Data-Driven Approach Results in Balanced Parking Space Use and Improved Driver Experience

eleven-x Brings Smart Parking to the Town of Oakville

Oakville, Ontario

Customer Challenge

The Town of Oakville was looking for a way to measure parking utilization in the busy downtown core and decongest their busiest street, Lakeshore Road. Their immediate goal was to find a solution that would provide accurate stall level occupancy monitoring with the ability to use both real-time and historical data gathered over time. The real-time data was needed to direct people to vacant parking spots while historical data would provide insights on utilization and payment compliance. The long-term goal was to use that data to inform their parking management strategy and policies. Learning from the challenges that a nearby municipality had run into with its own smart parking pilot, Oakville knew what they did and did not want from their own smart parking solution: namely, they were looking for reliable, accurate sensor-based space occupancy monitoring that would make collection of data as smooth as possible.

Solution – eXactpark™ by eleven-x

- Fully embedded sensor with no profile above ground with 99.5% accuracy in all weather conditions
- Ultra-long sensor battery life that lasts up to 10 years via LoRaWAN® technology
- Real-time status and data collection
- Wireless network connectivity
- Real-time webpage showing available spaces
- Integration with city infrastructure enabling data collection and analysis
- Digital wayfinding signage

Benefits

- **Real-Time Data:** Access to real-time data allows for agile decision-making to optimize areas where access to the university is needed most
- **Parking Profiles:** Longer-term, trend-tracking profiles create a comprehensive usage understanding to empower evidence-based decision-making
- **Accurate Technology:** eleven-x's technology is accurate, secure, and reliable, which lays a solid foundation for future initiatives.

OAKVILLE

The Town of Oakville is a suburb of the City of Toronto and is located along the shores of Lake Ontario, in the province of Ontario and with more than 225,000 residents, is one of the most densely populated areas of Canada. In addition to being Ontario's largest town, it also draws an average influx of 1.4 million visitors annually. Residents, combined with the steady influx of visitors, consistently converge to experience the town's dense and unique downtown entertainment district.

Challenge Details

Accessible and stress-free parking is a major priority for most municipalities, and the Town of Oakville wanted to make it a reality for its residents and visitors. With a population of over 200,000 – and growing – the Town knew from previous research that they wanted a reliable sensor-based solution that would provide accurate data monitoring capabilities in order to inform their parking strategy designed to improve driver experience. In particular, the Town wanted to reduce traffic and congestion in their downtown core, with an emphasis on busy downtown thoroughfares like Lakeshore Road. A perceived lack of available parking was causing town residents and visitors to the busy downtown Oakville area to become frustrated with their parking experience.

Lakeshore Road in Downtown Oakville

In terms of data, the Town was primarily curious about the actual utilization of available parking spaces (both those that were being underutilized and those that were in the highest demand), as well as the rate of payment compliance and how it can be enforced. As any data about parking utilization and rate of payment compliance would be used to inform a future parking management strategy, it was imperative that any and all data be as accurate as possible. Since the Town knew that a nearby municipality's smart parking pilot had issues with collecting data accurately, their intention was to find a solution with the most advanced data capabilities available.

Solution Details

The Town of Oakville ultimately chose eleven-x's eXactpark™ smart parking solution because it ticked all of the most integral boxes for their requirements. eXactpark is driven by the patented, award-winning SPS-X sensor, which integrates with a comprehensive software suite to provides real-time occupancy monitoring at the stall level, along with data collection and analysis. Data points tracked by eXactpark include individual space use counts, turnover, dwell time, and parking duration, and when analyzed can help inform an optimized parking strategy.

Real-time data also allows for the addition of wayfinding signage which can direct drivers away from busy thoroughfares with limited parking to areas with higher parking availability. This allows for increased utilization of historically underutilized parking assets, and the reduction of traffic congestion caused by drivers cruising for parking.

