RESPONSE TO RFP #12342-805 PARKING METER TECHNOLOGY, WITH MAINTENANCE AND SUPPORT FOR THE CITY OF FORT LAUDERDALE - TECHNICAL PROPOSAL

ELECTRONIC COPY

Submitted by: Mr. Jim Taylor
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Tel: (902) 752-5124 x 247 Due: February 4, 2020

MACKAY METERS™

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1. EXECUTIVE SUMMARY

MacKay Meters, Inc. ("MacKay"), is pleased to submit our response to the **RFP #12342-805** for the City of Fort Lauderdale ("City"). Our response provides information on all three types of parking hardware the City is interested in: the mkBeacon™ ("mkBeacon" or "mkBeacon 2Bay") single or dual space meters and the MacKay Tango™ ("Tango") pay stations. Our cutting-edge web-based Sentinel™ Meter Management System ("Sentinel™ MMS" or "MMS") along with mkAnalytics™, our newest and the industry's most flexible analytic tool, is also part of our response.

MacKay Meters, Inc. is a division of J.J. MacKay Canada limited and is a registered corporation in Florida with a support office in Sunrise, FL. MacKay has gained global recognition in the parking industry by providing our customers with impeccable customer service, and robust innovative products that are consistently recognized as being on the leading edge of technology. We have a 60-year history in the provision of products and services to all levels of local government including major cities not only in the United States and Canada, but also internationally.

Over the past 60 years, MacKay has gained crucial experience in deploying large scale procurements. Recently, MacKay has successfully delivered over 500 pay stations to San Francisco Municipal Transportation Agency , and has been chosen as the primary supplier of multi-space and single-space meters for the City of Vancouver, BC, with 400 Pay Stations installed during 2018 and 2019. Currently, MacKay is in the process of installing 1250 pay stations in the City of Montreal, Quebec.

The mkBeacon wireless single space or dual space meter accepts coin, credit card, smart card, and cellular payment. The mkBeacon™ meter uses solar power, has a large display with an easy to use piezo style keypad, utilizes the latest payment technology, all while featuring a new modular design. The exterior components of the mkBeacon™ meter are precision made, injection molded parts, made of an extremely durable, light weight, impact resistant polycarbonate copolymer resin material that will not corrode. The precision fit of the injection molded parts minimizes gaps and water ingress into the interior of the meter. The meter components mate tightly with the tubular stainless steel rear exterior housing of the mkBeacon™ meter, and together provide a very strong, weather proof exterior casing. The interior bracketry is made with recyclable plastics. **The mkBeacon meter is the world's ONLY battery neutral single/dual space meter, and will save the City THOUSANDS of dollars in battery costs.** This meter is the industry's "greenest" and most technologically-advanced parking meter, and one that would fit very well on your streets.

MacKay Meters produces some of the strongest, most secure, vandal-resistant housings in the industry today. As part of this proposal, and in addition to the mkBeacon meters, MacKay is offering the **optional MKH4000 vault** to replace existing vaults and provide a complete turn key solution consisting of brand NEW products from the pole up. This would include new locking coin cans and vaults outfitted with either MacKay or optional Medeco locking solutions as desired.

For areas where a centrally located pay station is best suited, MacKay has developed a smaller, lighter, and simpler solution to multi-space parking – the MacKay Tango™. The Tango™ supports various payment options including coins, tokens, smart cards, magnetic stripe and contactless credit cards as well as non-pin debit cards and is available in Pay and Display, Pay by Space or Pay by Plate configurations.

The TANGO, along with all MacKay equipment, is designed to adhere to today's stringent PCI DSS, PA-DSS, ADA and ISO 9001:2008 requirements.

Our hosted, Sentinel™ MMS is an extremely intuitive maintenance and reporting data aggregation tool. The Sentinel™ MMS will provide real time information to the City, allowing you to make decisions concerning the parking system based on specific data. Sentinel™ MMS offers a dashboard view of all parking operations including maintenance reports, financial reporting, event scheduling, alerts, rate management and third-party functionality.

Sentinel™ MMS was designed using best practices providing the ease of integration with third parties such as mobile payment providers, vehicle detection providers, enforcement providers and reporting tool providers.

mkAnalytics™ is a newly released add-on for Sentinel™ MMS that allows the City to design their own reports and dashboards with timelines, pie charts, bar graph and dozens of helpful ways to better display and communicate data. It includes daily emails for pushing certain reports to individuals or groups and the flexibility to query anything in the collected

I am confident that as you read through our comprehensive response, you will come to the conclusion that the MacKay product line, is the right choice for your operation as defined. We are the industry's most exciting company, providing products at the lowest price point, with an existing and robust interface integrated with several third-party mobile payment providers, sensor and enforcement solutions. We have understood from inception that the open architecture design in our back-end meter management system was imperative and has become the new standard in complex projects that need to interface with other pieces of any decided parking infrastructure puzzle. Simply put, MacKay is bringing the most experienced team, the most dynamic product and the most flexible software suite as our offering to you.

We look forward to the opportunities that this process presents and are confident the City will benefit from a partnership with MacKay for many years to come. MacKay will comply with all terms and conditions set forth in the Request for Proposals, unless otherwise agreed by the City.

Sincerely,

J.W. (Jim) Taylor
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1.1 PROJECT TEAM

Jim Taylor, Business Development Manager

Mr. James W. (Jim) Taylor has been employed by J.J. MacKay Canada Limited/MacKay Meters, Inc. since August 1991, selling and deploying MacKay parking solutions worldwide. Roles covered under Mr. Taylor's tenure with MacKay have been Sales Manager, Regional Manager-South Eastern USA where he opened the first US regional distribution office for MacKay Meters, Inc. After a successful tenure opening the USA office, Mr. Taylor returned to the corporate head office in New Glasgow Nova Scotia where he assumed the role of Sales and Marketing Manager. In 2010 Mr. Taylor was promoted to Business Development Manager. Mr. Taylor has also served a full 4 year term in the distinguished role as a member of the Canadian Parking Association Board of Directors- Atlantic Chair, representing 4 of 10 Canadian provinces.

James MacKay, V.P. Sales

James is currently in his 13th year with the company and brings a unique outlook to our project management team. Being a 3rd generation 'MacKay' to work in the company, there is a different level of ownership, commitment, and responsibility that comes with his involvement. After all, his name is on every one of MacKay's products. James also looks after the North American sales staff, along with MacKay's worldwide distributor network. He has helped cities all over the world design custom parking systems and looks forward to working with the City, to ensure a smooth and cost effective transition to new technology.

Adrian O'Neil, Chief Technology Officer

Adrian joined MacKay in 2009 and is an experienced software and services director, with over fifteen years of managerial and hands-on technical experience. Adrian has been intricately involved in the product design and development life-cycle from both a hardware and software perspective. In 2011, Adrian was instrumental in designing and delivering Sentinel™ Meter Management System to the marketplace. Adrian has been involved in this RFI process and is very familiar with the City's specifications. Adrian's role is to ensure the products to be delivered meet the City's specifications and he will assign and oversee the integration work to be completed.

Daniel Benoit, Customer Service Manager

Daniel has over 20+ years of experience with MacKay, starting in the paint shop and working his way up through the company to become the Customer Service Manager. In his role, Daniel provides overall leadership and management of MacKay's Customer Service Department. His solid record of personal/professional integrity and his willingness to exceed all Customer expectations makes him a

key player in the continued success of MacKay's after sales service. Daniel will oversee the scheduling of any on-site customer service staff for this procurement and will be the City's point of contact.

