

Electric Vehicle Charging Station Location Analysis

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Introduction

Interest in alternative fuel cars is growing. In the A/GFTC area, electric or hybrid vehicles are registered to owners in all but one zip code¹. Currently, the dominant type of alternative fuel vehicle is the non-plug-in Hybrid, with 1,542 vehicles registered in the A/GFTC area. There are currently 70 vehicles registered in the region which require plug-in charging, including full-size electric vehicles, Global Electric Motorcars (also known as GEM vehicles), and plug-in hybrids. As deployment of plug-in vehicles continues to increase, A/GFTC can provide data regarding potential locations for Level II Electric Vehicle charging stations. These types of charging stations supply 240 volts and can charge vehicles much faster than a standard 120 volt plug.

There are currently seven charging stations within the A/GFTC region - four are located at hotels or private businesses and are not intended to be used by members of the public. Two stations located at Glens Falls Hospital, as well as one at Green Mountain Electric Supply on Corinth Road in Queensbury, are available for public use. Electric vehicles have also been noted using Level 1 charging in outlets under the South Street Parking Pavilion in Glens Falls. As interest in electric and plug-in hybrid vehicles grow, demand for charging stations is also anticipated to increase.

Scope of Analysis

As an initial planning product, this analysis includes only those municipalities within the Glens Falls urbanized area, which includes the City of Glens Falls, the villages of Hudson Falls, South Glens Falls, Fort Edward, and Lake George, and portions of the towns of Queensbury, Kingsbury, Moreau, Fort Edward, and Lake George. This area was selected as the most likely location for the initial deployment of public EV Charging Stations. However, this analysis was designed to be easily replicated for any municipality within the A/GFTC region.

This analysis is focused on public parking lots. This includes any facility owned by the municipality which has surface parking spaces that are used by the public, such as municipal centers, parks and recreation areas, and public parking lots. These were identified using parcel ownership and land use codes as identified in the data provided by the assessor of each municipality. The number of spaces in each lot was identified through aerial photographs or site visits.² Public Works departments and firehouses were not included as part of this analysis; however, future planning efforts could include these facilities.

In addition, the methodology outlined below could be applied to private facilities as well. Many companies are choosing to locate Type II charging stations within their parking lots. This can be a favorable service for existing customers as well as an amenity which may attract a new customer base.

¹ All data regarding electric vehicle ownership provided by NYSERDA

² Some parking areas are unpaved or lack discernible pavement striping; the number of spaces in these lots was estimated.

Methodology

The methodology for this project was driven by the availability of data and the goal of providing an analysis useful to local municipalities. Since Type II charging stations require a few hours to charge a vehicle, it was determined that duration of parking was the most important factor. A 1/4 mile radius was drawn around each parking area. This is equivalent to approximately a 5-minute walk, a distance often used in planning analyses as the maximum desirable walking distance. Within the radius of each parking area, the potential for long- duration parking was tabulated using the following statistics:

- Employment-based activities. This data, supplied by NYSDOT through InfoGroup, includes statistics on all businesses with more than 10 full-time employees. (Note: Glens Falls Hospital was excluded from the analysis because the facility already houses two on-site charging stations.) Two types of data were tracked:
 - Number of businesses with more than 10 employees. Many small businesses have limited parking facilities dedicated for employees (if any). Providing charging stations in areas with a high density of businesses could increase the likelihood that the charging stations will be used.
 - Number of employees. This statistic allows the municipality to determine how many people are employed at the businesses listed above.
- Tourism/Lifestyle-based activities. This data was provided by land use codes assigned by the assessor.
 - Long-duration uses. These include any uses where the visit duration for an activity could reasonably average 2 or more hours. This includes theaters and other entertainment venues, convention centers, active recreation areas, libraries, municipal centers and courts, park-and-ride lots, and religious uses.
 - Medium-duration uses. These include activities which are not of long duration, but could be combined with similar activities to add up to several hours. For example, shopping in a downtown and then eating lunch, or attending a medical appointment and going to the post office. Uses include retail stores, restaurants, medical offices, offices, post offices, passive recreation areas, playgrounds, and cemeteries.
- Proximity to transit. The number of GGFT transit service lines was tabulated, to allow for multimodal activity.

Analysis Results

Parking Facility	Location	# of spaces	# of transit routes	Businesses with 10+ jobs	# of employees	Long duration uses	Medium duration uses
Glens Falls							
East Field	65 Haskell Ave	345	2	16	519	2	8
YMCA	Fire Road	155	2	4	223	4	5
Elm St. Parking Lot	214 Glen St	125	11	52	1161	8	84
South Street Parking Pavilion	25-33 South St	113	9	31	777	7	51
Crandall Park	576 Glen St	70	3	6	245	4	10
Ice Rink	Fire Road	54	2	3	208	4	3
Haviland's Cove	Bush St	50	1	1	50	1	0
Parking lot	34-38 Warren St	24	12	35	673	6	60
City Hall Parking Lot	38 Ridge St	24	11	40	982	7	73
Exchange Alley	1 Hudson Ave	19	11	50	948	5	74
Lake George (Town and Village)							
Beach Road (DEC)	Beach Road	465	3	1	10	4	4
Beach Road (Village)	Beach Road	96	3	17	427	5	33
Charles A Wood Park	West Brook Rd	90	3	4	215	6	15
Recreation Center	Dump Rd.	80	0	0	0	1	0
Municipal Offices	20 Old Post Rd	72	1	9	284	2	6
Parking Lot	Ottawa St.	28	3	20	336	8	42
Parking Area	Amherst St.	27	3	24	601	7	37
Usher park	NYS 9L & Racawana Rd	20	3	2	25	4	3
Moreau							
Municipal Park	Route 32 & Bluebird	360	0	0	0	1	1
Municipal Center	Route 197	50	0	0	0	1	1
Cooper's Cave park	River & First street	47	1	8	482	0	16
Fort Edward (Town and Village)							
County Offices	383 Broadway	460	1	19	1242	2	15
Town/Village Offices	118 Broadway	45	1	8	445	5	26
Roger's Island Visitor Center	11 Roger's Island Dr.	30	0	0	0	1	0
Yacht Basin	Satterlee Ln	25	1	5	390	2	20
Bradley Beach	25 Bradley Ave	10	1	4	375	4	15
Mullen Park	Factory & Wing	6	1	4	324	4	2

