daily maximum eight-hour average ozone concentration) is equal to or less than 70 parts per billion (ppb).

Electric Vehicles produce no emissions, so higher EV adoption rates can help decrease ozone trends

STATE OF EVs IN TEXAS

50,570 EV's in Texas as of August 2021



**Fuel Cell
Electric
Vehicle
(FCEV)**



**Plug-In Hybrid
Electric Vehicle
(PHEV)**

**~27% of
Registered EVs**



**Battery Electric
Vehicle (BEV)**

**~73% of
Registered EVs**

ELECTRIC VEHICLES BY THE NUMBERS



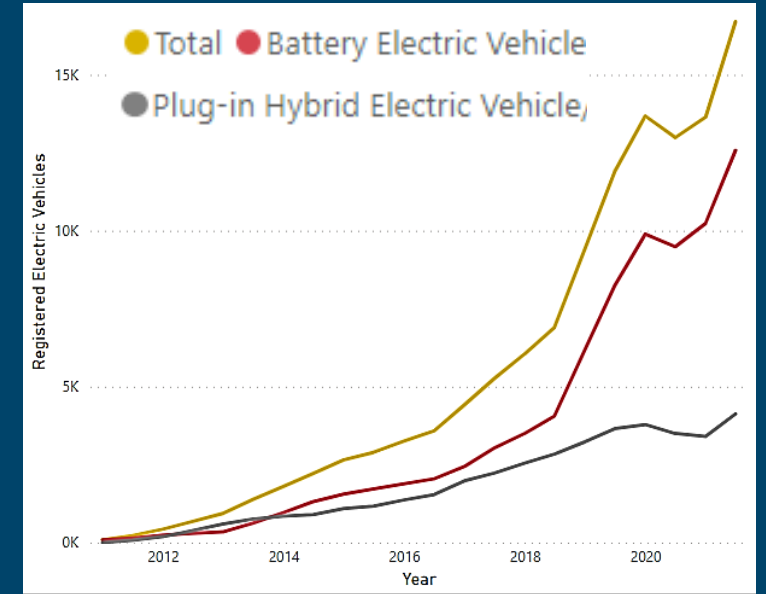
18,083

Electric Vehicles in North Texas in August 2021



32.5%

Average Annual Growth Rate of EVs in North Texas from 2015-2020



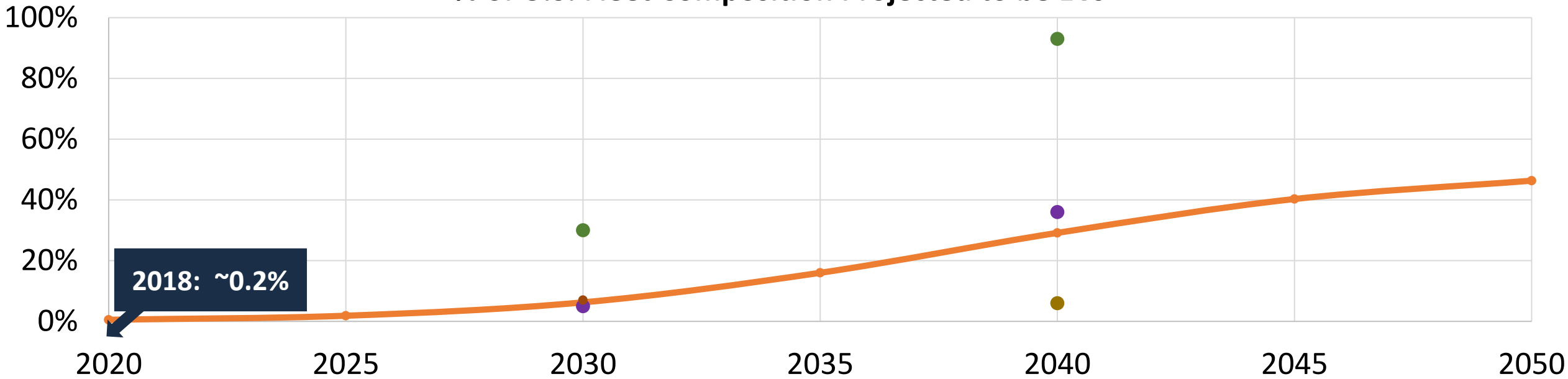
North Texas Historic EV Trendline 2011-2021