SPS-X surface mount and sub-surface sensors

Deployment

1,200 wireless SPS-X™ sensors were installed in thirty-two lots and additional on-street spaces throughout the paid parking area in the Town of Oakville's busy downtown core. Once enough data had been collected to quantifiably determine which streets were busiest and which often had available parking, eleven-x worked with the Town of Oakville to develop a parking guidance system that would drive congestion caused by drivers cruising for parking away from busy streets and toward streets with less congestion – and more available parking.

SPS-X sub-surface sensor when installed

This system was enhanced by the installation of wayfinding signs which clearly showed drivers where parking spaces could be found (on streets like Randall Street, Church Street, Lakeshore Road, Robinson Street, and Water Street) – and which areas to avoid. This information was also made available on the Town's website and payment app (which also highlight EV and accessible parking spots) making it easy and convenient for drivers to plan their routes and parking destinations ahead of time. eXactpark's data shows that after wayfinding signage was installed, peak occupancy on Randall Street, a previously underutilized parking zone, increased by over 20% while the peak occupancy on Lakeshore Road decreased by more than 10% – meaning that the dashboard can be used to both inform parking strategy and determine its effectiveness.

After the original installation of sensors and analysis of data, eleven-x worked with the Town of Oakville and a parking payment app provider to add a payment compliance use case. This means the Town could now analyze who is actually paying for parking as well as determine how that number can be increased. The goal here wasn't to increase enforcement of those drivers who hadn't paid for their parking, but rather focus on other ways of increasing payment compliance, including providing more ways to pay or better signage explaining how to pay. Thus, making parking in the downtown Oakville core seamless and easily navigable for drivers.

Wayfinding signage in Oakville

Additionally, a lot previously scheduled for development was temporarily employed as an opportunity to collect even more data. Because there is a surface mount version of the SPS-X, in addition to a fully embedded version, it can also be temporarily installed, rather than the more typical 10-year installation, to collect important data and provide an even clearer picture of parking utilization in a specific area.

Results

The eXactpark™ deployemnt has led to a number of positive outcomes for the Town of Oakville. Overall, parking experience for residents and visitors alike is much improved, thanks to the online dashboard showing where parking spaces are available, as well as digital wayfinding signage guiding drivers to open spots. In addition to this, drivers are spending much less time cruising for parking, thereby lowering greenhouse gas emissions and making the community safer.

Redirecting traffic from busy Lakeshore Drive to adjacent parking lots and streets was one of the Town's primary goals, and it has been successfully carried out through the use of wayfinding signage and the digital dashboard highlighting parking availability. This has helped balance the usage load by enabling awareness of and access to previously underutilized parking spaces.

Occupancy rates have gone from 15% to 65% for those spaces while Lakeshore's traffic has been reduced dramatically.

In fact, at peak times, there are on average 11 more parking spots available on Lakeshore Road compared to before the guidance system was installed.
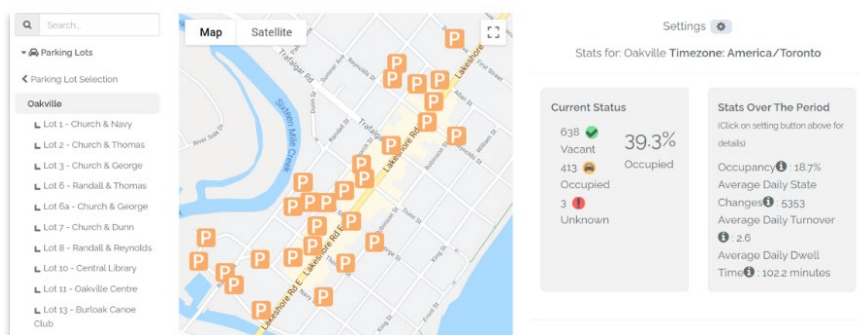
The Town of Oakville's dashboard providing key parking data and analytics

Thanks to the payment compliance use case, the Town now has a better idea how many people pay for parking, something that will influence their compliance policies and programs. The data supplied by eXactpark allows the Town to take a more informed approach on strategic planning, particularly for their parking management policies like parking rates, as well as for urban planning decisions (such as curbside functions and patios), and EV charging deployment.