Bill MacKenzie, Customer Service Technician

Bill has over 15+ years of experience working with MacKay single-space and multi-space products. Bill is one of MacKay's customer service technicians who travels throughout North America to provide customer support and training for our products including Sentinel™ Meter Management System. Bill will be utilized to provide on-site support and training for this procurement opportunity.

1.1.1 ADDITIONAL SUPPORT STAFF

Role	Experience Overview
Jason Munro Customer Service Technician	Jason has over 6+ years of experience working with MacKay pay stations and Mackay's single space products. Jason ran the Florida support office for 2 years+ and managed over 200 pay stations in that region. Jason was also onsite for the installation of pay stations in San Francisco. Jason handles a large portion of all customer service calls and is instrumental in product testing and troubleshooting.
Roger Plamondon Sales Support Manager	Roger has been with MacKay Meters since 2007. Prior to joining the MacKay Team, Roger had over 20+ years in sales, web development, project management and customer service. Roger manages the product documentation for MacKay and assists the sales team with customer training, presentations, RFP responses, credit card activation, marketing materials and tradeshows.
Mark Sloan Customer Service Technician	Mark has over 33+ years of experience with MacKay Meters single space and multi space products and is integral in troubleshooting issues the City may encounter. Mark was instrumental in the installation and delivery of the new wireless single space meters to Providence, RI and St. John's NF.
Steve Fitt Order Entry / Invoicing Manager	Steve has been with the J.J. MacKay Canada Ltd. since 1995. He has held a few positions over the years and has been in his latest position as Order Entry/ Invoice Manager for 13 years. In this position he works closely with all staff to meet and or exceed our customers' needs.
Janey MacLean Sales Support / Credit Card Support	Janey has been with MacKay Meters since Oct. 2017. She is responsible for credit card payment activation as well as working with the clients on contracts and other setup details.

2. EXPERIENCE AND QUALIFICATIONS

2.1 OVERVIEW OF MACKAY METERS

J.J. MacKay Canada was founded in 1960 in Canada and MacKay Meters, Inc. was incorporated in Florida in 1997. MacKay is headquartered out of New Glasgow, Nova Scotia, Canada, with its Research and Product Development office in Halifax, Nova Scotia, Canada. Sales and service offices are located in Scarborough, Ontario, St-Jean-sur-Richelieu, Quebec, Victoria, British Columbia, Patterson, New Jersey and Sunrise, Florida. Additionally, MacKay is supported worldwide by distributor offices.

The MacKay product line includes:

- **The MacKay Tango™** and **Guardian™ Multi Elite** multi-space parking pay stations.
- Single and dual-space parking meters featuring the **MacKay mkBeacon™ and mkBeacon™ 2-bay** wireless credit card meters and the **MacKay Guardian™ X Series** meters.
- Single-space parking meter housings, locks and decorative posts.
- **Sentinel™ Meter Management System for monitoring meters remotely.**
- **mkAnalytics™** data intelligence tool for Sentinel™ MMS.
- Various third-party ancillary parking control equipment including handheld computers; gates, vehicle boots or clamps; and other miscellaneous products.

MacKay sells its product line through its regional sales and service offices, its subsidiary companies and a worldwide distributor network. MacKay has more than 500,000 fully electronic parking meter mechanisms in service worldwide and over 3000 pay stations.

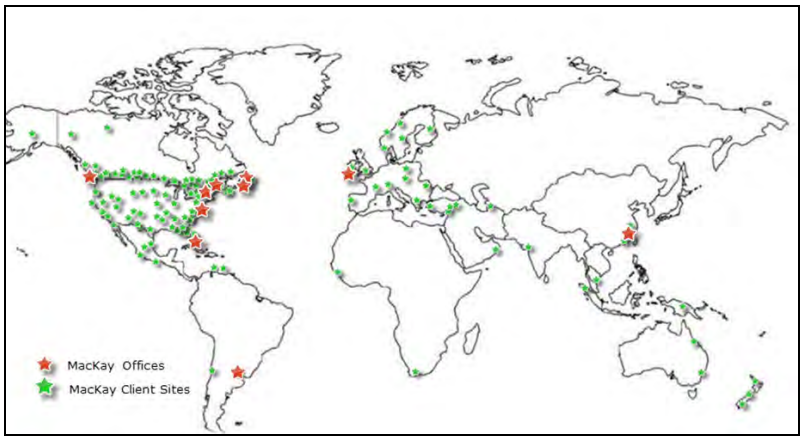

Figure 1 - MacKay Deployed Product

State of Florida
Department of State

I certify from the records of this office that MACKAY METERS, INC. is a corporation organized under the laws of the State of Florida, filed on September 6, 1996.

The document number of this corporation is P96000074021.

I further certify that said corporation has paid all fees due this office through December 31, 2020, that its most recent annual report/uniform business report was filed on January 20, 2020, and that its status is active.

I further certify that said corporation has not filed Articles of Dissolution.

Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capital, this the Twentieth day of January, 2020

Secretary of State

Tracking Number: 8332774219CC

To authenticate this certificate,visit the following site,enter this number, and then follow the instructions displayed.

https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication

2.2 PROVEN ABILITY TO PROVIDE TECHNOLOGY FOR LARGE PROJECTS

As mentioned previously, MacKay Meters has extensive experience with large projects including:

2014 - City of San Francisco – 500 pay stations

2015 - City of St. John's, NF – 1,200 wireless single space meters

2015 - City of Providence – 1,400 wireless single space meters in 2015

2016 - Atlantic City, NJ – 500 mkBeacon 2-space meters to manage ~1000 spaces.

2017 – City of Ocala, FL – 200 mkBeacon 2-space and single space meters

2017 – City of San Francisco – 100 mkBeacon single space meters

2018 – City of Vancouver, BC – 320 Tango pay stations and 100 mkBeacon 2-space meters

2018 – City of Macon, GA – 555 mkBeacon 2-space and single space meters

2019 – City of Walnut Creek, CA – 680 mkBeacon 2-space and single space meters

2019 – City of Montreal, QC – 1250 Tango pay stations

Other large projects delivered by MacKay Meters in previous years including in New York City (over 60,000 meters), San Francisco (over 29,000 meters), Miami (over 7,000 meters), Hong Kong, Los Angeles, and many more.

2.3 THE MACKAY ADVANTAGE

There are four major advantages to choosing MacKay Meters as your parking equipment provider; workmanship, our ability to support third party solutions, experience and our push for environmentally cleaner solutions.

Workmanship is paramount at MacKay Meters and we pride ourselves on having some of the most durable and long lasting products on the streets today. If you are looking for a well-built meter that keeps working year after year with only minimal maintenance; then look no further than the mkBeacon™ smart meter or MacKay Tango™ pay station. Additionally, MacKay has one of the largest painting facilities in Eastern Canada and can powder coat large quantities of meter products to most any color the City specifies.

MacKay's ability to work with third party solutions allows us to concentrate on what we do best… make durable well designed parking meters. We have developed and interface through our Sentinel meter management system that supports easy integration of third party solutions including phone payment solutions, enforcement solutions and street sensor solutions. We understand that each client site is inherently different, so we provide our clients with the flexibility to choose from several different

service providers to create the best overall solution. This has proven to be significantly better than a completely proprietary solution.

