Using Clean Cities Tools to Implement Electric Vehicle (EV) and EV Infrastructure Goals

October 1, 2020
2:30 to 4:00 p.m. (CST)
Thank you to our Dallas-Fort Worth Clean Cities sponsors!

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TODAY’S AGENDA

Welcome and Introductions

EV 101 and Goals to Increase the Deployment of EVs and EV Supply Equipment (EVSE)

Municipal EV Goals Discussion

Interactive Training with Clean Cities & Department of Energy Tools

Discussion of Potential Department of Energy Grant Proposal
1 Attainment 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).
NITROGEN OXIDE (NO\textsubscript{x}) EMISSION SOURCES

Total Nitrogen Oxides (NO\textsubscript{x}) = 234.75 tons per day (tpd)

- On-Road Mobile: 88.27 tpd
- Non-Road Mobile: 38.18 tpd
- Off-Road Mobile: 30.95 tpd
- Point (Excuding Oil & Gas): 30.05 tpd
- Area: 34.47 tpd
- Point (Oil & Gas): 6.04 tpd
- Oil & Gas (Production & Drill Rigs): 6.79 tpd

- Light-Duty Vehicles: 36.18 tpd
- Medium-Duty Vehicles: 9.81 tpd
- Heavy-Duty Vehicles: 42.28 tpd
EMISSIONS IMPACT OF PASSENGER CARS

**GHG Emissions**

- **ICE**
- **HEV**
- **PHEV10 (US Mix)**
- **US Mix**
- **NGCC**
- **Other Renewable**

**NOx: Total**

- **ICE**
- **HEV**
- **PHEV10 (US Mix)**
- **US Mix**
- **NGCC**
- **Other Renewable**

ICE=Internal Combustion Engine; HEV=Hybrid Electric Vehicle; PHEV=Plug-In Hybrid Electric Vehicle; NGCC=Natural Gas Combined Cycle; GHG=Greenhouse Gas

Source: Argonne National Laboratory Well-to-Wheels Emissions Calculator; https://greet.es.anl.gov/results
ELECTRIC VEHICLES 101

North Texas Registered EVs:
30% PHEV
70% BEV

Hybrid Electric Vehicle (HEV)
Plug-In Hybrid Electric Vehicle (PHEV)
Electric Vehicle (EV) or Battery Electric Vehicle (BEV)
## LEVELS OF EV CHARGING INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Type</th>
<th>Connector</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 1</strong></td>
<td><img src="image" alt="J1772 charge port" /></td>
<td>2 to 5 miles per 1 hour of charge</td>
</tr>
<tr>
<td>5 in North Texas</td>
<td></td>
<td>J1772 charge port</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="J1772 charge port" /></td>
<td>10 to 20 miles per 1 hour of charge</td>
</tr>
<tr>
<td><strong>Level 2</strong></td>
<td><img src="image" alt="J1772 charge port" /></td>
<td>10 to 20 miles per 1 hour of charge</td>
</tr>
<tr>
<td>408 in North Texas</td>
<td></td>
<td>J1772 charge port</td>
</tr>
<tr>
<td><strong>DC Fast Charge</strong></td>
<td><img src="image" alt="J1772 combo" /> <img src="image" alt="CHAdeMO" /> <img src="image" alt="Tesla combo" /></td>
<td>60 to 80 miles per 20 minutes of charge</td>
</tr>
<tr>
<td>56 in North Texas</td>
<td></td>
<td>J1772 combo CHAdeMO Tesla combo</td>
</tr>
</tbody>
</table>

**Plus 55 Tesla Destination Chargers & 10 Tesla Superchargers In North Texas**

Source: U.S. DOE, [https://afdc.energy.gov/stations/#/find/nearest](https://afdc.energy.gov/stations/#/find/nearest)
DAY IN THE LIFE OF AN AVERAGE CAR

Based on Location Type and Average Time Spent, Different Charging Levels May be Better Suited by Site than Others.
SETTING EV GOALS
TYPES OF EV GOALS

Vehicle Goals
- Internal Fleet
- Vehicles Within Jurisdictional Boundaries

Infrastructure Goals
- Amount of Charging Stations
- EV-Ready Construction
- Accessibility
### REGIONAL EXAMPLES OF EV GOALS

<table>
<thead>
<tr>
<th>City</th>
<th>Plan Description</th>
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</thead>
</table>
| **Dallas Comprehensive Environmental & Climate Action Plan (CECAP)** | Install 1500 EV charging stations by 2030  
Transition bus and light-duty fleet to 100% electric by 2040  
Implement an incentive/fee plan that will allow shared-mobility to increase the size of their fleet if it is increasingly electrified |
| **Plano Cleaner Air and Reduced Emissions (CARE) Plan** | Electrify 75% of passenger vehicles by 2050  
Promote electrification of city fleets and charging station installation by partnering with fleets and incentivizing construction of “EV-Ready” buildings |
| **Denton Simply Sustainable Plan**       | Encourage sustainable modes of transportation including EVSE  
Lower Emissions from City Fleet Vehicles, including evaluating options such as EVs |
WHAT OTHER TEXAS CITIES ARE DOING

**Houston**
Convert non-emergency, light-duty municipal fleet to 100% EV by 2030.
Increase commercial and private sector infrastructure and incentives.

