Transportation Services

Transportation Operations Branch

PAY-BY-PLATE TRIAL PROJECT REPORT

EPark

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1 Project Description

1.1 Background

Prior to the trial installation of Pay-by-Plate in June of 2013, Transportation Services (with assistance from Mark Huberman of Bunt & Associates) reviewed the current structure and operations for various areas of parking administered by the City. The resulting work stated the City of Edmonton needed to modernize and revitalize its existing parking operations, and its underlying technologies and IT systems. The business model, information systems, and supporting technologies would not adequately meet either the current or future demands for parking services.

The report included a number of recommendations towards the development of a new parking management strategy that would provide uniform parking management technologies throughout the City. Various methods were assessed, with Pay-by-Plate coming to the forefront a preferred approach. Further exploration into this method identified the City of Calgary's ParkPlus system as an industry leader in the use of Pay-by-Plate for both parking payment and enforcement applications.

In late 2012, an opportunity was identified that would have the City of Edmonton and the City of Calgary actively engage in a technology exchange program. The City of Edmonton is a leader with respect to the design, implementation and use of LED Street Lighting, whereas the City of Calgary's Parking Authority (CPA) is a leader with the development of fully integrated parking management solution.

Within the framework of a municipal partnership, the City of Calgary assisted the City of Edmonton with a local trial installation of their ParkPlus parking management system. On June 10, 2013, this technology was installed at both on- and off-street parking locations. ParkPlus pay-by-plate pay stations were installed underground in City Hall and nine curb-side zones in the downtown district near and around City Hall. The trial Pay Machines temporarily replaced approximately 290 of the City's 3300 coin operated meters.

The trial also presented the opportunity to re-brand Edmonton's commitment in parking service innovation along with the plans for new digital based services as "EPark". For this reason, the EPark brand would be used on the Pay Machines, the City's web site, and on the accompanying mobile app.

1.2 Goals and Objectives

The goal of this project has been to install select components of the Calgary established parking system within the city of Edmonton on a six to 12 month trial basis. The objective was to assess results, and use the experience gained and data collected to assist with the development of a comprehensive parking system for Edmonton in 2015.

1.3 Project Approach

In the interests of an efficient and timely implementation, Calgary fully hosted all aspects of the parking payment control system. The enforcement components of Calgary's system were used only as a test, and not for the purpose of issuing actual parking violations. By doing so, Transportation Services was better able to focus on the financial and routine data transfer aspects of having a hosted parking control system.

1.3.1 Business Readiness

Business aspects considered in order to implement the Park Plus trial:

- Understanding of Current Parking Management Processes (end-to-end)
- Understanding of New Parking Processes specific for Enabling a ParkPlus Trial
- Transportation – Equipment Support and Maintenance Training
- Finance – Payment Transaction Reconciliation and Ticket Processing Training
- Enforcement – Ticket Issuance Testing and Training (hand-held and mobile vehicle)
- All necessary end user system training
- Security review including PCI compliance
- Legal consultation prior to production use

