EV Ordinance Site Study

The purpose of this Site Study was to use Ann Arbor site plans from 2019 to calculate the number of EV-C/R/I parking spaces that would have been required if the proposed EV Readiness Ordinance were in effect last year. We assigned percentages of EV Readiness according to the draft 'EV Charging Equipment Requirements' in the Ann Arbor Unified Development Code Parking Table. This helped our EV Ordinance committee identify areas in the Ordinance and Parking Table that needed to be modified for clarity and consistency. This exercise also was used to help verify the validity of existing models to calculate the EV charging equipment installation cost for new construction vs. retrofit projects. When it comes time to obtain buy-in of key stakeholders, it will be important to demonstrate the value of EV readiness during the original construction phase and being able to provide cost comparisons is necessary for this.

Careful consideration was taken and all the formulas were tested on 2019 development projects in Ann Arbor. The Committee conducted a methodical study of 2019 projects listed in Ann Arbor's etrakit.a2gov.org website. The formulas were tested on twenty-seven (27) site plans and the total number of EV-C, EV-R, and EV-I spaces was calculated for each project.

After calculating the number of EV-C, EV-R, and EV-I spaces in the site plan study, we used the cost estimate analysis done in the Ecology Center's October 2019 report: *"Estimating EV Infrastructure Installation Costs in Ann Arbor: New Construction v. Retrofit."* We then mapped these costs onto every project in the site plan study with enclosed parking garages.

Findings

EVSE INSTALLATION COST AS A % OF PROJECT COST

- **Ann Arbor Infrastructure Cost Analysis: Cost estimates are for EV-C and EV-R, in ENCLOSED Garages**
    - **NEW Installation: 0.03% -> 0.4%**
    - **RETROFIT Installation: 0.07% -> 0.19%**

EV-C/R/I spaces:

Total EV charging capacity that could have been built in Ann Arbor based on the twenty-seven 2019 site plans in this study, if the EV Ordinance was in place:

- **EV-C spaces: 1,373**
- **EV-R spaces: 1,225**
- **EV-I spaces: 379**

All relevant 2019 site plans in the Ann Arbor property project database were included in this study.

- Number of plans in this study: 27
- Plan #s: SP19-001 through SP19-039
- Plans can be found at: https://etrakit.a2gov.org/etrakit3/

Types of projects:
18 – new construction
4 – remodels
3 – site modifications (parking lots, landscaping)
2 - additions

Overview of property types in this study, based on Zoning District Classifications:
Commercial/Business (C) properties: 7
Sites include:
. hotels
. grocery store
. credit union
. marijuana dispensary
. restaurant
. retail

Downtown (D) properties: 6
Sites include:
. residential + retail
. residential
. residential + office + art exhibit
. one project to pave a parking lot

Residential (R) properties: 12
Sites include:
. single-family developments
. multiple-family developments
. Total residential units per site range from 50 to 470.

Mixed-use (PUD) properties: 1
. residential + hotel + retail + restaurant

Office/Research/Limited Industrial (ORL) properties: 1
. project to add/amend parking and landscape areas

Parking spaces, Overview:
Types of parking sites
- Single and 2-car garages
- Parking structures
- Surface parking lots
- Number of parking spaces per site ranges from 6 to 719

NOTES ON COST TO INSTALL EV-C/R/I

3 Primary components of EVSE cost:

1. Make-Ready Infrastructure – highest cost
2. Installation – 2nd highest cost
3. Charging stations

Make-Ready is unique to every facility. Includes:

- ❑ Step-down transformers for additional electric service sometimes needed
- ❑ Electric panels
- ❑ Conduit
- ❑ Wires pulled
- ❑ Connectivity for stations
- ❑ Pkg lot striping
- ❑ ADA configuration
- ❑ Signage

Charging stations that will be installed on pedestals/bollards require:

- ☑ Trenching
- ☑ Concrete pads
- ☑ Sinking j-bolts

Installation includes:

- ☑ Assembly of charging station
- ☑ Installation in addition to assembly
- ❑ If the site host will optimize the use of charging stations to recoup installation costs and control electricity costs, the host will need to install "smart" chargers. Smart charging stations require a network for connectivity and control (smart charging). Installation of smart charging stations requires network hookup and setup.