**Austin**
Pursue code options to increase “charger ready” parking.
Implement photovoltaic systems that may be embedded in roadways or shade canopies that provide electric vehicle charging
Allow high occupancy and zero-emission vehicles access to toll roads at reduced or free rates
Explore emerging technologies such as an induction charging system inside City streets for fast charging of electric vehicles

**San Antonio**
Incentivize new development for EV infrastructure
Promote policies that increase EV use
INTERACTIVE TRAINING WITH CLEAN CITIES & DEPARTMENT OF ENERGY TOOLS
STEPS TO CREATE AND MEET EV GOALS

1. Identify Your EV & EVSE Environment Today

2. Forecast How Many EVs You Will Have in the Future

3. Determine How Many Charging Stations You Need

4. Identify Where to Put Charging Stations

5. Find Funding Opportunities
Identify Your EV & EVSE Environment Today

**TOOLS:**
- DFW Clean Cities EV Registration
- Alternative Fuel Data Center Station Locator
Top 10 Zip Codes with Highest EV Registration

1. 75035 (Frisco) – 456
2. 75034 (Frisco) – 267
3. 75013 (McKinney/Allen) – 251
4. 75093 (Plano) – 240
5. 76092 (Southlake/Grapevine) – 238
6. 75024 (Plano) – 233
7. 75063 (Dallas/Irving/Coppell) – 225
8. 76262 (Roanoke) – 210
9. 75056 (The Colony/Lewisville/Hebron) – 195
10. 75019 (Dallas/Coppell/Grapevine/Carrollton) - 184

13,047 EVs

EV’s in North Texas as of September 29, 2020
NCTCOG North Texas EV Registration Tool Demo

Use this Tool to Determine the Number of Registered EVs Currently in Your Jurisdiction

Access the Tool:
www.dfwcleancities.org/evnt

Also Access The
Statewide EV Registration Tool
To Compare Inter-Regional EV Trends Across Texas
Alternative Fuel Data Center (AFDC) Station Locator Demo

Use this Department of Energy Tool to Determine All the Existing EV Charging Stations in and Around Your Jurisdiction

Access the Tool: https://afdc.energy.gov/stations

INSIDER TIP: Export Station Data to Use in GIS Maps or Other Analysis
Forecast How Many EVs You Will Have in the Future

TOOLS:  
+ EV Registration Historic Trendline Tool  
+ EV Forecasts and Projection Calculations
NCTCOG Historic EV Registration Tool Demo

Use this Tool to Examine Regional EV Registration Trends and Growth Over Time

Access the Tool: www.dfwcleanCities.org/evnt

See Historic Registration Trends By Region And By Specific Make And Model Of Vehicles
Step 3: Use available EV forecasts and growth projections to help plan for EV growth in your jurisdiction.

1,242,089 Electric Vehicles Estimated in North Texas by 2040

Impact of Coronavirus on Current EV markets:

"-our current estimate is that the passenger car market will contract by 15% over the year relative to 2019, while electric sales for passenger and commercial light-duty vehicles will remain broadly at 2019 levels"

-IEA Global EV Outlook 2020

Projected Growth of Electric Vehicles in North Texas
NCTCOG EV Growth Calculator Demo

Use This Tool To Calculate EV Growth Projections For Your Jurisdiction to Help Plan for The Future

Data Needed for Input Into Tool

➢ Municipality population
➢ Total Number of Registered Vehicles in Municipality
➢ Total Number of Registered EVs in Municipality (Data available via NCTCOG)

Play Around with Any Assumptions to Make this Tool Align with Your City’s Unique Goals
Determine How Many Charging Stations You Need

TOOLS:

+ Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite
Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite Demo

Use This Tool To Estimate How Much Electric Vehicle Charging You Might Need At A City-And State-level

Access the Tool: https://afdc.energy.gov/evi-pro-lite
Identify Where to Put Charging Stations

TOOLS:

+ Google Maps & Notable City Destinations
Choosing Station Locations

**Public**
- Parking lots/garages
- Public/municipal
- Retail
- Transportation hubs
- Hotels
- Education
- Medical
- Leisure destinations
- Non-profit meeting places

**Workplace**
- Business offices
- Office parks or campuses
- Industrial facilities
- Fleets
- On-street
- Multi unit dwelling
- Single family residential garages and driveways

**Home**

**EVSE Location Distribution Pyramid**

Determine where to install or expand stations

Where do people spend time and visit in your jurisdiction?