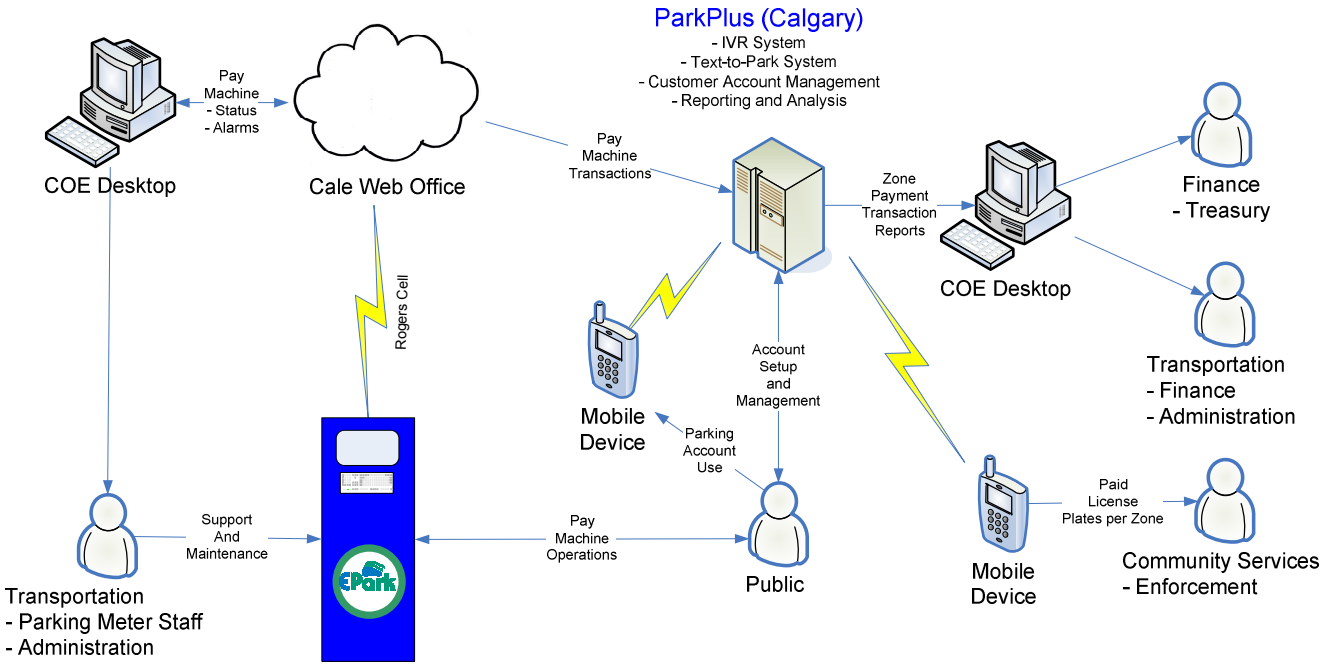
1.3.2 Technology Readiness

Technical aspects considered in order to implement the new system:

- Setup of the Calgary Hosted Backend – 10 Edmonton Parking Zones
- On-Street Pay Machine Installations (9)
- Off-Street Pay Machine Installations (6)
- IVR Telecommunications Setup for an Edmonton based service (780-496-PARK)
- Coin reader programming for supporting Edmonton specific $1 tokens (aka Downtown Dollars)
- Test use of enforcement handheld cameras
- Test use of license plate image processing and Autochalk software
- Test use of enforcement mobile vehicle
- Technical Support Service for the duration of the trial
- Setup of CPA web site development (as an extension of the CPA's ParkPlus site)
- iPhone application development (MyParking EDM) and general IOS publication

2 Project Scope

The following illustrates a conceptual model of the system components that were implemented...



2.1 Scope Definition

2.1.1 In Scope

- ParkPlus Device Installation for On-street and Off-street (City Hall Parkade) locations.
- CPA (Calgary's) ParkPlus as a hosted information system
- CPA's existing service agreement with Cale Systems as the pay machine platform
- Use of Pay-by-Plate functionality for supporting a customer payment processing method
- Application of a Credit Card pay option as new customer pay convenience
- Re-use and re-branding of CPA's iPhone app for supporting the Trial.
- Re-use of CPA's IVR and Text Message services for use in Edmonton.
- Parking Enforcement staff to utilized Calgary's mobile enforcement camera technology in a non-production capacity (test only).

- Parking Enforcement staff to utilized Calgary's Mobile Video Enforcement vehicle in a non-production capacity (test only).

