ELECTRIFYING THE TRANSPORTATION GRID

Benefits, challenges of EV charger installation

By Kent Waddington

The network of zero-emissions vehicle/electric vehicle (ZEV/EV) charging stations on healthcare campuses is growing steadily across the country.

A recent survey of 101 Canadian hospitals revealed 76 per cent have EV charging stations, and 26 per cent have preferred parking for low emission vehicles.

Behind this embrace of the modern, efficient transportation grid is an understanding of the benefits and challenges inherent in electrification.

A sound electrification plan can enhance an organization's preparedness to deal with future climate change impacts, help reduce its ecological footprint, bolster its corporate sustainability plan, improve its perceived 'brand' in the community, as well as among current and potential employees, and increase staff satisfaction, which is linked to workforce participation and retention.

"Electric vehicle charging stations are a visible demonstration of an employer's commitment to sustainable business practices," says Cara Clairman, president and CEO of Plug'n Drive, a non-profit organization committed to accelerating the adoption of electric vehicles in Canada. "The biggest barrier to more widespread adoption of EV technology and the associated charging grid is the lack of understanding about the significant environmental and economic benefits of using electricity instead of fossil fuels."

According to vocal ZEV champion Dr. Pascal Gillrich, many hospitals are in the "dark ages" when it comes to the adoption of the technology.

"Changing the mindset in the healthcare community will take time but at the end of the day, it just makes sense," he says. "All of us in healthcare have a responsibility to

engage senior leaders, together with our friends and colleagues, in the conversation and urge the opening of minds."

Dr. Gellrich encourages everyone to step out of their conventional gasoline-fuelled comfort zone and investigate ZEV technologies.

From an organizational perspective, embracing EVs and an EV charger network involves more than visiting a hardware store to pick up a few off-the-shelf charging stations.

Sunnybrook Health Sciences Centre's manager of energy and sustainability, Saleh Daei, is all too familiar with installing chargers in a healthcare setting. Daei has been helping to orchestrate the growth of Sunnybrook's charger network since 2017. Twenty-four chargers are currently in use at the Toronto healthcare facility, and 20 more are planned when funding is available.

Daei cautions organizations to confirm sufficient consumer demand and the presence of adequate facility infrastructure to support the chargers and draw on the power grid before making a purchase.

"You might find yourself digging up pavement and needing to install electrical infrastructure, such as transformers, power panels and heavy-duty wiring," he explains. "The chargers themselves are only part of the total cost. And don't forget to plan for the human behavioural element, maintenance program as well as an ongoing awareness campaign."

The 10 Level 2 dual charger units recently installed at Sunnybrook for staff use cost $67,000. They amounted to approximately 30 per cent of a total project cost, which included $24,000 in design fees and $110,000 in installation and infrastructure upgrade charges.

The University Health Network (UHN) has taken on similar EV charger installation projects. Phase 1 involved Tesla donating 36 charging stations for the Toronto General and Toronto Western hospitals. The charging stations can accommodate all types of electric vehicles and are available in both staff and visitor parking areas at no extra cost beyond regular parking fees.

UHN's energy steward Lisa Vanlint worked closely with parking management, business operations, security, facilities management, IT, infection prevention and control, and the Tesla destination charging program to make the project a reality.

"We in energy and environment covered the extras, such as painting the zones green and installing electricity submeters to track the energy impacts and operational costs," says Vanlint. "Funds saved from other energy conservation projects were committed to the EV project because we felt this was a very effective way to bring down greenhouse gas emissions."

Sparked by requests from physicians, Phase 2 was initiated and involved the installation of six more donated Tesla chargers in Toronto Western's parkade.

Vanlint says it's prudent that organizations develop a sound written policy to govern EV charging stations. It should include a clear articulation of fees (if any), consequences of inappropriate use by non-EVs (internal combustion vehicles, motorcycles, hybrids and off-road/commercial vehicles), length of permitted charging time and common charging courtesies.

While retrofitting a charger network into an existing healthcare facility is often fraught with unexpected obstacles, designing for a new build also has its hurdles, says Frank Deluca, chief imagineer at DCL Healthcare Properties, developers of an innovative green medical arts centre in Niagara Falls, Ont.

"(The new centre) was designed to conserve natural resources and have a low carbon footprint with electric car chargers seamlessly integrated as part of the project; however, the chargers posed a challenge," explains Deluca. "Not all public charging stations are the same. Some are free, some are not. Some charge much faster than others. And, most importantly, different electric cars need different types of charging ports, particularly Tesla, which uses a unique proprietary charger system."

To incite EV buy-in, Deluca favoured offering free charging but had to be fiscally responsible at the same time. He considered contracting with one of the many third party North American EV charger firms that would install, manage and operate the network. He debated for weeks with his team about whether to buy or lease equipment, as well as which types of chargers and brand names to install.

"I knew there was a growing list of locations in the area featuring Level 2 charger installations but I wasn't aware of any Level 3 fast charger sites," says Deluca, who wanted to ensure the chargers would meet user requirements.

In the end, the design team opted to rough-in 15 charging station locations — five to service the general public and 10 for building tenants. A fee will not be levied for use of the chargers and tenants will be able to choose the type and brand of charger they require. ■

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