Experience was outlined earlier but you will find very few companies in this industry with the kind of project experience that MacKay possesses. Being able to manage an installation of 1250 pay stations in Montreal in just a few months was the achievement of months of planning and well thought out execution that can be drawn upon for your project.

Finally' finding "greener" solutions has been a point of pride with MacKay meters. We are proud to offer the industry's ONLY battery neutral single and double space parking meter, something only achieved by being driven to offer the greenest and overall cost effective product on the market today. Utilizing more solar power, using recycled materials, and finding various battery options that don't include harmful metals while still providing long lasting power, are just a few examples of the steps MacKay has taken to reduce our carbon footprint and be more responsible environmentally.

2.4 FUTURE PROOFING

One of the most important attributes of the mkBeacon meters and the Mackay TANGO pay stations is their ability to be upgraded to newer technologies. The modular design of the meters allows for newer communications modules to be added and support of new contactless payment methods. All of which can be added onto the existing equipment when the new technologies are ready for public use.

3. APPROACH TO SCOPE OF WORK

3.1 PROJECT APPROACH / METHODOLOGY

It is our understanding that the City of Fort Lauderdale is looking for newer technologies in order to upgrade their existing parking meters and pay stations that will allow them to take full advantage of newer payment options, communications capabilities, product integrations, analytics, improved maintenance functionality and meter management tools.

MacKay is in a unique position being able to offer all three of the products the City is interested in learning about; single space meters, dual space meters and pay stations. Using the same back end Management, reporting, Maintenance and analytical backbone in one software suite, MacKay Sentinel.

MacKay is offering a solution that can be installed in stages or all at once if the City chooses. Strong emphasis on staff training and ongoing support from our customer service team is ensured. This way, the City controls their meters without the need of third-party management companies in handling initial maintenance and repair needs. All MacKay hardware solutions are modular and easily maintained with a small cache of spare parts.

Referencing Addendum #2 and section 3.5 of the RFP document, it is MacKay's understanding that the City is looking at utilizing a third-party City management platform that has the ability to drive the requested parking equipment. MacKay does have plenty of experience with this type of system, and look forward to discussing the overall requirements and data flow with this third party if successful. MacKay does not currently use World Pay as its payment gateway, however does utilize Credit Call, which has an interface into the World Pay merchant processor arm. Any fees, licences or costs associated with adhering to the required services described in Addendum #2 and section 3.5 of the RFP document are not included in this bid, and would be passed onto the city (if applicable).

3.2 WORK PLAN

MacKay proposes to supply the City with a combination of single and dual space meters to cover on-street parking where existing meters are in need of upgrading. The existing infrastructure of poles reduces the overall cost of implementing this work plan versus installation of new pay stations on-street. The mkBeacon provides a newer, cutting edge approach to single / dual space parking. When someone parks in an open space with a new mkBeacon single or dual space meter, they don't have far to walk to get to the meter, all instructions, along with payment and parking session information is

communicated on a large LCD screen. All major coin, credit and cell phone payment options are accepted (except bills) and enforcement is easily verified visually at the pole through bright LED lights seen on either side of the meter. The implementation of a dual space meter reduces the City's costs significantly where one meter can manage two spaces.

The MacKay Tango offers a low cost solution for lots or areas without pole infrastructure and includes parts that are common with the mkBeacon which allows the city to require fewer spare parts. The Tango is small yet strong and is a non-imposing piece of hardware on any street scape.

The Sentinel Meter Management system integrates the mkBeacon and Tango maintenance, financial and enforcement functionality under one platform. It is browser based, highly configurable and designed to work easily with third party solutions such as mobile payment, sensors and enforcement applications.

In general, the work plan would entail identifying the meter locations that the City wishes to upgrade to determine the type and quantity of meters required. Next, MacKay will work with the City to determine the best configuration of those meters that will allow for an easier transition and also allow for future upgradability. MacKay will then build the meters and schedule delivery, training, installation and implementation of the meters.

On-site training will be provided for all your parking staff (maintenance, financial and enforcement) during the installation process and follow-up training will be provided once scheduled and as needed. Integration with third party applications will be setup prior to installation where requested.

Ongoing maintenance will be performed by trained and supported city staff who will be the first responders, and trained to be responsible for system tier one troubleshooting. It is proven that trained city staff armed with spare parts and general repair knowledge as gleaned from the training and customer support staff, offer the best possible scenario for uptime should an issue arise in your system.

It is suggested that a 3% spare parts inventory be procured with the system to insure spare parts are readily available.

3.3 SAMPLE PROJECT SCHEDULE

The following is a sample Project Schedule typically undertaken for the delivery of single / dual space meters and pay stations for approximately 5000 spaces:

MacKay General Meter Project (5000 spaces)	**~120 days**	
MacKay Process	56 days	
Sales Order Approved	2 days	MacKay
MacKay Product Specifications Package Sent to Customer	1 day	MacKay
Project Kick-off Meeting	**2 days**	
Confirm Order Details	1 hr	Customer, MacKay
Ensure Shipping Address is correct	1 hr	Customer
Communicate Merchant Account Details	1 hr	MacKay
Discuss 3rd Party Integrations	1 hr	Customer, MacKay
Sentinel Services Explained	1 hr	MacKay
Rates Discussion	1 hr	Customer, MacKay
Signage / Decal Requirements	1 hr	Customer
Installation Requirements	1 hr	Customer, MacKay
Expected Go-Live Date	1 hr	Customer, MacKay
Obtain End User Information	1 hr	Customer
Training Requirements	**1 day**	
Confirm Training Requirements	2 hr	Customer
Confirm who will participate in the Training	1 hr	Customer
If remote of On Site allocate time	1 hr	Customer, MacKay
Review Returned Information	**10 Days**	
GHN Agreement Signed	5 days	Customer
Review of Configuration Information	5 days	MacKay
Merchant Account / CreditCall Setup	**10 Days**	
Confirm Approved Merchant Account is being setup	0.5 hrs	Customer, MacKay
Proper Merchant Info Returned To MacKay	10 days	Customer
Sentinel Setup	**14 days**	
Customer Added to Sentinel	2 days	MacKay
Enter Units in to Sentinel	3 days	MacKay
Merchant Account info entered into Sentinel	1 days	MacKay
Specified Sentinel Services Activated	7 days	MacKay
Meter Name(s) and Location Setup Confirmed	1 day	Customer
Production and Shipping (concurrent with other setup)	**40 days**	
Production Buffer	40 days	MacKay
Ship Units	1 day	MacKay

Arrive at Customer	7 days	MacKay
MacKay Technician - Travel	1 day	
Book Travel	**1 day**	
Flights	1 day	MacKay
Hotel	1 day	MacKay
Ground Transport	1 day	MacKay
Travel to Location	1 day	MacKay
Customer Process	66 days	
Equipment Install and Configuration	**~60 days**	
Install Meters	60 days	MacKay, Customer
Signage Installed	60 days	Customer
Training	**4 days**	
Train Customer on Hardware / Meters	1 day	Customer, MacKay
Train Customer on Sentinel	1 day	Customer, MacKay
Configure Meters	1 day	Customer, MacKay
Meter(s) Verified Online	1 hr	MacKay
Go-Live Preparation	**1 day**	
Rates Approved	1 hr	MacKay, Customer
Receipt Messaging Approved	1 hr	Customer
3rd Party Integrations Ready	1 hr	Customer, MacKay
Merchant Account Live	1 hr	Customer, MacKay
Screen Messaging Approved	1 hr	Customer
Go Live Date	1 hr	Customer, MacKay
Customer Services Handoff	**1 day**	
Project Close Meeting	1 day	Customer, MacKay
Hand off to Customer Services	1 hr	MacKay

3.4 DELIVERABLES - MKBEACON DETAILED PRODUCT DESCRIPTION

The mkBeacon comes in single or dual (2-Bay) space versions depending upon the location. Other than software, the primary difference is the dual space keypad includes left and right space options. Typically, a dual space mkBeacon will replace two older meters on one pole given these meter poles are usually installed between two spaces.