All EV registration data can be found on interactive online tools housed on Electric Vehicle North Texas webpage at www.dfwcleancities.org/evnt

US FLEET COMPOSITION EV PROJECTIONS

% of U.S. Fleet Composition Projected to be EVs



Nationwide Charger Deployments:

Current: ~44,000¹

Biden Administration goal: 500,000 by 2030

- Energy Innovation Policy & Technology LLC - Policy Simulator (2019)
- International Monetary Fund (Fast-adoption)
- International Monetary Fund (Slow-adoption)
- Edison Electric Institute Report (November 2018)
- Texas A&M Transportation Institute: Alternative Fuel Vehicle Forecasts (April 2016)

¹[Alternative Fuels Data Center: Alternative Fueling Station Locator \(energy.gov\)](https://www.energy.gov/alternative-fuels-data-center/alternative-fueling-station-locator)

AUTO INDUSTRY SHIFT

Ford: 40 EVs by 2022: 16 BEVs, 24 PHEVs; investing \$11 billion by 2022

General Motors: 30 EV models by 2025, Carbon Neutral by 2040; investing \$27 billion by 2025

Honda: 2/3 of all sales to be electric by 2030; every car in the lineup will be EV or hybrid by 2022

Hyundai/Kia: 34 EV models by 2025; investing \$87 billion by the end of 2025






Toyota: Half of all sales electric by 2025

Volkswagen: 70 electrified models by the end of 2028; investing \$91 billion in vehicle electrification

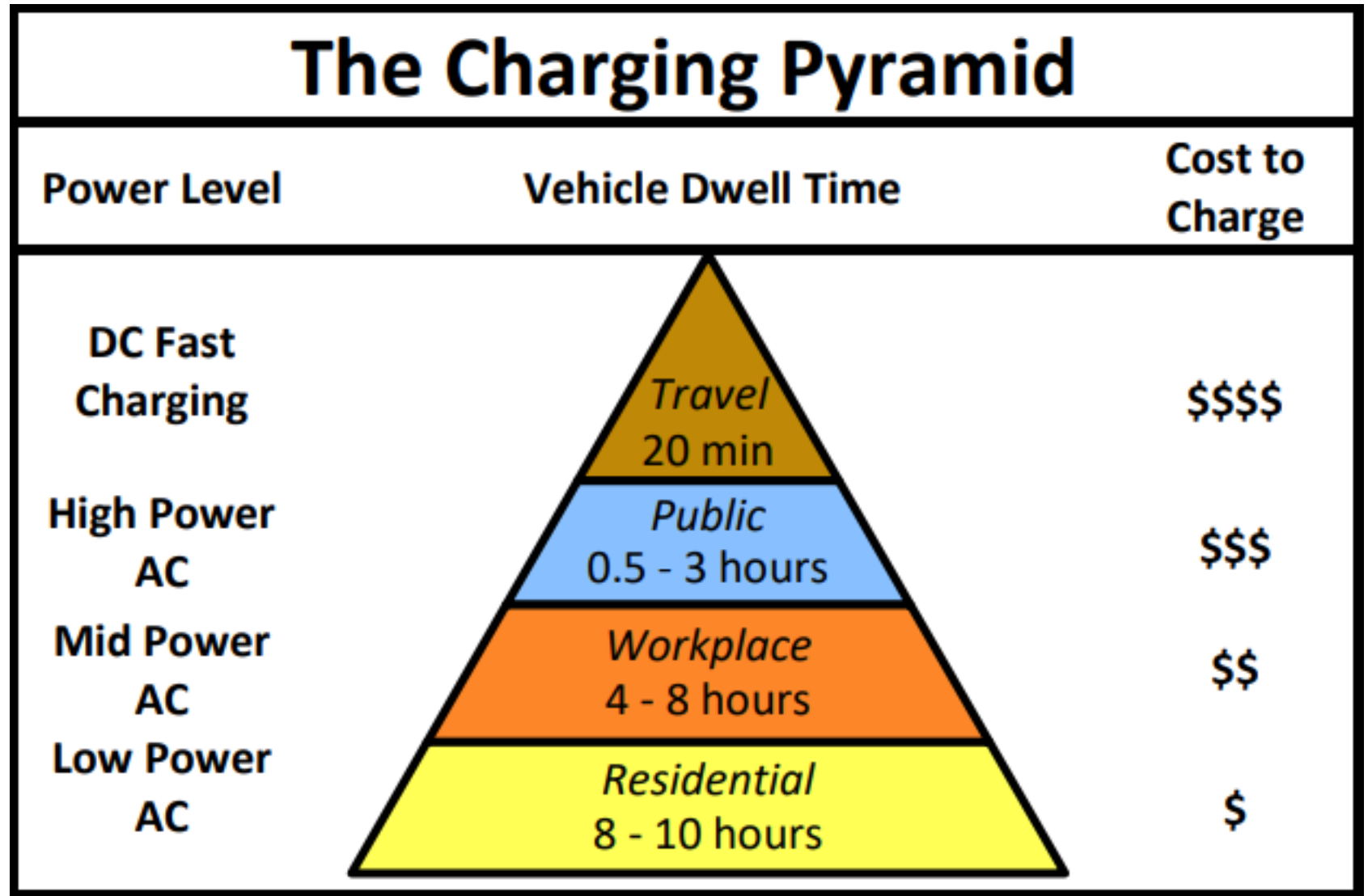
Volvo: Half of all sales electric by 2025, fully electric by 2030