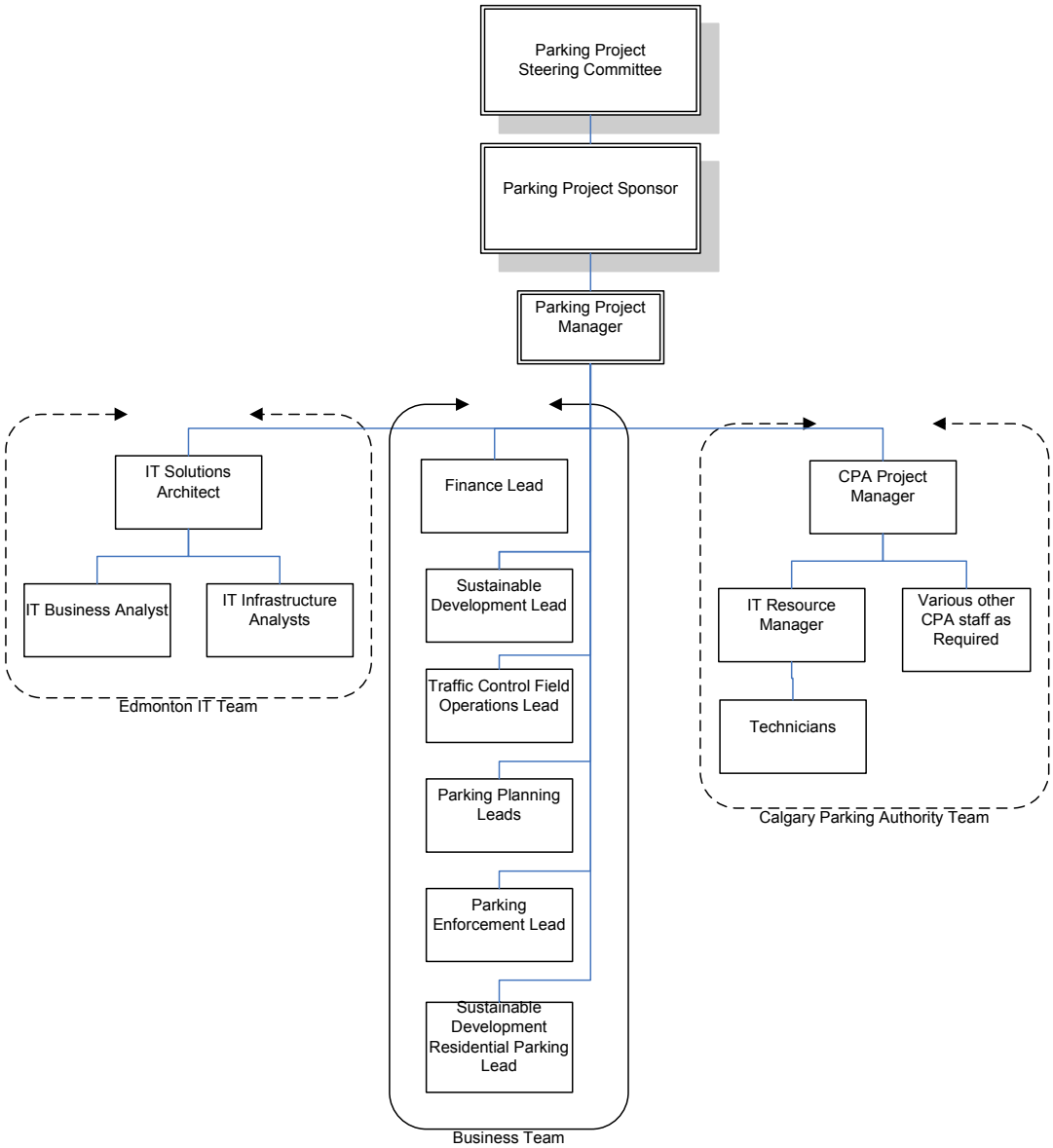
2.1.2 Out of Scope

- Use of any non Pay-by-Plate methods, such as Pay-by-Display or Pay-by-Space
- Installation of Calgary's turn guidance system for off-street parking facilities.
- Automated Integration with other City Systems
- Debit card pay convenience
- Use of FINES and JOIN for ticket processing
- Use of Calgary's parking enforcement systems.