Figure 2 - two single space meters can be replaced by a dual space mkBeacon

3.4.1 mkBeacon Housing

The mkBeacon consists of high strength polycarbonate front cover assembly attached to a rear tubular stainless steel frame. All electronic components and sub-assemblies are held or mounted within the front cover assembly which locks onto the rear frame assembly. The rear frame assembly is securely bolted to the vault housing (either existing housing or new MKH housing vault).

When placed into and secured into traditional meter housing, there is no longer a need for a traditional mechanism housing "top" and "cap" as the mkBeacon front and rear assemblies replace these portions of the housing. Only the existing housing vault is used (or replaced with a new housing vault where needed). The mkBeacon is designed such that when unlocked, the front cover assembly can be easily lifted up to a service position or lifted up fully until it becomes detached and removed from the rear frame assembly and meter housing.

The front cover assembly has a unique service position feature in that it can be slid upwards relative to the back frame to a fixed/locked position. This allows for the most common forms of service work such as inspecting/clearing coin chutes, card slots and battery replacement to be done with the meter held in place freeing up the technician's hands.

When viewed from the front, the separate coin and card slots are visible as is the optional "NFC/Tap" reader area for making contactless payments. All payment modes are accessible to the user when the mkBeacon is properly installed into place with the rear frame assembly.

Figure 3 - Single space mkBeacon wireless meter

Above the user keypad is the back-lit graphics LCD, visible through a rectangular opening on the front cover. Above the LCD, are the light sensor and three visual indicator LEDs for use by enforcement and maintenance staff. The red and green LEDs are used for enforcement or meter status indication, usually to indicate that the meter is OK/in a valid "time purchased" state or to indicate that the meter is in an expired state. The yellow LED is used primarily to indicate that service or maintenance is required.

Figure 4 - Maintenance friendly access for on-street servicing

Above these three LEDs is a fourth LED light designed to illuminate the front face and controls and payment slots on the mkBeacon under low light conditions.

The card slot is for accepting chip based smart cards, as well as traditional magnetic stripe type credit cards. An optional contactless card reader can be installed to the right of the coin slot for "Tap" NFC payment..

3.4.2 Protection of Electronic Components

The electronic components are all conformal coated to protect against moisture.

Figure 5 – Dual space (2-Bay) mkBeacon wireless meter

The protective covers used on the mkBeacon are made of a clear, ¼" thick Lexan® polycarbonate with an added UV inhibitor extends the life of the covers, reduces premature yellowing, and helps protect the Lexan from breakdown due to exposure to strong UV rays.

The mkBeacon meters have a series of "air flutes" or channels built into their design. Attention giving to water ingress and water exposure ensures that rain water cannot easily enter the housing and is designed to provide for air circulation for the escape of moist air that may otherwise be trapped inside the housing.

Furthermore, condensation build-up inside the meter is minimized by air circulation within the meter cavity that the meter post is straight/vertical allowing water to drain properly from the housing. It is suggested that installed meter

posts have ¼ inch drain holes drilled 6 inches above the base and 6 inches below the housing to help allow water and condensation to escape from the mounting poles.

3.4.3 Power

The mkBeacon is the worlds ONLY single space meter that runs entirely on renewable energy. A single Lithium-Ion battery pack (6 x AA or 12 x AA) provides enough power to keep the meter running and support all functionality. Assuming a fully charged new battery, the typical estimated life expectancy of a rechargeable battery pack is about four to five years. MacKay also provides a battery charging station so the City can always have charged batteries on their shelves IF a battery does need replacement.

Figure 6 - rechargeable lithium-ion battery pack

3.4.4 mkBeacon Display Screens and LEDs

The mkBeacon has a large, high contrast, graphics capable, backlit, liquid crystal display, which provides for contrast adjustment. The display is protected by a high quality, ¼" thick, clear Lexan® polycarbonate cover which has a UV inhibitor additive to extend the life of the Lexan, and to allow for clear, unhindered viewing of the display. The large display allows for the presentation of large, easily read characters and text. The display is a vertical, flat facing design, allowing for easy viewing for most users and also ensuring that rain water will readily run off the display, providing a "self-cleaning" aspect

Design and deployment of the mkBeacon screens is managed via the Display Editor within the Sentinel™ MMS. The display supports up to 8 lines of text, 5 font sizes, and up to 3 panels per status… all customizable.

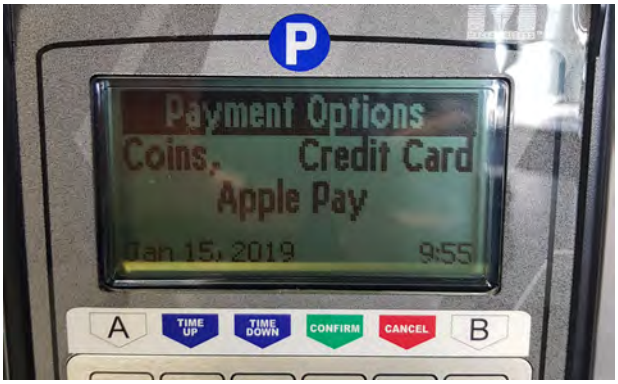

Figure 7 - Customizable display screen showing payment options

3.4.5 Visual Enforcement

The mkBeacon meters have visual enforcement indicators on both the front (sidewalk-facing) and the back (street-facing) sides of each meter

Figure 8 - Front Enforcement LEDs

The front display of the meter is large and provides clearly visible indication of the current meter payment status to end users and enforcement officers. If there is any parking time remaining, two pairs of large digits, separated by a colon, will be displayed indicating the time remaining in hours and minutes. A large "EXPIRED" graphic will be displayed to indicate that there is no count down time remaining on the meter (i.e. time expired).

"Super-bright" type LED enforcement indicators are present on both the front and rear of the mechanism. LED indicators are used for indication of the following conditions: Green - "paid," Red - "expired," and Yellow for both - "out of order," or "maintenance required." The LEDs can be configured to be ON or OFF or to blink during different periods of the day and at a specified blink rate. The brightness of the LEDs is factory configurable for both daytime and nighttime viewing and can be changed by making a factory adjustment of the LED blink on-period.

Figure 9 - MacKay's patented SmartChute™ Plus

3.4.6 Coin Chute

The most current version of MacKay's SmartChute™ coin chute has five individual sensors. There are three inductive type coil sensors. Metallic objects of sufficient size/density will be detected by any of these three sensors. Each sensor can be used by the meter to serve two roles: coin insertion and validation, and metallic object jam detection. All valid North American coins currently in circulation have specific metallic properties and as such, an inductive type coil sensor is the logical choice for coin insertion detection/activation. Also, fogging or build-up of water, moisture, dust, dirt, or grime will not impact or affect coin insertion detection in these types of sensors.