Where are there concentrations of multifamily developments?
North Texas EV Registration by City

Top 10 Cities with Highest EV Registration

1. Dallas – 2387
2. Frisco – 1079
3. Plano – 970
4. Fort Worth – 916
5. McKinney – 543
6. Irving – 491
7. Arlington – 404
8. Allen – 353
9. Flower Mound – 319
10. Richardson – 292
Top 10 Zip Codes with Highest EV Registration

1. 75035 (Frisco) – 456
2. 75034 (Frisco) – 267
3. 75013 (McKinney/Allen) – 251
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FILL THE GAPS: Install Stations in Low Density Registration Areas So People Can Charge Away from Home
Find Funding Opportunities

TOOLS:
+ NCTCOG Air Quality Funding Page
+ AFDC Laws and Incentives Page
Paying for EVs and EVSE

Tool: NCTCOG Air Quality Funding Page
Funding for projects that address air quality, such as clean vehicle projects, are available from a number of federal, state, local, and non-profit entities.

www.nctcog.org/aqfunding

Tool: AFDC Laws and Incentives Search
Tailor results by location, fuel, type of incentive, and incentive user.

https://afdc.energy.gov/laws/search

Source: AFDC
Volkswagen Settlement Texas Mitigation Plan: Zero Emissions Vehicle Infrastructure – NOW OPEN

**Funds:** The purchase and installation of new light-duty electric vehicle Level 2 charging equipment

$10.4 million in grant funding will be available for reimbursements of up to $2,500 per installation

Grants will be awarded on a *first-come, first-serve basis* and may not exceed the following percentages of eligible costs:

- 70% for *Publicly Available* EV Chargers
- 60% for EV Chargers at a *Workplace* or *Multi-Unit Dwelling*

Alternative Fuel Infrastructure Tax Credit

**Funds:** A Tax Credit equal to 30% of costs of EVSE, not to exceed $30,000

**Deadline:** Installed before December 31, 2020

For a full list of available funding opportunities visit [www.nctcog.org/aqfunding](http://www.nctcog.org/aqfunding)
OTHER IMPORTANT CONSIDERATIONS
EV Infrastructure Planning & Policy Tools

Zoning:
Greater access to on/off street charging, workplace charging, overarching EV infrastructure

Parking:
Designated EV charging spaces; enforcement policies

Building/Electrical Codes:
Adopting latest Building and Electric Codes

Permitting/Installation:
Permitting and inspection process for charging installation

Procurement:
Encourage EV and EVSE procurement policies to prioritize zero emission alternatives in fleets and join cooperative contracts to ensure lower pricing options
Utility Engagement

As EV adoption continues to grow in your jurisdiction, it’s critical to engage with your local utility early to prepare for the need to generate and deliver more electricity.
Non-Grid EV Charging Solutions

Utilize renewable energy (e.g. solar) to provide electricity to power EV charging stations

Benefits

- Resiliency Against Power Outages/Natural Disasters
- Reduced Emissions Impact
- Mobile, No Grid Connection Needed
On Street EV Charging
Utilize the existing electrical infrastructure (streetlights, utility poles)

Off Street EV Charging
Parking garages and lots will alleviate residential charging demand

Workplace Charging
Employers/building owners can offer charging as a free benefit/amenity
Include EV infrastructure into new workplace construction, much less expensive than retrofitting an area after construction

Multi-Family Housing:
Benefits both current and future residents as well as increases property value
Promotes resident retention and draws-in EV owners as residents

Source: NREL

Charging stations at the DFW International Airport
Source: NREL

Charging stations
Source: NREL

Workplace Charging Stations
Source: NREL

Multi-Family Housing
Source: NREL
DISCUSSION OF POTENTIAL DEPARTMENT OF ENERGY GRANT PROPOSAL
Preparing for Funding Opportunity Announcement

Topic: Electric Vehicle and Charging Community Partner Projects Application

Objective: To encourage strong local and/or regional partnerships to create an enduring local ecosystem to support increased business and consumer use of electric vehicles.

1. Create an Enduring Local Ecosystem to Support Increased Business and Consumer Use of EVs
2. Demonstrate EVs, Collect/Share Data, Document and Share Project Learnings and Best Practices
3. Leverage Ongoing, or Propose New, Smart Mobility/Smart Cities Efforts
4. Incorporate Utilities, Electricity Suppliers, Community-Based Groups, Local/Regional Governments, Site Hosts, Dealerships, Retailers, Fleets, EVSE Representatives, and Clean Cities Coalition

For Discussion: Interest in Pursuing a Proposal Next Opportunity?