3 Project Organization Structure

CALGARY PARKING TRIAL

- PROJECT ORGANIZATION -



4 Implementation Work Plan

ParkPlus Implementation Plan		Week					
		April 29 - May 3	May 6 - 10	May 13 - 17	May 20 - 24	May 27 - 31	June 3 - 7
Category	**Task**						
Pay Machine Deployment							
	Pay Machine Decals						
	Power Install for City Hall Pay Machines						
	(780)496-7275 linked to (403)537-7275						
	Assign Zone Numbers						
	Zones and Tariffs Installed into ParkPlus System						
	Test Cell Phone Payment						
	Training - Pay Machine Maintenance						
	Manufacture Signs						
	Install Signs						
	City Hall License Plates into System						
Financial Processes							
	Setup Coin and Credit Collection Process						
	Training - Collections & Counting						
	Test Revenue Processing						
Enforcement Processes							
	Setup Manual Internal Ticket Writing Process						
	Training - Enforcement Staff						
	Test Enforcement Processes						
Communications							
	COE Logo and Service Branding						
	Updates to Edmonton Website						
	Pamplets, Newsletters, and Street Comms						
	Media Event Planning						
	Design and Update of COE Web Content						
	Training - Customer Service						
Overall							
	Document Processes for Training						
	Data Extracts - Financial Payments						
	Reporting Requirements - Operational & Statistical						
	Smart App Modifications						
	Edmonton / Calgary Service Agreement						

5 Solution Evaluation Results

An analysis of clients who have previously implemented Pay-by-Plate parking systems, it was determined that personal public assistance would be a key aspect in successfully promoting the use of the new technology in Edmonton.

For this reason, the EPark Ambassador Program was initiated. An existing casual municipal labour force was tasked with assisting new EPark customers with the use of the new pay machines and addressing questions and/or concerns.

5.1 Significant Achievements

5.1.1 Overall Experience…

- Multiple payment methods available. Methods include coin, credit card, and cell phone (iPhone App, SMS Texting, and IVR)
- Generally positive public perceptions with regards to the change over to electronic pay stations.
- An increase of approximately 10% in curb-side parking availability was experienced. This was partly due to the removal of space delineations and identifying opportunities to extend and maximize curb-side parking areas.

5.1.2 Pay Station Customer Use

- Ability to pay using any on-street pay stations.
- General acceptance as easy of use. Most parking patrons understand the system and find it easy to user after their first time.
- Overall satisfaction with customers no longer relying on coin only for paying parking fees.
- No need to return to the car in order to display the receipt.
- Payments only accepted when parking is permitted and when payment is required.
- Allows customers to purchase time before the start of the day, but only be charged from the time that payment comes into effect.
- Added convenience with the ability to pay at any on-street pay station that is on the way to a destination.
- Easily accessible pay machine locations within the trial zone.
- With parking receipts now provided, the receipts can assist with personal record keeping.
- Receipts with their expiry time can then kept with the customer for quick reference, and not left behind on the car dashboard.
- Conflicts can be avoided with panhandlers and those selling illegally acquired coupons.
- Updated the pay stations to accept Downtown Dollars as a form of payment for parking.

- Special pay codes were setup and used to demonstrate an ability to provide promotional free parking time for selected areas.

5.1.3 Pay Station Administration

- Parking rates can be changed from central location.
- Devices are environmentally friendly with the use of solar powered equipment.
- Compact design with a small footprint takes up very little sidewalk space
- On and Off Street utilization data now available. This data can then be use to…
    - Enable upgrades to be identified
    - Optimize usage of street space
    - Allow Transportation Planners to make more informed decisions.
    - Support real-time occupancy statistics to help drivers plan their route to their destination and reduce traffic congestion.
    - Support predictive availability of parking stalls
- No losses of parking revenues as a result of parking meter vandalism with improved security of mechanisms and coin vault.