In addition to these five sensors, a series of individual “anti-pull back” flippers are located at the lower end of the coin path, strategically placed between two of the inductive coil type sensors. Valid coins inserted into the meter must travel past both of these coil sensors in order to be validated, and therefore travel in the reverse direction back up the coin path (i.e. coin on a string), is restricted by these individual flippers.

The coin chute can be programmed to accept up to 16 different coins or tokens and is typically setup to accept all US quarters, nickels, dimes, and dollar coins. Customized to the City’s specifications.

3.4.7 Card Reader Payment and Processing

The mkBeacon is capable of accepting in real time, both magnetic stripe type or contactless type credit cards, including NFC enabled devices that emulate contactless credit cards, issued by the major card brands. All credit card transactions that originate at any MacKay parking meters are authorized using an internet-based, secure payment gateway solution provided by CreditCall Ltd. (“Payment Gateway”). When a credit card (CC) is swiped or tapped at the point of sale, the meter initially performs basic checks for card type, and expiry date, as well as checking for being on the ‘Hotlist’ file. If any of these local checks fails, the transaction is immediately declined and aborted, with an appropriate message displayed to the cardholder. If the swiped card is a valid CC, the Presented products attempt to connect to the internet wirelessly, via a cellular radio/modem, registered on the appropriate CDMA, GPRS or HSPA network. The behavior of the meter from this point forward is dependent on activation of the “hold and send” feature.

If the “hold and send” feature is NOT active, CC authorization is only possible if the meter successfully connects to the Cellular Network and establishes a secure connection to the Payment Gateway. If the Cellular Network connection is successful, the meter then establishes a secure SSLv3 socket connection, to the Payment Gateway, forwards the CC details to the Payment Gateway and waits for a response. The Payment Gateway will forward the transaction to the cardholder’s issuing bank, through the merchant’s processor which will either authorize or decline the transaction. The response is passed back to the meter by the Payment Gateway. If the CC transaction is authorized, the cardholder is provided a confirmation of payment on the screen by the award of parking time on the meter. An appropriate message is displayed if the credit card is declined.

Figure 10 - Card Reader and Coin Slot payment options

If the "hold and send" feature is active, the meter behavior is similar to what is described above; however, if the time to establish the Cellular Network connection or connecting to the Payment Gateway exceeds a programmable period of time, the CC transaction will be accepted by the meter without authorization. In this circumstance the cardholder is provided a confirmation of payment on the screen, by the award of parking time on the meter. The meter will continue to attempt to make a network/gateway connection to authorize this transaction for a programmable period of time. If any attempt is successful, the CC transaction gets authorized or declined in the usual fashion. If no attempt made in that period was successful, the meter will hold the transaction until the next established network connection. Parking time awarded to a cardholder is never taken away or removed in the event that the CC transaction is subsequently declined. The number of credit card transactions that can be accepted and held by the meter at any given time is programmable via the Sentinel™ MMS, with the maximum limit set at 15 transactions.

The card payment slot restricts the width and thickness of the card being inserted to that of a standard sized credit or debit card. Also, the card payment slot is purposely narrowed to restrict the insertion of coins and similar such items. Card insertion with the magnetic stripe orientated in the incorrect orientation cannot be easily done because the raised embossing of the credit card acts as an obstruction to the card slot.

The card slot can be setup to accept VISA, MasterCard, American Express, Discover and Diner's Club cards depending upon what the City chooses.

3.4.8 Additional Payment Option – EMV Contactless Card Reader (Optional)

As it relates to EMV, the mkBeacon™ meter offers a contactless credit card reader that meets the EMV L1 and L2 Certifications The card reader supports all layers of ISO14443 Type A&B communication scheme and ISO18092 NFCIP-1 standards. It is EMV compliant and supports contactless payment applications with the following: Visa® payWave, MasterCard® PayPass™, American Express® ExpressPay®, Discover® Network Zip as well as other forms of NFC payment including ApplePay and Android Pay.

Figure 11 - mkBeacon with contactless payment (Apple Pay) accepted

3.4.9 MacKay's Cellular Technology

The cellular modem devices proposed for use with MacKay's wireless solutions are the 'MTSMC' series Socket Modem devices manufactured by Multi-Tech Systems Inc. These are fully modular approved, high performance, low power 'Data Only" devices ideally suited for 'machine-to-machine' applications such as on-street parking. The MTSMC devices available offer 4G-LTE as well as 2G or 3G, GSM or CDMA data performance. All MTSMC Socket Modem series devices are end to end carrier certified/approved as an end use device. All models in this 'MTSMC' series of Socket Modems share the same hardware footprint, allowing MacKay to offer its customers cellular radio solutions covering all major cellular networks/frequency bands. A handheld signal strength device can be used prior to installation to determine the best cellular carrier in the area and the modem can then be setup for that carrier.

3.4.10 Switching Network Technologies with the mkBeacon™

The modular design of the quick-release radio-drawer used in the mkBeacon™ parking meter allows it to be easily replaced with an alternative radio if the existing radio type is not effective in that area of the City or if it needs to be serviced. The radio-drawer design allows alternative wireless solutions, including HSPA, EVDO, and LTE to be supported without the need to replace the entire parking meter and incurring the added expense a full replacement would entail.

The radio assembly is located near the top of the mkBeacon™ meter. By simply turning the locking pins (thumb screws – one on each side) 90 degrees counter clockwise will unlock the compartment. The pins will come loose but will stay attached to the assembly. At this point the communications

module can be pulled out and replaced with any alternative wireless communications module. No special tools and no need to replace anything more than the communications module of the mkBeacon™.

Figure 12 - mkBeacon communications module - easily removed and replaced

3.4.11 Operating System and Meter Interface

The mkBeacon meter includes MacKay proprietary operating system that allows it to operate as efficiently as it does. The meter has a number of interfaces that are externally accessible when the meter is in its closed and locked position. The interfaces available are the 4 - 6, large buttons, placed next to the front display and the payment slots/surfaces (1-coin slot, 1-card slot, and 1-contactless card "tap" surface). The buttons, are fully sealed, 'Piezo' type, and feature permanent label markings. Buttons were chosen to be user-friendly with ADA considerations in mind.

The Piezo style buttons or 6 Button Pad feature no moving parts and can only be activated by physically pressing the button. Piezo type buttons were chosen over capacitive style buttons, because they don't rely on the 'skin effect' from a user's finger to work, and they don't false trigger, or become desensitized over time.

Figure 13 - mkBeacon Piezo control buttons (shown on 2-Bay mkBeacon monitoring 2 spaces)

The coin payment slot is used to make cash payment at the meters. In addition, the coin slot also acts as the interface for maintenance staff using a handheld device whereby a narrow RF probe inserts into the coin slot to initiate data transfer with the meter.

The meter button functions differ depending on the mode of use, 'USER' mode or 'MAINTENANCE' mode.

In 'USER' mode, the UP or DOWN arrows are used by the public to select the amount of parking time desired, where pressing the UP arrow will increase or Add (+) park time up to the MAX park time allowed and the DOWN arrow will decrease or Subtract (-) park time to the MIN purchase amount. Once the MAX park time allowed or the MIN purchase amounts are displayed, a subsequent press of the same button will display the MIN purchase amount or the MAX park time allowed respectively. Once the desired amount of park time is displayed the user can either press the GREEN 'Checkmark' button to confirm the amount or press the 'X' button to cancel the transaction, and start over. If no buttons are pressed for a programmable period of time, any initiated transaction will automatically be cancelled and the meter will revert back to its idle state.