Mazda, Mitsubishi, Nissan: Carbon Neutral by 2050

LEVELS OF EV CHARGING INFRASTRUCTURE

Type	Connector	Range per Hour of Charging Time	Typical Station Cost with Installation
Level 1 120 Volts AC	 J1772 charge port	2 to 5 miles	Nominal
Level 2 208/240 Volts AC	 J1772 charge port	10 to 20 miles	\$1,100-\$21,000
DC Fast Charge 200-500 Volts DC	   CCS charge port CHAdeMO charge port Tesla charge port	180 to 240 miles	\$23,000-\$90,000

CHARGING HIERARCHY



Based on Location Type and Average Time Spent, Different Charging Levels May be Better Suited by Site than Others

APPLY NOW FOR LEVEL 2 CHARGERS

Texas Volkswagen Environmental Mitigation Program – Level 2 Charging Equipment

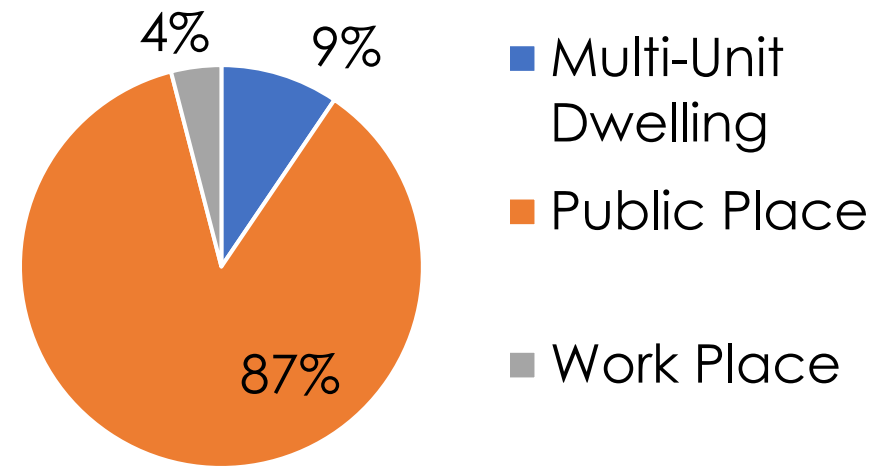
- **Application Deadline **September 9, 2021**, ~24 Months to Complete Project**
- Up to \$2,500 per Charger
- Can Combine w/Federal Tax Credit of 30% if Installed by 12/31/2021
- www.texasvwfund.org, click on “Grants”

Good For:

- Workplaces
- Multifamily Properties
- Public Sites with Long Dwell Times
(e.g. Large Retail, some Restaurants)

1701 Sites Requested Statewide

Data Posted as of 8/23/21



For a full list of available funding opportunities, visit www.nctcog.org/aqfunding

UTILITIES AND EVS

UTILITIES ROLE IN THE EV INDUSTRY

Utilities Have an Essential Role in Enabling and Connecting EVs:

- Helping to Speed its Development
- Informing Siting of EVSE to Keep Costs Low and Ensure Adequate Grid Capacity
- Supporting Development and Capacity in Areas that Might Otherwise be Overlooked or Underserved, Such as Low-Income

EVs Can be a Substantial Source of System Benefit with:

- Right Mix of Utility Policies and Programs that Reflect the Market Structure, Supply Mix, Load Dynamics, Social Goals, and Other Characteristics in a Jurisdiction

WHY SHOULD ELECTRIC UTILITIES & CUSTOMERS CARE ABOUT EVS?

