

City of Raleigh EV Ready Handbook

Scope of Work
December 2020

Objective:

Create an electric vehicle infrastructure readiness guide for a public audience focused on North Carolina, specifically Raleigh. This document will provide information, specifications, and best practices on electric vehicle charging stations. This document will include educational information and links to resources on electric vehicles, charging stations, and charging station installation.

General Guidance:

The content included in this document should be easy for a reader to quickly reference. The content should be organized in a way so that a reader has all required information in a specific, clearly labelled section (i.e. residential charging, commercial charging).

As a user of the document, if I am a private EV owner interested in installing a charging station at my home I will be able to find all info in one section. If I am a property manager with a parking facility I will be able to find all relevant installation info in one section.

Pictures, images, diagrams, charts, and graphs should be utilized.

The document will provide specific guidance for Raleigh but should be able to be generally used by other municipalities throughout North Carolina.

The document will address the following:

Electric Vehicles

- General information and overview of electric vehicles
 - Vehicle types and differences including internal combustion engine, hybrid, plug-in hybrid, battery electric vehicle
 - Vehicle operation and charging
 - Driving distances, battery duration
 - Charging behavior
 - MPG vs. MPGE, m/kwh
- General information and overview of EV technology
 - Vehicle technology improvements
 - Battery technology improvements
- General information and overview of EV market
 - Automaker market shift to electric
 - Increasing private adoption of vehicles
 - Market forecast and demand forecast
 - Regulations on emissions and other emissions reduction goals

- NC EO 80

EVSE installation guide

- How to choose a charging station
 - Considerations for hardware
 - Choosing the right charging level (1, 2, DCFC)
 - Different applications for each (residential, on street, long term parking, workplace charging, commercial property, retail, parking garage)
 - Specifications for each including plug type, voltage, amperage, typical time to charge
 - Best Practices for each application install
 - Considerations for software
 - Networked charging stations vs non-networked charging stations
 - Mounting systems including pedestal, wall, and ceiling
- Where to locate charging station(s)
 - Power accessibility and placement considerations
 - Distance from power source
 - Electrical wiring, conduit
 - When to install a new utility meter
 - Visibility
 - Placement, clearances, and equipment protection
 - Stormwater
 - Parking space design
 - Pedestrian flow
 - ADA
 - Bollards and protective equipment
- How to collect data associated with charging events
 - Networked charging stations and non-networked charging stations
- How to charge a fee for electricity and the case for/against charging fee
 - Legislation allowing for kWh rate charging (NC HB 329)
 - Transaction processing in EVSE software
- Potential impact to electricity bills
 - Utility rate considerations
- Signage guide
 - Placement and clearances
 - Specific information on: sign size, color, text; distance from ground, curb, cross walk, fire hydrant, driveway, other objects
 - Installation considerations
 - Preferred object to attach sign to; not recommended (i.e. trees, wooden poles, wayfinding signs)
 - Orientation of “EV Parking” sign related to other signs on pole (i.e. above/below parking or regulatory signs)

- Parking space striping
- ADA requirements and guidelines
- Placement and clearances
- Electrical requirements
- EV Make Ready – Commercial & Residential
 - EV capable, EV ready, EV installed

Permitting

- Process for EVSE in commercial area
- Process for EVSE in multi family, MUD
- Process for EVSE in single family residence
- Process for EVSE in right of way (ROW)
- Permitting applications and associated documents
 - Completed sample document(s)

Case studies, Raleigh specific

Local case studies that offer testimonials from individuals, businesses, developers, and property managers.

Content to include in case study:

- Organization/Owner overview
- Why did you install charging stations?
- What did you install and why did you choose this type of charging station?
- How was it installed?
- How was the EVSE procured?
- What were the associated costs?
- What was the planning process?
- What benefits have you and/or the users experienced?
- Is there anything that you would have done differently?
- Contact info (if appropriate)

Case studies (one to two for each):

- Retail location
- Workplace charging
- Multi-unit dwelling
- Hospitality/Hotels
- Parking deck
- Street parking

Points of contact for additional resources and assistance

- City of Raleigh
 - Planning and Development Services
 - Permitting
 - Inspections
 - Sustainability
 - Transportation
- NC Department of Environmental Quality
- NC Department of Transportation
- US Environmental Protection Agency
 - Alternative Fuels Data Center