Confirmation of a card transaction by pressing the 'Checkmark' button is followed by a swipe of a credit card, insertion of a smart parking card or TAP of a contactless credit card at the contactless payment area. Alternatively, the meter can be configured to allow the presentation of any card to act as the confirmation, (swipe/tap to confirm) where after the desired amount of time has been selected, the user can simply swipe a credit card, insert a smart parking card or TAP a contactless credit card at the contactless payment area, without the need to press the 'Checkmark' button.

3.4.12 Collection Card

The collection card, when inserted into the mkBeacon card slot, resets the audit report and notifies Sentinel that the coin box is being removed / emptied.

Figure 14 - The Front and Back of a mkBeacon Collection Card

The collection staff member inserts the card as instructed and then empties the coin vault. All audits are then available on Sentinel MMS.

Note: If the collection staff member neglects to use the card, the mkBeacon continues to add new coins to the previous audit. The next time card is used the audit resets then and the audit file reflects coins from the last card invoked collection period.

3.4.13 Maintenance Card

The maintenance card allows a staff member to access a menu of options on the mkBeacon.

Figure 15 - The Front and Back of the mkBeacon Maintenance Card

The options include:

Quick Test – diagnostic screens showing meter information, radio status, battery voltages, coin chute status and electronic status. Quick test does not change the time on the meter when it is run.

Radio Test – powers up the radio and connects to the central server to verify the radio is operating properly.

Collection - same as using the collection card

Lamp Test - restarts the meter and checks for updates. Any time on meter is lost.

Force Offline – Stops the meter from accept payment. No time can be added.

Clear Offline - Returns the meter to active from "Force Offline"

Clear Time – removes time from the meter back to zero.

Add Time – Allows the staff member to add time to the meter

Enter Test mode – puts the meter into test mode where payment can be tested and time added to the meter.

Try Payment Input – allows the staff member to test all payment devices without any payment going through or time added to the meter.

Adjust Contrast – Allows the maintenance staff to adjust the contrast on the display.

3.4.14 M Series Lock Assembly and Optional Medeco NexGen Electronic Locks

The mkBeacon™ meter typically ships with a lock assembly that includes, amongst other pieces, a MacKay Plus Series (M Series) lock. MacKay housings can be outfitted with an optional Medeco Electronic Lock if applicable/desired.

3.4.15 M Series Lock and Optional Medeco Electronic Locks

The mkBeacon™ meter typically ships with a lock assembly that includes, amongst other pieces, a MacKay Plus Series (M Series) lock. MacKay housings can be outfitted with an optional Medeco Electronic Lock if applicable (pricing is extra and can be found in the spare parts list).

The Medeco electronic Cam Locks are an ideal for loss and liability management. The cylinder requires no wiring to the door and is powered by the Medeco rechargeable key (sold separately). The cylinder is designed for interior and exterior use with an operating temperature rating of -40 degrees Fahrenheit to 140 degrees Fahrenheit. Flexible authorization, auditing of use and quick retrofit to existing hardware are all in one convenient package.

Figure 16 - Medeco Electronic Lock cam

3.4.16 Mobile Payment

MacKay provides several fully integrated solutions for accepting mobile payment. Rather than build a single, proprietary application that only works with our equipment, MacKay developed an API interface that works with most mobile payment applications present today. This way, the City can choose the mobile payment application that best fits their needs. Additionally, MacKay can also offer a Multi Tennant cellular payment solution where multiple cell phone payment solutions can be used and reported on within Sentinel.

For single or 2-Bay space meters, mobile payment allows the user to pay for a specific space that is denoted by a space number on the meter or post. The user enters the space number, pays for the desired amount of time and leaves. The transaction is communicated to MacKay's servers where the transaction is recorded as a mobile payment in Sentinel. The time is simultaneously sent to the meter (optional functionality) so that the time show on the meter. If the City chooses not to display the time

on the meter, then the transaction data is typically sent to an enforcement application that the enforcement officer can access remotely.

This integrated solution all takes place in just seconds with a proven latency of under 60 seconds 95% of the time and under 2 minutes 99% of the time ensuring mobile payment users are not ticketed after using mobile payment.

MacKay currently supports the following mobile payment solutions:

- PaybyPhone
- Passport Labs
- ParkMobile
- MacKay Pay
- And others

3.5 OPTIONAL MKH4000 HIGH SECURITY HOUSING (ONLY VAULT REQUIRED)

The mkBeacon can fit onto existing housings by removing the upper half of the housing and bolting the mkBeacon to the existing vault using a polycarbonate saddle (provided by MacKay). The saddle is specific to the housing and several housing vaults are currently supported.

However, MacKay can also provide the City with a new vault with the mkBeacon meters. The MacKay MKH4000 features a precision- machined meter housing constructed entirely of durable ductile iron with a tensile strength of 65,000 PSI. The housing has a special tapered design for increased strength and security. The MKH4000 includes our largest vault in a tough wrinkle finish with an extended coin can. The coin canister holds up $100 in mixed U.S. coins. For complete specifications and details, please see the MKH4000 series comparison.

Note: only the vault portion of the MKH4000 is used with mkBeacon meters as the mkBeacon is built with its own upper housing that fits onto the vault.

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Figure 17 - MKH4000 High Security Housing vault

MK BEACON™

MKBEACON™ 2-Bay Meter

MACKAY METERS

Key features:

- Supports single-space or multi-bay parking.
- EMV compliant, PA-DSS certified and FCC approved.
- Accepts coins, credit cards, contactless credit cards and smart cards.
- MacKay's patented SmartChute™ coin validation technology.
- Green Technology - High efficiency solar panel providing long-lasting power to a single, rechargeable battery pack.
- Runs entirely on renewable energy.
- Superior design for serviceability providing quick access to components for on-street maintenance.
- Large high contrast graphics display.
- Bright, front and rear enforcement LEDs can be easily seen from passing enforcement vehicles.
- Powerful off-site monitoring capabilities using Sentinel ™ Meter Management System. Monitor your equipment remotely, generate reports, and receive alerts, no matter where you are.
- Fits into existing housings or ships with new vault and coin can ready for the street.
- Manufactured under stringent ISO 9001:2008 certified quality process.
- MacKay Meters backs its product lines with a solid warranty based on the confidence in the quality of its products.

<over for specifications>

www.mackaymeters.com

MK BEACON™

SPECIFICATIONS

General Specifications

- Compatible with all MacKay mechanism housings and many competitor's housings.
- Manufactured under ISO 9001:2008 certified quality processes.
- Designed to work under extreme environmental conditions.
- Operating temperature range: -22°F (-30°C) to 176°F (80°C).

Power Source Details

- High efficiency, solar recharged, lithium-ion battery pack.
- Battery pack is easy to replace on-street without the use of tools.

Keypad & Human Interface Details

- Sealed weather proof buttons for selecting menu items.
- Standard buttons include an up arrow, down arrow, "✓" for accept and "X" for cancel.
- Audible feedback with all button presses.

Front Graphical Display

- High contrast and high visibility Liquid Crystal Display (LCD) and Light Emitting Diode (LED) backlight technologies.
- LCD has fully programmable displays and LED back light for effective night-time operation.
- Large 4.25" (108 mm) display.
- Client controlled customizable screens that can be sent remotely using Sentinel™ Meter Management System (MMS)

Front and Rear LEDs

- Dual colour (Red/Green) Super Bright LED's on both front and rear.
- Flashing LED visible at distance of 80 feet (24 meters) at night.