5.1.4 Pay-by-Phone/Cell Account Use

- New mobile capabilities (anywhere/anytime)
- Ability to setup a prepaid account. Legal community attending the nearby Law Court and media staff attending City hall pleased with this new convenience for frequent and routine parking.
- Fast speed-dial activation and de-activation of parking sessions with touch tone (IVR) services.
- Email and text messages can be used for call back notification of pending parking session expiry (useful for avoiding tickets in tow away zones)
- Low balance notifications on accounts help to avoid payment denial when funds near depletions.
- Accounts provide for automated monitoring and electronic receipts for purchases.
- Cell phone users are able to phone in and with touch tone phone, inquire about an existing parking session. This is useful when customers lose track of a current session's expiry time.

5.1.5 Photo Enforcement (during a limited test period only)

- Staff effort for identifying and processing parking violations was reduced. As well conflicts with enforcement officers were avoided. This was achieved as a result by running a computer automated violation detection process based upon the license plate images scanned in the field.

- The identified potential violations were then officer reviewed for acceptance or rejection.

- Officer comfort was shown to be improved as enforcement could then be conducted from the confines of a climate controlled vehicle, and then later from the convenience of an office environment for further batch processing. This also allowed for a more efficient use of officer time, as officers are no longer needed to patrol on foot, to manually chalk tires.

- The data collected can then assist with repeat offender identification, stolen vehicle recognition, and expired license plate enforcement.

- The continuity of photo evidence shows not only the offence of the day/time, but additional supporting information relating to payment. This can provide for clear and concise evidence of parking events and eliminates ambiguity the can occur afterwards; also reducing an officer's time spent in court.

- Mobile phones were used for manual real-time checking of parking payments for license plates.

- Hand-held cameras were used for single image capture of parked cars for subsequent feeding into a computer based violation detection process.

5.2 Challenges Experienced

The City is committed to addressing the following list of challenges to the best of its ability, as part of the selection, planning, and implementation of a permanent solution in 2015.

Weaknesses discovered and observed…

- Some communication failures in the system caused warnings to be handed out by enforcement officers when no violations had taken place

- Inability to do an early top up. Parking customers must start a new session near the end of their previous session rather than simply add credit

- Uncertainty, confusion about operating the new pay machine technology. For example, there has been some initial and lingering confusion as to whether a receipt is required to be displayed on the windshield of the vehicle. Not all first time users will pickup on the note in the instructions placed on the machines. After the "Press ACCEPT" instruction, there was smaller lettering indicating "You are not required to display this receipt in your vehicle".

- Parking customers frustrated with always having to know their plate number.

- Some disappointment with no longer being able to pass extra parking time on to other parking customers.

- Some disappointment with not supporting debit cards. Note: Support of debit card use does not align with the City's current financial practices.

- There was some disappointment with smart phone application only being available for iOS (iPhone). Other cell phone types were supported with the use of a Text-to-Park feature and IVR (Interactive Voice Recognition) call in.

- Line ups for people and the delay in receiving parking data caused some grief with officers who were trying manually ticket cars for non-payment.

- Screens timing out too quickly…

    - for adding more money to purchase

    - for printing receipt option

    - The default option is to accept whatever is entered instead of rejecting it; this was a problem when the customer might not have time to finish the transaction, for instance

- User experience design could use more work:

    - Public sometimes confused with the various screen options

    - The Multiple Language Option is displayed, but when pressed shows support for only English

    - The keyboard positioning not viewed as standard. E.g. zero key

    - Pay machine operations are not completely intuitive, and requires the reading of instructions

    - Messages are too high up on the screen

    - People pressing images of coins instead of putting in coins

- No setup of default parking zone. It would better if the machines would at least pre-load the zone that they reside within, to reduce user additional typing. If a different zone is to be entered, a zone override feature could be applied.

- Some types of prepaid Visa cards worked but others did not.

- Pay Machine Display…

    - Condensation occurs when it rains

    - Hard to see in full sunlight.

- Sound/vibration alarms were triggered without any known cause.

