Progressive cities strive for an optimum balance between citizens’ numerous and often conflicting interests and objectives. Restaurant versus office, residents versus colleges, high density versus low density – all require differing services from the city.

Parking is one of the most contested of services. Adequate and properly policed parking goes a long way to making cities liveable and workable.

Most cities with dense urban structure rely on street parking to augment private or public parking lots. Forcing vehicle turnover has typically mandated use of pay-and-display machines, parking meters, or time-limit enforcement using chalking of tires to demark the beginning of the time period.

Chalking of tires, whether using real chalk or writing down license plates, is enormously labor intensive. More than 20,000 people perform parking enforcement for municipalities in North America; of these, a significant percentage perform time-zone management using chalk.

Easy to defeat, difficult to apply in rain and snow, and dangerous if chalk sticks are used with a motorized vehicle, physical chalking of vehicles is an antiquated method for time management.

A drive-by digital chalking system does not require chalk. It automatically captures before and after images of vehicles and determines if there is an infraction. No operator intervention is required, except to begin scanning and to confirm infractions.

The autoChalk system by Tannery Creek uses the vehicle’s size, shape and color to ascertain if it has “seen” this same vehicle in the same location for a time period exceeding its policy limit. AutoChalk can scan and time individual vehicles at a rate of two per second at 25 mph and from up to 8 feet away. Moreover, the vehicles can be parked within only 6 inches of one another. Each is timed separately.

Because autoChalk does not use license plate recognition (LPR), it makes no difference if the plate is obscured, covered, damaged or otherwise illegible.

The parking enforcement officer (PEO) can examine the vehicle through a touch-screen display, expanding the image by touching the screen to look at valve stems, marks on the road and other details that will confirm that the vehicle has not moved. Once confirmed, the PEO presses a “ticket” key to record the instance of the infraction. At this point, the PEO can either issue a ticket using his normal handheld device or write a paper ticket, or use the back office method (described below).

Encouraging parkers to honor a maximum stay requires consistent enforcement.

The Drive-By Digital Chalking System Consists of a:

- Color camera to capture the vehicle profile.
- Color camera to capture the vehicle’s rear license plate.
- Laser to detect and measure the vehicle.
- Highly accurate GPS.
- Panasonic Toughbook laptop computer and cradle.

Calgary, Alberta, is one of Canada’s fastest-growing cities, with a population of 1 million and expanding fast. As with other major urban centers, encouraging parkers to honor a maximum stay requires consistent enforcement.

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However, the Calgary Parking Authority’s PEOs chalk tires by hand, leading its general manager, Dale Fraser to note: “The existing process of enforcing time-limited parking zones is inefficient.” What’s more, he said, the PEOs “are unable to respond to the volume of citizen complaints.”

A 10 business-day live trial of the autoChalk system followed a week of in-field testing. The pilot program operated in areas where business owners and residents had complained about over-
time parking and at high-traffic locations such as light-rail transit stations, schools, hospitals and entertainment districts.

AutoChalk was used to scan vehicles and record violators, including profile and license plates. Both the initial photos (time equals 0) and the final photos (e.g., time equals 2 hours 10 minutes) were recorded. AutoChalk processed 600 to 1,300 vehicles per shift. Initially, fewer vehicles were scanned, but as the PEOs and CPA management became more familiar with its operation and productivity, the numbers of scanned vehicles increased.

Citations were not issued on-site; rather, the data were brought back to the Parking Authority’s central location and transferred into Tannery Creek’s office software and the CPA database.

The PEOs then examined each offending vehicle, determined if it had a residential parking permit and issued a ticket as appropriate. The ticket was mailed to the vehicle’s registered owner; it featured compelling color prints of the initial and final photos of the vehicle, including profile and license.

More than 350 citations were mailed during the pilot pro-
gram. City attorneys believe the autoChalk citations will withstand challenges in court, given the photographic evidence and accurate GPS technology.

In the trial run, the autoChalk drive-by digital system proved very productive and reliable over the live trial, attaining a 250% increase in productivity over walking and chalking, with minimal setup and tear-down time. And it significantly reduced parker cheating. The Parking Authority’s PEOs found it easy to use and reported encountering less conflict with drivers.

The Calgary Parking Authority estimates that when fully automated, autoChalk – combined with the CPA’s comprehensive ticket management system – will achieve an approximately 500% increase in productivity over the current system, with a return on investment significantly less than one year.

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Lessons Learned:

• A fully automated chalking system, as the Calgary Parking Authority envisions it, requires the motor vehicle registration to be tightly integrated with enforcement where temporary and permanent vehicles registered to the motor vehicle department can be identified using the license plates.

• Routes need to be planned carefully to take full advantage of the automation of drive-by digital chalking.

• Data accumulated by autoChalk resulted in excellent parking statistics for use in planning.

• Fully automating the parking-time enforcement system will lead to greatly improved efficiency, decreased human error and fewer contested citations.