Communication and Data Transfer

- Supports multiple secure interfaces for communication including:
  - Wireless cellular radio 3G and 4G cellular (HSPA, EVDO, LTE)
  - X-Key programming port
  - Future Expansions

LED Night Light

- Bright LED provides light for the buttons and payment options during dark hours.

Coin Payment

- Patented SmartChute™ coin discriminator proven in hundreds of thousands of meters worldwide.
- 3-coil design provides accurate coin reads and long life.
- Straight-drop/clear view coin chute allows for superior detection and removal of foreign objects.
- Coin chute is easily and quickly replaced/ serviced in the field without the need for special tools.
- Coin chute calibration or chute training is not required.
- Sorts up to 16 different coin/token signatures and uses a single stainless steel entrance slot.
- Can be programmed to detect non-metallic jams such as paper/gum.
- Validates and discriminates coins electronically by two different coil sensors/methods.
- Invalid coin indicator on display.

Credit Card and Smart Card Payment

- Single card slot for both credit card and smart card payment.
- Card reader rated at 50,000 insertions and is easily and quickly replaced / serviced in the field without special tools.
- Real time credit card authorization through cellular communications.
- PA-DSS validated.
- Angled insertion design to prevent water ingress.
- Programmable[2] to support numerous ISO7816 compliant smart card payment technologies including:
  - Microprocessor cards
  - Reloadable stored value memory cards
  - Other custom card payment schemes

Contactless Payment

- compact module easily serviced/replaced
- EMV compliant reader supports contactless payment applications with the following: Visa® payWave, MasterCard® PayPass™, American Express® ExpressPay®, Discover® Network Zip.
- EMV Certified by major card associations, FCC/CE Certified Class B

On-Street Serviceability

- Easy on-street replacement of cellular modem, coin chute, card reader, batteries, contactless reader, and solar panel.

Transaction Data

- All operational, maintenance and financial data is sent wirelessly to Sentinel™ MMS.

Programmable Features

- Highly flexible rate/tariff/max-time structure including:
  - Up to sixteen (16) defined rates with defined max time for each.
  - Standard rate operation.
  - Time-of-day rate/max time control.
  - Day-of-week rate/max time control.
  - Day-of-year rate/max time control.
  - Progressive/regressive tariffs.
  - Cumulative grace.

Meter Management System Features

- Remote programming and monitoring using Sentinel™ MMS.
- Meter revenue audit including credit cards by type, individualized coin counts, plus total invalid coin count.
- Separate time-stamped transaction (coin/card) and maintenance logs for ticket adjudication.
- Transaction log stores time-stamped data for the coin and card transactions.
- Maintenance log stores time-stamped data for the all maintenance events.
- Swapping/moving meters within a meter system.
- Audit disable for coin/card check during:
  - Maintenance/testing.
  - Time/rate programming.
  - Meter maintenance.
  - Meter/post inventory.
- Password protected - user and group level security features.

Warranty

J.J. MacKay Canada Limited, the manufacturer, guarantees for a period of one year from the date of shipment against defects in workmanship and/or materials.

Contact your local representative for further information.

Easy Access for On-Street Servicing

(1) Certain restrictions and/or costs may apply.

MACKAY METERS™

95LT0000450-01/19

Head Office:
J.J. MacKay Canada Limited
1342 Abercrombie Road, PO Box 338,
New Glasgow, Nova Scotia, Canada B2H 5E3
Phone (902) 752-5124
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Head Office customer support and technical support:
Toll free in North America: 1-888-4MACKAY (462-2529)
Fax (902) 752-4889
Email customer.service@mackaymeters.com
Web www.mackaymeters.com

Sales Office:

MacKay mechanism

MacKay MKH 4000 Series Housings

MKH 4500

MKH 4000

MacKay Housings MKH 4000 Series Comparison

Key features:

- MacKay Meters produces some of the strongest, most secure, vandal-resistant housings in the industry today.
- From our top-of-the-line MKH 4500, constructed completely of ductile iron, to the more affordable iron-zinc MKH 4000, MacKay has the products and experience to find the right housings to fit your needs.
- Compatible with MacKay Meters' industry-leading electronic mechanisms and competitive products.
- MacKay Meters backs its products lines with a solid warranty based on confidence in the quality of its products.
- All MacKay housings are distinguished by their "hex" shaped top.
- J.J. MacKay Canada Limited guarantees for a period of one year from the date of shipment, to repair or replace any of its housing parts determined to be defective in materials and/or workmanship, under normal use and service.
- Manufactured under stringent ISO 9001:2008 certified quality process.

<over for comparison chart>

www.mackaymeters.com

MacKay MKH 4000 Series Housings

MKH 4000 Series Comparison

4500	4000	
		Mechanism Housing
✓		• High Security
✓		• Precision-annealed ASTM A536 ductile iron with rugged construction
✓		• Tensile Strength of a minimum of 65,000 PSI
✓	✓	• Brinell hardness of 143-187
✓	✓	• Experience on location has proven its resistance to the elements, tampering and abuse. The mechanical housing is of modern design, neat and free of rough surfaces, sharp corners or edges
	✓	• Precision Zamac die cast construction
	✓	• Rugged, corrosion resistant, non-brittle metal, rated at a minimum of 41,000 PSI
		Housing Cap
✓		• Precision-annealed ATSM A536 ductile iron with a tensile strength of a minimum of 65,000 PSI
✓		• High Security slide lock cap
✓	✓	• Easily distinguished by a hex top
	✓	• Interlocked, hinged construction makes the cap integral with the mechanism housings
✓	✓	• Easy access to meter mechanism for servicing and protects unit from dust, moisture, tampering and abuse
✓	✓	• The locking arrangement provides simultaneous and positive positioning of the unit mechanism
		Display Window
✓	✓	• Large, clear, high-impact polycarbonate window displays the liquid crystal display (LCD) of our electronic unit and provides excellent visibility; completely sealed for a maximum element and dust protection
		Instruction Plates
✓	✓	• Large, easy-to-read plates on the door and hours of enforcement cards in the cap contain simple operating instructions
		Ventilation
✓	✓	• Strategically placed vents in dome cap ensure excellent visibility and reduced condensation both above and below mechanism level
		Enforcement Hours Card
✓	✓	• To facilitate easy removal, in the event of a change in enforcement hours, a card slot is provided within the complete protection of the housing dome. Its position in the meter is clearly visible.
		Coin Box Housing
✓	✓	• Made of ductile iron
✓	✓	• Tensile strength of a minimum of 65,000 PSI
✓	✓	• Largest vault with extended coin can
✓	✓	• Tapered base to prevent the removal of the meter from its mounting pole by upward force
✓	✓	• Design has been engineered to afford increased amount of protection against vandalism, breakage and theft.
		Door
✓	✓	• Lower vault door is made of ductile iron with a tensile strength of a minimum of 65,000 PSI
✓	✓	• Precision machined to a tolerance of 0.005", designed to withstand tampering by prying or hammering with ordinary hand tools
✓	✓	• No exposed/vulnerable hinges
		Collection Compartment
✓	✓	• The collection compartment is secure against entry from the mechanism compartment
✓	✓	• With the door open, the coin box is easily accessible
✓	✓	• Vault is engineered for precise alignment to ensure trouble-free coin acceptance of most coins found around the world today, without need for modification
		Finish
✓	✓	• The burr-free, raw casting is conversion-coated in a five-stage power spray pre-treatment system which includes cleaning, rinsing, zinc phosphate coating, rinsing again and then sealing. The pre-treatment system designed to remove grime and strengthens paint bonding. It also establishes a chemical coating on the surface which will slow corrosion in the case of paint damage. The conversion coated castings are electro-statically powder coated with high-quality paint. The castings are cured at predetermined temperatures for the appropriate time. Our castings have successfully passed the ASTM-B L 17 1000-hour salt spray resistance-to-corrosion test.
		Locks
✓	✓	• Multi-tumbler and highly pick-resistant
✓	✓	• The security lock in the door is encased in tough ductile iron, with minimum area exposed, reducing its vulnerability to vandalism
✓	✓	• Various types of security locks available
		Materials
✓	✓	• Full hard brass, stainless steel, aluminum stampings, Zamac and ductile iron castings and high quality powder paint finish
✓	✓	• All parts fabricated from steel are plated to industry standards
		Meter Post
✓	✓	• Standard requirements 5.1cm (2") inner diameter standard galvanized pipe. Small weep and air vent holes drilled to reduce condensation and prolong pipe life. These weep holes should be located approximately 30.5cm (12") from the top and 30.5cm (12") from the bottom on opposite sides from each other. Holes should be about 1.27cm (1/2") in diameter.
		Typical Installation
✓	✓	• Contact your local distributor or our Customer Service Department on the best method of installation for your location