- Pay Machine accepts a payment transaction without any entry of a plate number. Some entry of plate should be mandatory in order to proceed to the payment options.
- Paper jams have occurred
- Wheelchair access can be difficult
- For Parking Enforcement officers, hand-held camera use can be problematic as in some instances the officer would need to stand into the street in order to capture license plate images. Also, it can be difficult to capture license plate images on cars that are backed into stalls.
- Some enforcement staff did not seem to have the proper training to use the real time online query, and were relying on outdated lists that needed to be refreshed
- Enforcement staff was issuing warnings anytime the plate number wasn't 100 per cent accurate. There was no consideration amongst officers that minor errors during entry of vehicle license plate could occur.

5.3 Suggestions for Solution Improvements

Recommendations from EPark Ambassadors

- Add more street lighting in around machines on the street.
- Improve user experience, simplify operations
- Add the ability to top up existing parking session instead of starting a new one every time
- Address quick time out concerns
- Consider voice prompting as an option for assisting the pay machine user
- Consistency of the experience across all channels. Positive feedback was heard from those who have used the mobile app
    - Consider that parking customers who do not (or wish not to) have prepaid accounts should still have the benefit from a similar simple convenient mobile experience
- Have machines stand out and be more visible
    - Make them a bit brighter in colour
    - Consider LED ribbon lighting around the machines
    - Add reflective tape.

5.4 Customer Satisfaction Survey

In the fall of 2013, a survey was conducted to assess the level of public satisfaction regarding the use of the trial pay stations. The survey results were collected both online and one-on-one from users after they had just used the system.

The results showed an overall 80 per cent satisfaction rate. When the respondents were asked what they like most about using the pay stations, 74.5 per cent selected “Ease of Use”. When the respondents were asked what they disliked the most, 57.4 per cent selected “nothing at all” with 23.4 per cent selecting “Have to remember License Plate”.

5.5 Customer Service Inquiries

For the duration of the trial, customer inquiries were routed to the City of Edmonton’s host service provider (Calgary Parking Authority).

The following was provided by CPA Customer Relations staff for inclusion in this report….

EPark Statistics

As of June 7, 2013 there were a total of 267 inquiries received to date.

In this period users of the system expressed the following comments to CPA customer services…

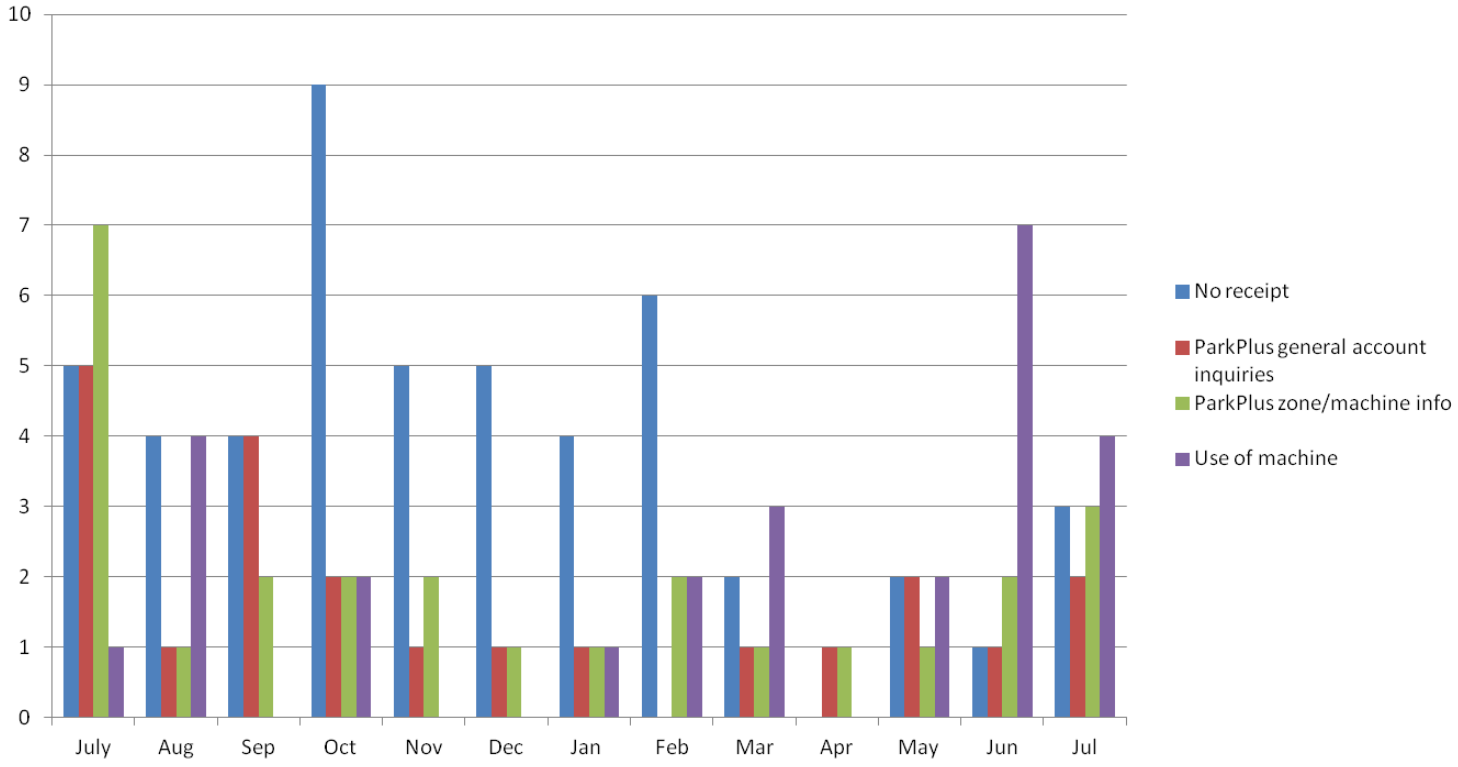
Pros:

