Case Study
City of Kingston

Client Overview

Client: City of Kingston

Location: Kingston, Ontario

Segment: City

Population: 123,000

Station Models: CoRe+, SmartTWO-BSR, SmartDC

Project Goals:

- Reduce emissions and foster EV adoption
- Drive transit corridor traffic towards city center to support local businesses
- Access Federal Funding to Subsidize the Cost of Deployment
- Deploy Both Level 2 and DC Fast Charging Stations

Key Figures*

Number of Charging Sessions: 9,520

Average Monthly Growth in Users: 2 %

Average Session Duration: 2 hours 36 mins

Total kWh transferred: 91,529

* Last 12 months from March 2020

Situated adjacent to the renowned Thousand Islands archipelago and filled with buildings hewn from local limestone, the City of Kingston makes for a picturesque midway point between the urban centers of Toronto and Montreal. In the spirit of preserving the city's charming nature, Kingston was one of the first Canadian municipalities to develop a climate action plan, and its current City Council has made demonstrating leadership on climate action a priority. The City has developed a Climate Action Plan which aims to cut greenhouse (GHG) emissions from the community by 30 per cent by 2030 and achieve carbon neutrality by 2040. A key element of this work has been the deployment of a comprehensive EV charging network, a project undertaken in partnership with electric vehicle charging manufacturer FLO®.

The project, which began in 2017, saw the City of Kingston work with FLO to deploy a total of 48 EV charging stations, broken down as follows:

- 2 SmartDC™ Fast Charging Stations,
- 4 SmartTWO-BSR™ Level 2 Curbside Charging Stations
- 42 CoRe+™ Level 2 Charging Stations, deployed in city buildings and municipal parking lots.

This charging ecosystem, ideal for a city of Kingston's size, has helped spur EV adoption and position the Canadian municipality as a leader in the transition to a more sustainable mode of transportation.

Where cities and municipalities are eager to deploy EV charging networks, the source (or sources) of funding must always be considered; rarely does a city put forward a budgeted project without some idea of where the funding will emanate from. However, in this instance, the City of Kingston was adamant in being an early adopter of EV charging technology, and a budget and plan was put forward without knowing if grant funding from upper levels of government could be obtained. Ultimately, the City was able to source approximately CAD $800,000 from the City Council to implement their EV Strategy, which included the deployment of an initial run of 46 Level 2 charging stations. Working closely with FLO, who specialize in helping clients navigate provincial and federal funding applications, they were able to access CAD$100,000 through Natural Resources Canada's Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative. This additional funding was important in allowing the City of Kingston to confidently proceed with the installation of two DC fast charging stations in Kingston's popular downtown area.

Analytics & Insights

Station Usage: A majority of charging station users (77%) are non-local and travelled an average of 113KM to use the station, suggesting the chargers are succeeding in driving business to the city centre

Average Charging Session Duration:
Local (2 hours, 44 minutes)
Non-Local (2 hours, 41 minutes)

Most Used Station Park: Frontenac Municipal Parking Lot, Clarence Street (Shopping & Restaurants)

In speaking about the federal funding to Kingston to expand their charging project, Canada's Minister of Natural Resources Amarjeet Sohi stated "Canadians want to be part of the solution in the fight against climate change, and one important way they are doing this is by making cleaner, more efficient choices when they travel…projects like these EV fast-charging stations in Kingston will power our future, while lowering costs for families."[2]

Similarly, accessing special federal funding dedicated solely to the development and proliferation of DC Fast Charging infrastructure allowed the City to deploy the two SmartDC stations located in the Frontenac municipal parking lot adjacent to the city's Leon's Centre, a popular downtown sports arena and concert venue.

No technological adaptations were required for FLO and the City of Kingston to deploy the 48 Level 2 and DC Fast Charging stations that make up their charging network; however, post-deployment conversations with the City stressed the importance of properly analyzing potential charging sites so as to ensure that the electrical infrastructure and necessary panel capacity were present upon installation and commissioning.

