

CIMA+

Engineering for people

IVY (ON-Charge) EV Charging Infrastructure

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Project summary

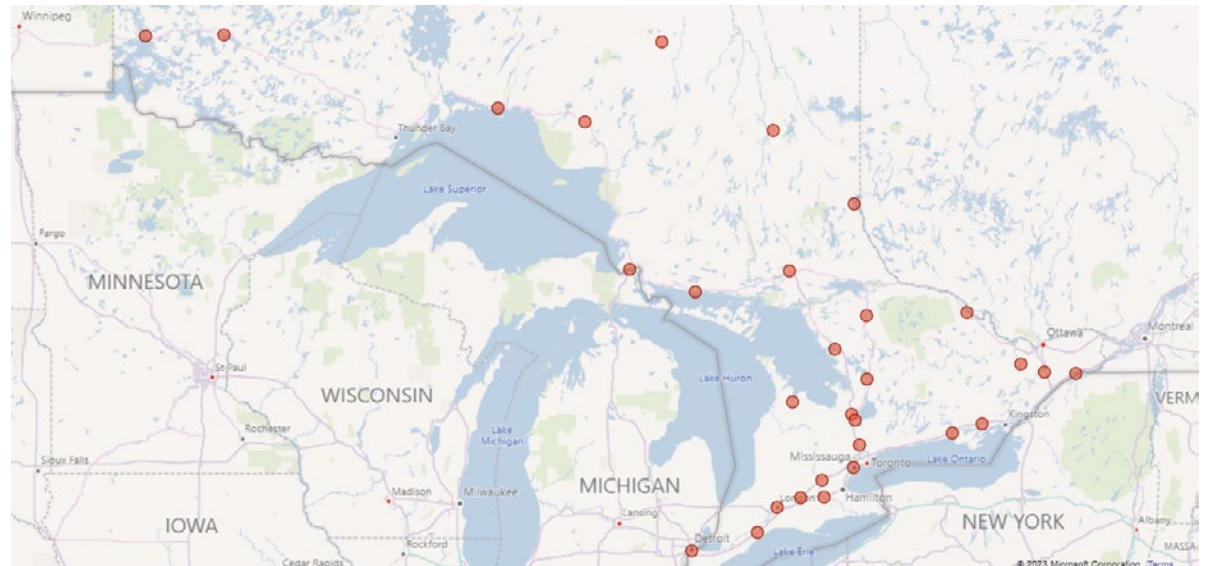
CIMA+ provided civil, electrical, and structural engineering services for the installation of 50 kW and 150 kW EV chargers. These are for IVY Phase 1 (23 locations) and Phase 2 (28 locations) projects across Ontario. CIMA+ also provided construction management services and standardized the engineering package, to simplify contractor interpretation of site-specific needs. This charging infrastructure allows EV owners to travel between major centres and have access to charging points.

Innovation

CIMA+ provided an end-to-end engineering solution for EV Charging Stations (EVCS) including High Power Charging Stations resulting in construction cost efficiency. This was the first significant program deployment of EV charging points in the province of Ontario.

The project required working out the optimal process to select host sites and locate equipment, while preparing a design package that allowed contractors to quickly identify needs and quantities. Where possible, CIMA+ standardized the engineering packages as much as possible to reduce the amount of time required for the contractors to interpret the site-specific needs, sometimes including some over-design. This netted a lower construction cost due to simplified repetitive work. CIMA+'s Civil, Electrical and Structural teams each developed internal tools to support the portfolio. They leveraged experience gained from other programs that included repeatable work and evolved their processes as industry introduced complementary devices or construction methods.

Moreover, the sites were future-proofed by adding empty conduits for anticipated future charging points as per location demand increases.



Complexity

The main obstacles to overcome were the coordination of various stakeholders and disciplines, power availability, weather impacts, equipment delivery, and availability of parts.

Furthermore, adding new infrastructure to an existing facility that must remain operational always adds some challenges. The major challenges were related to availability of power (or limits on additional capacity) and existing underground infrastructure that required relocating the charging equipment. When possible, EV chargers were added to locations with existing infrastructure, close to other services that could be used while the vehicle recharges. This meant each location had site-specific complexities related to how additional power could be made available at the site. All existing underground services had to be considered and new works adapted to minimize interferences. Additionally, site access had to be maintained to allow the existing business to operate.

Ensuring equipment procurement and delivery matched with site preparation avoided scheduling difficulties. Some LDCs required more work on their distribution to be able to provide the additional power at the site.

Finally, an additional challenge was that technical concern related to new connections were not known at the project kick-off. We worked with Greenlots to change the scope and budget to address the additional technical support required. CIMA+ collaborated with Greenlots and IVY during the design process to follow up on design progress, identify site-specific challenges and facilitate the construction activities.



Social and/or economic benefits

CIMA+ was an integral part of a program that provided EV charging stations across the province.

This EV charging infrastructure was instrumental in providing EV owners with much needed charging points allowing them to travel longer distances within the province and to start considering using EVs vs. typical internal combustion engines to travel to major towns within the province, thus reducing EV range anxiety. This infrastructure can also incite non-EV owners to consider EVs for future travel.



Environmental benefits

The transportation sector is Ontario's largest source of greenhouse gases, accounting for roughly 30% of the province's total emissions.

As more and more EV chargers become accessible across commonly travelled routes, more and more consumers will consider travelling longer distances with their EVs.

Post manufacturing, an electric vehicle's only source of greenhouse gas emissions is the generation of electricity used to power the EV. Ontario's electricity is generated mostly from non-greenhouse gas emitting sources, resulting in an extremely low carbon intensity. Consequently, Ontario is one of the most environmentally friendly places in the world to own an EV. EV drivers in Ontario reduce their contribution to climate change and air pollution by over 90%.



Meeting client's needs

This portfolio was the first of three phases of EV charging projects with this client. The client has retained CIMA+ to support them on two additional phases to further augment their charging infrastructure and continue to provide greater EV charging support to reduce EV range anxiety.

A summary of the phases is found below:

Phase I:

Greenlots constructed the EV charging stations for IVY and CIMA+ was hired by Greenlots to provide civil, electrical, and structural engineering services for the installation of 50 kW and 150 kW EV chargers at 36 locations across Ontario. CIMA+ also supported construction management services.

Phase II:

IVY awarded the engineering services contract to CIMA+ to provide services for an additional 30 sites. CIMA+ is currently supporting construction management services.

Phase III:

IVY is starting this phase and awarded the engineering services contract to CIMA+ to provide services for an additional 2 sites.





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