



NCTCOG PRESENTATION

# Electric Vehicle Infrastructure Building Standards

BAILEY MULLER | 7.30.2021

# Working Group Goals

**GOAL:** Develop Regional Resources to Provide Consistency in EV-Capable and EV-Ready Construction



# Electric Vehicles by the Numbers



17,389

Electric Vehicles in North Texas in July 2021



32.5%

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



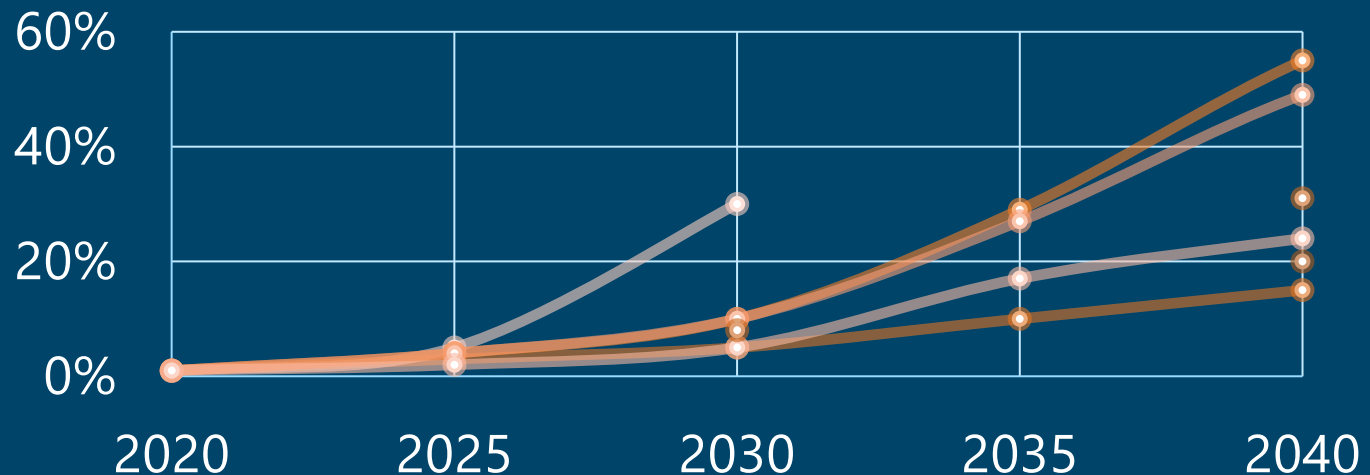
0.67%

EV percentage of total vehicles in North Texas in July 2021



UP TO 55%

EV percentage of total vehicles forecasted by 2040



**Forecast sources:**  
Exxon Outlook for Energy, Bloomberg New Energy Finance, BP Energy Outlook, International Energy Agency

# 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

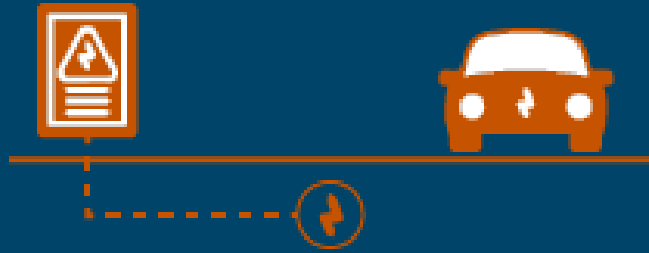
**Toyota**: Half of all sales electric by 2025

**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

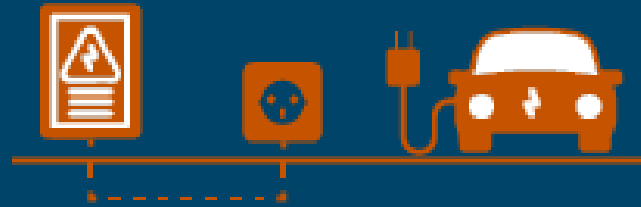
**Mazda, Mitsubishi, Nissan**: Carbon Neutral by 2050

# EV Parking Infrastructure Specifications



## EV-CAPABLE

**Electrical Panel  
Capacity  
+ Branch Circuit  
+ Raceway**



## EV-READY

**EV-Capable  
+ 240-volt outlet**



## EV-INSTALLED

**Install a Minimum  
Number of Level 2  
EV Charging Stations**

# PLAN EARLY AND SAVE



Planning to incorporate EV-Readiness in construction or new-builds can save properties money

**4x-6x**  
less expensive

The cost to install EV-Capable infrastructure during new construction than during a stand-alone retrofit. Source: [Energy Solutions, 2019](#)

**0.1%-0.5%**

Total cost added to new construction project to add EV-ready for multi-family residential. Source: [California Air Resources Board, 2018](#)

Why Retrofits are **more expensive** than EV-readiness in new construction:

- Demolition and repair of surface parking
- Breaking and repairing walls
- Longer conduit runs (raceways)
- Upgrading electric service panels
- Soft costs: permits, plans, inspections, and project management

# International Codes Background

Commercial and Residential EV Infrastructure Requirements were proposed as part of the 2021 International Energy Conservation Codes (IECC)

## Covered

EV Capable and EV Ready minimum parking space standards based upon amount of total available parking spaces for Commercial and Residential new construction

## Overtured by Board

**Spring 2020:** Proposed EV requirements approved by the online vote of ICC Members

**October 2020:** ICC Board of Directors voted to overturn the proposal for EV readiness through an appeal, claiming that these updates do not meet the stated intent of the model code to conserve energy.

# Examples of EV Ready Goals/Standards

Municipality	State	Year	Type	Single-family	Multi-family	Commercial
<a href="#">St. Louis</a>	MO	2021	Ordinance	1 EV-Ready Space per dwelling Unit	2% EV-Installed, 5% EV-Ready (increases to 10% in 2025)	2% EV-Installed, 5% EV-Ready
<a href="#">Madison</a>	WI	2021	Ordinance	-	2% EV-Installed, 10% EV-Ready (increases by 10% every 5 years)	1% EV-Installed (increases by 1% every 5 years), 10% EV-Ready (increases by 10% every 5 years)
<a href="#">Denver</a>	CO	2020	IBC / IRC	1 EV-Ready Space per dwelling Unit	5% EV-Installed, 15% EV-Ready, 80% EV-Capable	5% EV-Installed, 10% EV-Ready, 10% EV-Capable
<a href="#">Honolulu</a>	HI	2020	Ordinance	1 EV-Capable Space per dwelling unit	25% EV-Ready (8+ spaces)	25% EV-Ready (12+ spaces)
<a href="#">Chicago</a>	IL	2020	Ordinance		20% EV-Ready (5+ spaces)	20% EV-Ready (30+ spaces)
<a href="#">Salt Lake City</a>	UT	2019	IBC / IRC + Zoning Ordinance		1 EV-Installed Space for every 25 parking spaces	
<a href="#">Massachusetts</a>	MA	2019				1 EV-Ready space (15+ spaces)
<a href="#">Seattle</a>	WA	2019	Ordinance	1 EV-Ready Space per dwelling Unit	100% EV-Ready up to 6 space, 20% for parking lots with 7+ spaces	10% EV-Ready
<a href="#">Oakland</a>	CA	2018	IBC / IRC		10% EV-Ready, 90% "Raceway Installed", 20% total panel capacity	10% EV-Ready, 10% "Raceway Installed", 20% total panel capacity
<a href="#">Atlanta</a>	GA	2017	Code of Ordinances	1 EV-Capable Space per dwelling Unit	20% EV-Capable	



# OPEN DISCUSSION