As such, a strategic analysis was undertaken to deploy the chargers in such a way that their deployment could be managed effectively and with minimal electrical servicing costs while ensuring that their geographic alignment would still serve the intentions of the project at large. Specifically, the stations were placed only on properties owned by the City and in locations where there was an intersection between available electrical capacity and driver convenience. In the case of the SmartDC Fast Charging Stations, they were placed in the city's downtown center, rather than along the transit corridor of the Ontario Highway 401, so as to encourage out of town EV drivers to venture off the highway and explore the city's vibrant urban core. Similarly, in placing the units downtown rather than the nearby transit corridor, the City was able to provide a fast charging amenity to Kingston residents.

An analysis of charging network data affirms that Kingston's charging stations are being used in the manner intended by the City by attracting passersby traffic who might not otherwise stop and frequent local establishments. FLO data illustrates that a majority of the EV drivers using the stations are from out of town; approximately 77% of users accessing charging services in Kingston are not from the region. Similarly, analysis of charging station data shows that the City's busiest stations are those located in the downtown core and on streets populated by local businesses, shops and restaurants, and that the average session duration at these stations for non-local users was 2:41:49, more than enough time to indulge in some shopping or a meal. These types of results have led the experts at FLO to conclude that the stations

“ You only get one chance to be an innovator and an early adopter with something like this, so there was a ‘time is of the essence’ element to electric vehicle technology. The deployment of these networked charging stations was very in keeping with the City of Kingston’s mantra of innovation and harnessing the power of local companies. ”

Paul MacLatchey
Environment Director
City of Kingston

are servicing the City of Kingston’s desire to pull out-of-town traffic from the nearby Ontario 401 Highway and drive those consumers towards the businesses of the downtown core while simultaneously providing a reliable charging amenity to local EV drivers.

Further analysis of the Kingston charging network revealed that FLO membership in the region has grown significantly since the installation and commissioning of the charging network. From 2017-2019, FLO membership in the Kingston region grew over 2,000% (from nine total members to 209 members), figures which suggest the City’s intention to foster EV adoption in and around the community has been a success.

Post-deployment conversations with the City of Kingston revealed insights and best practices that they were happy to share with other municipalities eager to explore EV charging infrastructure. Primarily, the City wished to stress the importance of integrating an EV charging station deployment into the appropriate department; their experiences with the project detailed here led them to conclude that any EV infrastructure project should consider integration with the city’s parking planning and enforcement agency, as the operation of the stations (and the enforcement of the rules surrounding their use) ultimately registers as a fee-for-use street infrastructure service. Similarly, the City of Kingston felt it was important to note that projects like this need to be undertaken with the notion that public awareness and perception will be key elements to optimizing station uptake; in this particular instance, the City worked closely with FLO to publicize the commissioning of the stations, develop a public outreach campaign devoted to educating and informing the population about EV charging technology, and provide support to EV drivers as they become familiar with the new charging infrastructure.

Since the deployment of their EV charging ecosystem, the City of Kingston has seen charging use equivalent to a 20,000 kilogram reduction in greenhouse gas emissions[3]. While there is still work to be done in achieving their impressive climate action goals, this is undoubtedly a laudable step in the right direction.

The team at FLO believes that innovation and initiative are key elements in leading the way towards a more sustainable future, and they are proud to have partnered with the City of Kingston to help them reduce their greenhouse gas emissions while simultaneously fostering EV adoption in their community.

1. All analytics from dataset: FLO CA network, (January 1st, 2019 to December 31st, 2019), City of Kingston's charging stations usage data
2. King Whig Standard, August 7 (2019), here: https://www.thewhig.com/news/local-news/kingston-plugs-into-new-fast-electric-vehicle-charging-stations
3. Avoided CO2e from gas consumption are estimates only based on sample NRCan kWh to gas and gas to CO2e conversions (2014; 2020), adjusted for provincial carbon intensity using National Inventory Report (2017) data.