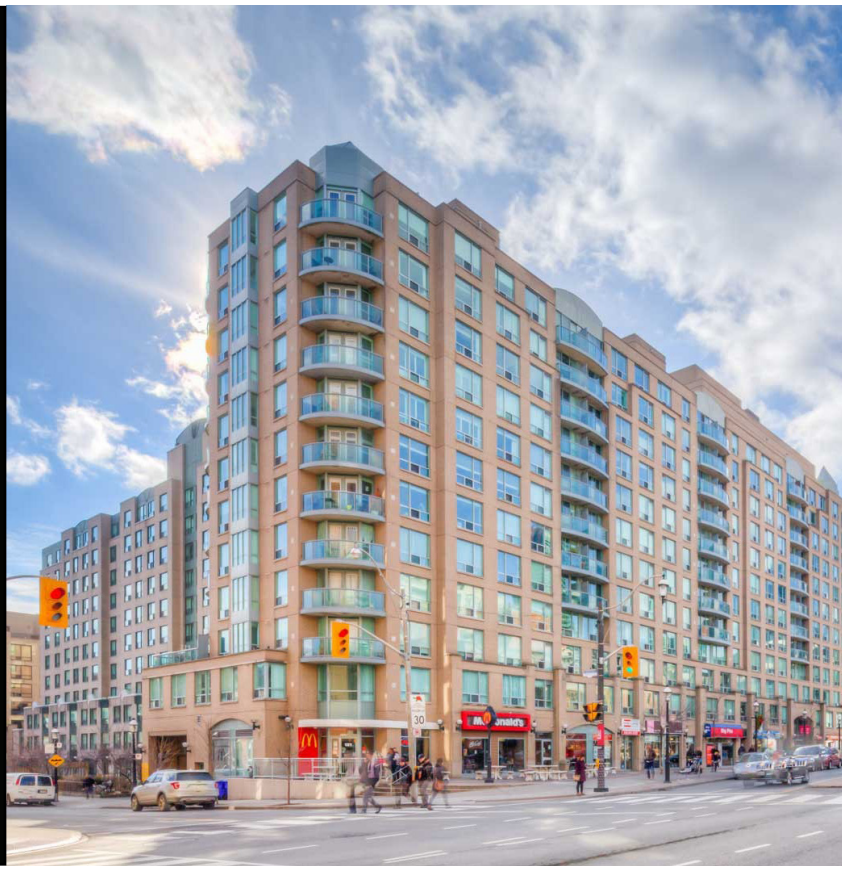
SWTCH

CASE STUDY

MULTI-FAMILY RETROFIT



CUSTOMER PROFILE

+ Property: New Times Square
+ Location: Toronto, ON, Canada
+ Size: 375 Units
+ Age of Building: 20 Years
+ Number of EV Chargers: 14

Crossbridge CONDOMINIUM SERVICES

FEATURED PARTNER

SIGNATURE ELECTRIC

New Times Square Prepares for Growing EV Adoption with Scalable, Future-Proof Charging Infrastructure

As demand for EV charging in high-density urban environments grows, forward-thinking condo corporations like New Times Square are getting ahead of the curve by enabling residents to make their parking spaces “EV ready”. Like most existing buildings, New Times Square faced significant electrical capacity constraints. A networked smart charging approach enabled a greater number of residents to access their own private charger while saving the corporation time and money.

14
EV Chargers Initially Installed

32-40
Total EV Chargers Supported

$24k+
Savings from SWTCH's Networked Approach

> *"Property managers have enough on their plate as it is. SWTCH's services removed all headaches associated with providing EV charging, and Signature was great to work with on the installation. Our residents have been extremely happy with SWTCH's service and enthusiastic about the decision to add EV charging to our building." — Daniel Bonea, Property Manager, New Times Square*

MOTIVATED BY GROWING DEMAND

For electric vehicle (EV) owners, few places are more convenient to charge than at home. As urban EV ownership grows and the real estate market shifts permanently to multi-family construction, developers and building operators are expected to make their buildings "EV ready". In condo settings where residents own individual parking spaces, residential stalls can be outfitted with personal EV chargers, or visitor parking spaces can be coverted for shared community charging.

In an effort to prepare for greater demand for charging, New Times Square Condos approached our group to provide a scalable EV charging solution. Motivated by resident demand, higher property values, and convenience, New Times Square opted for the private charging model. While not all residents wishing to participate in the upgrades currently own an EV, some plan to purchase an EV in the future and others viewed it as an investment opportunity in their property.

A TAILORED APPROACH TO EV CHARGING

The ideal solution for multi-family retrofits involves network management, where individual chargers are connected to the internet and communicate with each other in real-time.

With this approach, building operators save time and money through dynamic load management (which minimizes infrastructure upgrade costs) and automatic energy metering & billing (which recoups energy costs from EV owners). Further, usage data is available for building operators to make important decisions on when and how to upgrade their infrastructure.

The first step in this project was to complete a load review to understand the building's loads and available capacity. To make New Times Square EV ready, the electrical infrastructure was upgraded with two 200 A panels and two 75 kVA transformers. At the time of upgrade, 14 private EV chargers were installed and made available for immediate use by residents.