- Accepts credit card
- Cell phone payment is convenient, easy to use and avoid line ups
- Display of receipt not required
- Payment can be made at any on street machine

Cons:

- Not enough pay machines
- Cannot add time to existing payment
- Display difficult to read
- Does not accept debit

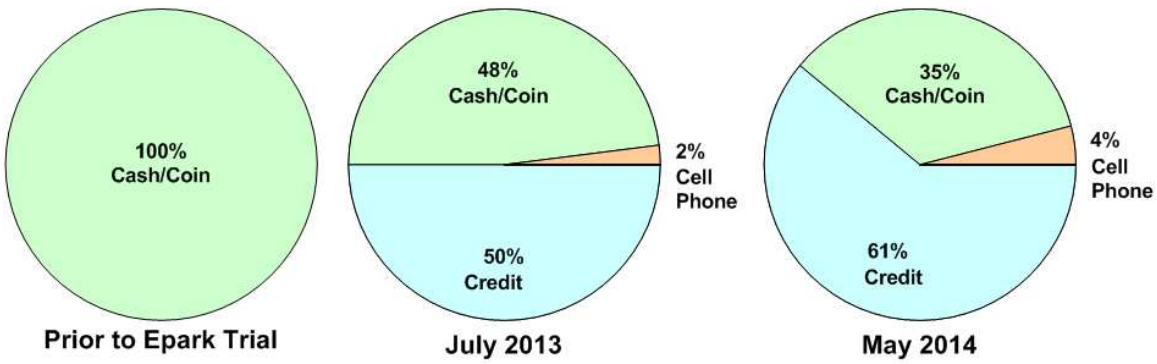
Top 4 Inquiries



5.6 Impacts of the Trail

The Pay-by-Plate Trial showcased an immediate up take on credit card payments from the moment the pay stations were made available. From that point on there was continued growth in the use of alternative payment methods (credit card and/or cell phone). Statistics taken from the trial also showed that the use of cell phone technology for payment doubled from June 2013 to May 2014.

The following graphics show the change in the payment selections and the growth in the use of credit and cell phone during the term of the trial…



6 Document Approval

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