GRID OPTIMIZATION	EV charging during off-peak hours can fill nighttime load valleys and increase system load factors creating better load management and create a more efficient grid. This can also help lower distribution costs.
RESILIENCY AND SYSTEM RELIABILITY	<p>Certain EVs may be able to function as distributed storage resources (ex: backup power) and power the grid for emergency response.</p> <p>Vehicle-to-grid (V2G) integration and other solutions may also benefit the grid as more vehicles become V2G capable</p> <ul style="list-style-type: none">• Nissan only vehicles with V2G capability today• Volkswagen and Mitsubishi both made V2G announcements for their EVs
ADDITIONAL UTILITY REVENUE	Well-managed EV charging may make new electricity demand desirable, which can increase utility revenue and profit where applicable

CHALLENGES FOR UTILITIES WITH INCREASED EV PENETRATION

High EV Penetration Could Pose Challenges to a System that is Unprepared for it

If Utilities Respond to Increased EV Loads Late & Reactively, it Could:

Shorten the Life of Grid Infrastructure Components

Require Greater Investment in Peak and Flexible Capacity

Make the Grid Less Efficient

May Increase Unit Costs of Electricity for all Consumers

Increase Grid-Power Emissions

Make the Grid Less Stable and Reliable

WHAT OPTIONS DOES AN UTILITY HAVE REGARDING EV ADOPTION?

UTILITY PROGRAMATIC OR INTERNAL OPTIONS

EVSE Installations:	Invests in EVSE stations within its operating area.
Education and Outreach:	Shares information or hosts events to educate its customers and the public about EVs and EVSE.
Fleet Investments/ Demonstrations:	Invests in EVs for its fleet. Demonstration programs such as <u>DFW Clean Cities Try & Drive Alternative</u> allows you to test the technology before committing fully.
Workplace Charging:	Offers and promotes a workplace charging program for its employees and customers visiting its facility.

North Texas Examples:

Oncor Electric Delivery

- Drive Electric, Be the Change Campaign
- Fleet transition/ EV – WATTS Data Sharing
- Chargers at headquarters

CoServ

- EV Education at Annual Meeting
- Customer EV Choice Tool on Website

PenTex Energy

- Currently Building out EV Infrastructure Network

WHAT OPTIONS DOES AN UTILITY HAVE REGARDING EV ADOPTION?

CUSTOMER FACING OPTIONS

EVSE Incentives:	Provides financial and/or technical support for customers to install EVSE and/or to charge during off-peak hours.
EV Incentives:	Provides financial support for customers to purchase or lease EVs.
Rate Design:	Designs a whole-house or EV-only time-of-use (TOU) rate, bill credit, or other rate-based program.
Advanced Metering Infrastructure (AMI):	Offers incentives to customers who allow the installation of a meter that evaluates charging station usage/charging behaviors or controls EV charging during peak demand.

North Texas Examples:

United Cooperative Services

- Offers rebate of 50% up to \$500 of install cost for Level 2 residential charger

Denton Municipal Electric

- GreenSense Incentive Program – \$300 rebate for purchase of EV or PHEV

OPEN DISCUSSION

HIGHLIGHTS FROM:

ERCOT

Oncor Electric Delivery

Bandera Electric Cooperative

Green Mountain Energy



**2022 LTSA
EV Update and Input Assumptions**

August 27, 2021

LTSA Background

- The **Long-Term System Assessment (LTSA)**, released in December of even-numbered years, evaluates the potential needs of the ERCOT high-voltage system 10-15 years into the future, providing a scenario-based view of long-term needs
 - ERCOT staff works closely with stakeholders to understand trends and future expectations, and stakeholders work within the **Regional Planning Group (RPG)** to identify the long-term planning scenarios
 - Multiple Scenarios are typically evaluated with a variety of input assumptions

http://www.ercot.com/content/wcm/key_documents_lists/189757/2020_LTSA_Review_Dec2020.pdf