SWTCH's approach allowed New Times Square to prepare for growing EV adoption while keeping infrastructure upgrade costs low. Total capacity dedicated to EV charging was increased to 400 A, allowing 32-40 chargers to be supported in a load-managed configuration.

COMPARING ALTERNATIVE APPROACHES

At face value, alternative approaches, including tying non-networked chargers to sub-metering or smart panel systems, are attractive because residents can purchase their preferred brand of non-networked EV charger. However, these approaches do not afford the same level of scalability, flexibility, or security.

For example, with non-networked chargers and sub-metering, load management is not possible, *period*. With smart panels, load management capabilities are seriously limited; additional chargers won't provide power if the capacity of the panel is met, rather than allowing output to be dynamically adjusted based on real-time demand and priorities. By way of example, with a smart panel system, if capacity is available for 5 EVs to be charging at once, the 6th EV can't start charging until the 5th completely finishes or is unplugged. Thus, for the same number of EV chargers in a building, the cost-savings from purchasing non-networked chargers is quickly offset by the higher cost of electrical infrastructure associated with a non-networked approach. Further, non-networked chargers do not have access control, so any resident or visitor could show up and start charging on someone's personal charger.

DYNAMIC LOAD MANAGEMENT IS CRITICAL

Many older buildings are already supporting the maximum electrical load. SWTCH's approach overcomes this challenge through load management, a technique which allows available electrical capacity to be shared between multiple chargers. Load management is possible because not all EV chargers are used at the same time, nor will EVs require a full charge every time they're plugged in.

In the case of Times New Square, one 200 A panel can support maximum 20 chargers. Taking into account that continuous loads should never exceed 80% of total capacity, 20 chargers will be sharing 160 A in the most extreme scenario. If all 20 chargers are in use at once, the maximum output will be 8 A; if 10 chargers are in use at once, the maximum output will be 16 A.

As charging demand grows and capacity is exceeded, priority load management may be implemented, taking driver-defined charging priorities into account to ensure that all residents' charging needs are met.

Associated cost savings from this component of the project range from $16,000-$40,000, compared to tying non-networked chargers to sub-metering or smart panel systems. Higher cost savings are possible relative to the sub-metering approach, due to reduced electrical infrastructure requirements enabled by load management. A minimum cost savings of $16,000 can be achieved relative to the smart panel approach, with further savings achieved if the goal is to support the greatest number of drivers at once.

COST-EFFECTIVE CONNECTIVITY

Many urban multi-family buildings have underground parking where there is typically no internet connection. For SWTCH to provide network management services, a network connection needs to be established via cellular or WLAN.

This challenge was overcome by establishing an internet connection via WLAN, eliminating the cost of installing expensive cellular repeaters. Some real estate developers may choose to bring cellular service to parking garages as a security measure and/or amenity, however for

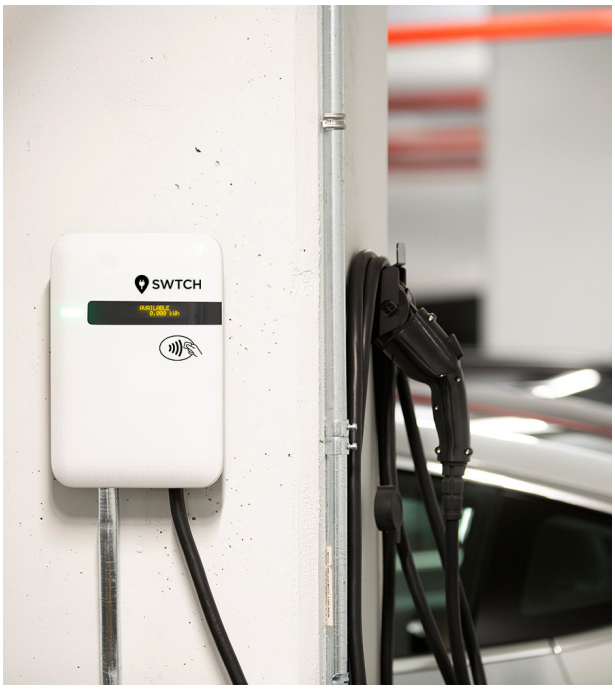
retrofit situations, it usually represents an unnecessary additional cost. SWTCH's chargers have built-in local load management, ensuring that load management is possible even in the event of an internet outage.

Associated cost savings from this component are estimated to be $8,000, compared to using cellular repeaters, bringing total cost savings from this project to over $24,000.

SCALABLE & FUTURE-PROOF

When it comes to retrofitting existing buildings for EV charging, careful attention must be made to each building's unique requirements in order to develop a tailored, future-focused plan. With SWTCH's networked, smart charging approach, the charging needs of the wider community can be accommodated, not just the first one or two lucky residents tapping into the existing panel with little spare capacity.

As battery technology improves and consumer preferences change, many jurisdictions are implementing forward-thinking policies to encourage greater EV adoption. Whether for new or existing construction buildings, real estate developers and building operators need creative, cost-effective solutions. SWTCH is offering just that.



About SWTCH

SWTCH provides end-to-end EV charging and energy management solutions for multi-unit residential and commercial settings throughout North America. We streamline the charging experience for EV owners while maximizing usage and revenue for building operators.

Reach out for more information.

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