Parking Facility	Location	# of spaces	# of transit routes	Businesses with 10+ jobs	# of employees	Long duration uses	Medium duration uses
Hudson Falls/Kingsbury							
Town hall	Center St & Route 4	65	1	12	433	6	45
Library/Village Hall	Clark & Locust	62	1	12	437	6	39
St. Mary's Church	Wall St	16*	1	11	423	6	40
Queensbury							
County Offices	1340 State Route 9	730	2	28	1071	3	9
Ridge Jenkinville Park	133 Jenkinville Rd	277	0	0	0	0	1
Town Hall	742 Bay Road	190	2	6	220	2	9
Airport	443 Queensbury Ave	100	0	5	84	1	3
Gurney Lane Park	118 Gurney Ln	100	0	1	101	1	3
Town Court	81 Glenwood Ave	50	3	19	615	2	40
Park & Ride	Media Drive	39	1	5	403	2	10
Bike Trail Parking	Country Club Road	30	2	5	132	1	9
Hudson River park	Big Boom Rd	28	0	0	0	0	1
Hovey Pond	21 Lafayette St	25	4	28	576	1	38
Park & Ride	105 Main St	10	1	9	470	2	12
West End Park	Luzerne Rd	8	1	3	373	2	3
Hudson Pointe trailhead	Hudson Pointe Blvd	5	0	0	0	1	0

*58 spaces including St. Mary's parking area

Using the Analysis

Each community may have a different goal for promoting the use of electric vehicles, so a variety of data has been provided. For example, a community could promote business development by using the employment-based data to identify potential locations for charging stations. Similarly, municipalities with a tourist-based economy could use the long- and medium-duration activities as the deciding factor, so that the charging stations are more useful for visitors.

In addition to the tabular analysis, there are other considerations for the location of a charging station. These include:

- **Visibility.** Consider locating charging stations in spaces which are highly visible from major streets, rather than those located behind buildings or at the end of long driveways. This will raise awareness of the station and increase usage. If low-visibility spaces are determined to be a high priority, consider adding directional signage.
- **Parking Restrictions.** Some parking areas have time restrictions or are fee-based. Consider locating charging stations in areas with minimal restrictions, to promote usage.
- **Pavement/Parking Infrastructure.** Several of the parking areas included in this analysis are unmarked or the pavement stripes have deteriorated. Installation of a charging station may necessitate re-paving or re-striping these facilities, as well as improvements to accommodate the requirements of the Americans with Disabilities act. In addition, there are recommended design guidelines for dimension, signage, striping, and access of charging stations. See [Siting And Design Guidelines For Electric Vehicle Supply Equipment](#) for more information.
- **Electrical Infrastructure.** Not all of the parking areas included in this analysis have the necessary electrical infrastructure in place to facilitate installation. See sidebar for more information.

CONNECTION TO POWER

"When installing EVSE or EVSE-ready wiring, a dedicated circuit may be required or optimal. This can be added to an existing panel, or planned for in new construction. Dedicated circuits may require a new conduit, in addition to the conduit running from the panel to the EVSE's location. Costs rise as cable length increases due to the installation costs of construction and trenching. Experienced installers recommend not exceeding 25 feet of conduit from panel to EVSE site, but this will vary widely.

Most facilities have accessible 120V circuits sufficient to power level 1 EVSE. Level 2 charging requires 208-240 volts and at least 15-30 amps. Many jurisdictions require or recommend a dedicated branch circuit for level 2 charging. The existing electrical panel in most installations, especially older structures constructed prior to 1960, will not have the system capacity to handle large and continuous loads. While level 2 EVSE is similar to other household appliances like clothes dryers, the continuous nature of the load may be a burden on the system. Installation of dedicated branch circuits/new panels may reduce safety risk and assist with peak load management in scenarios with multiple charging vehicles."

Source: "[Siting And Design Guidelines For Electric Vehicle Supply Equipment](#)", November 2012

Additional Resources

For more information on funding, siting, and installing charging stations, please see the following links. In addition, A/GFTC has additional resources available upon request.

New York State Energy Research and Development Authority (NYSERDA):

<http://www.nyserda.ny.gov/Energy-Innovation-and-Business-Development/Research-and-Development/Transportation.aspx>

Northeast Electric Vehicle Network, Guidance Documents including EV-Ready Codes, Guide to Planning and Policy Tools, and Siting and Design Guidelines: <http://www.northeastEVs.org>

Transportation & Climate Initiative, Siting and Design Guidelines for Electric Vehicle Supply Equipment: http://www.transportationandclimate.org/sites/default/files/EV_Siting_and_Design_Guidelines.pdf

“Ready, Set, Charge: A Guide to EV Ready Communities”:

<http://www.rmi.org/Content/Files/Readysetcharge.pdf>