Updates to Base EV Assumptions

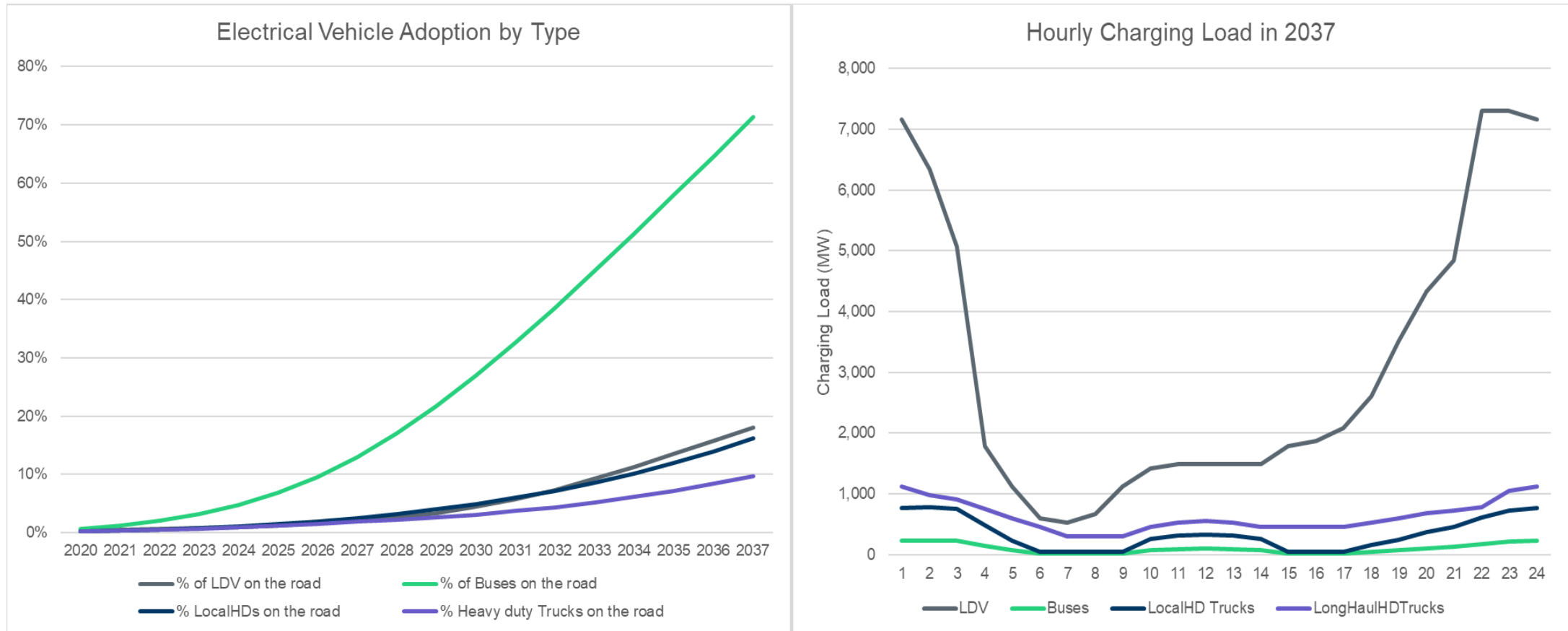
	Reference	1 Approximate Number of Light Duty Vehicles (Cars and Trucks)	3 % of Miles Driven by Buses	% of Miles Driven by Short Haul Trucks	5 % of Miles Driven by Long Haul Heavy Duty Trucks
2022 LTSA	2020 BNEF (Adjusted)	2 3.6M	4 71%	16%	10%
2020 LTSA	2018 BNEF	3M cars and 0.6M light duty trucks	N/A	N/A	N/A

Assumptions cited correspond to the 2035 study year for the 2020 LTSA and 2037 study year for the 2022 LTSA

1. Light duty vehicles merges cars and pickup trucks and maintains different adoption rates for each
2. Assumed EV growth determined by adjusting BNEF projection (time-shifting curve to match actual sales 2015-2020)
3. Expands previous 3 categories to 4 categories by splitting out Short Haul trucks from buses due to charging patterns/metrics available
4. Includes estimate of miles driven by trucks since growth projections now exist that were not available in time for the 2020 LTSA
5. Electric load is based on miles driven which is based on TXDOT and TEA data for trucks and buses

Electric Vehicle Adoption

- Electric vehicle adoption by type based on adjusted Bloomberg New Energy Finance (BNEF) 2020 projection and hourly charging load in 2037



- Questions?