MACKAY METERS™

Head Office:
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Fax (902) 752-4889
Email customer.service@mackaymeters.com
Web www.mackaymeters.com

Sales Office:

MacKay mechanism

95LT0000126-01/19

3.6 DELIVERABLES - THE MACKAY TANGO™ PAYSTATION

Figure 18 – MacKay TANGO™ with optional alpha-numeric keypad for Pay by Plate

The Tango allows for tailor-made parking programs. System modes include:

Pay and Display: In this mode, a customer purchases parking time and receives a printed ticket indicating the ticket expiry time, which is then placed and displayed on the paying customer's car dashboard.

Pay by Space: In this mode, a customer enters a space number into the meter corresponding to the location of their parked vehicle, and then makes payment appropriate to their desired parking time. The space manager in the Tango or in a remote space manager server keeps track of paid and expired spaces. There is no need to return to one's vehicle.

Pay by Plate: In this mode, a customer enters their license plate number into the meter. The space manager keeps track of paid and expired plates. Enforcement officers can check at the Tango or online at a secure enforcement database for paid license plate numbers.

POWER OPTIONS
Solar power operation
Battery is commercially available
Battery life exceeds 100 transactions per day under battery only operation and lasts at least 14 days without recharging. Life expectancy of 3 – 5 years under normal usage.
18 Ah or 40 Ah battery acts as the main power source and is charged via the solar panel
Temperature operating range of the battery is -20°C to 50°C (-4°F to 122°F) charge, -30°C to 60°C (-22°F to 140°F) discharge
Battery voltage/amps can be checked externally without opening the meter
Battery voltage/amps can to be checked remotely
Low battery is treated as a remote alarm function
Battery is stored independent of all other meter components (lower service cabinet)
The battery can be exchanged in less than one minute without special tools

Flash Memory, clock, configuration, etc. re-sync with a central server when power is restored, thus eliminating the need for a second battery.

3.6.1 Power

The Tango is powered by a commercially available 40 Ah rechargeable battery that is continually charged by a large integrated solar panel on the top of the unit. The Tango can remain power-neutral for a normal days usage with approximately 2 – 3 hours of sunlight. The typical estimated life expectancy of the Tango's rechargeable battery is approximately three to five years. The battery life of the Tango is maximised using its proprietary software and hardware battery life conservation tools which manage the power consumption of the meter during the battery operational life cycle. Should the battery charge get low, an alert will be sent to the meter management system (Sentinel) to allow maintenance to swap the battery and manually charge it for use in another unit.

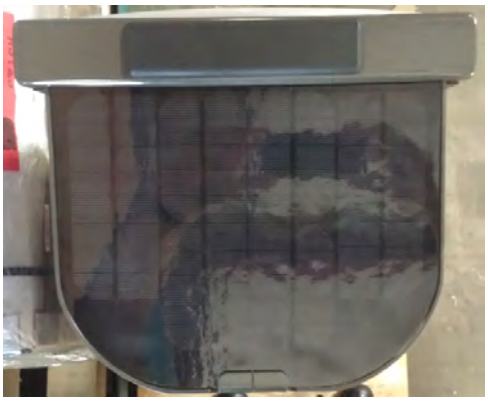


Figure 19 - Integrated solar panel on the top of the MacKay Tango™

A second battery is not used nor is it required in the Tango. The Tango retains the audit and calendar information as well as other operational log files in non-volatile Flash memory that is retained even when power is removed, or the main battery goes completely dead. This type of memory is reprogrammable and as such, it does not need to be physically removed to effect new tariff structures or other configuration changes. When power is restored to the Tango, communications with the host server is established through the wireless modem and the clock and calendar are automatically updated.

HOUSING AND EXTERNAL SECURITY
Cabinet is made of high strength, 9-gauge stainless steel
Paint is powder coat - vandal and weather resistant
Custom colors are available. Standard colors are black and grey tones.
All doors and openings are equipped with rubber seals to prevent water ingress
Cabinet meets ADA & OADA Standards for handicapped access
Bolts, meter to pedestal and anchors are internal
Meter has 9 locking points on the vault door and is extremely vandal resistant
Locks are flush mounted and hidden
Locks have anti-drill protection
MacKay uses Medeco High security locks on the Tango

Choice of Cabinet is available as being one or two-piece construction, typical production is two-piece construction to meet Union rules for civil employees' lifting/weight restrictions. Ease of maintenance and/or storage requirements.

3.6.2 Cabinet Security

The Tango's cabinet and doors are made of welded reinforced Grade 304-2B, 9 gauge stainless steel which is extremely hard and it is both difficult and time consuming to cut and drill through, requiring industrial grade cutting tools. Such a cutting/drilling vandal attack would be both time consuming and extremely noisy.

Figure 20 - The MacKay Tango™ pay station with optional contactless card payment

The Tango is protected from theft of coins, data and internal components as it is secured by high-security Medeco locks with anti-drill protection. Each vault door can be outfitted with an optional Medeco Electronic Lock if applicable (pricing is extra and can be found in the spare parts list).

Each of the two (2) external door access locks on the Tango is hidden and protected by a stainless steel, lock shutter mechanism intended to resist drilling and/or malicious vandalism by the insertion of foreign objects. The shutters also provide the locks protection from the natural elements.

The Tango was designed with resistance to vandalism and burglary attack in mind. Each access door is mounted to ensure a tight fit, resisting forced entry by the use of prying devices. The Tango's design is such that there are three distinct compartments, each separated by heavy steel. The cash box is located in the center of a double walled, cash vault compartment. Access to the cash vault is not possible from the open upper service cabinet, or the open lower service space.

Other standard security features of the Tango include:

- The upper cabinet door locking mechanism is made of a 3/16" thick stainless steel bar establishing three (3) separate locking points with the main door. A high security Medeco key is used to actuate the locking mechanism. The possibility of key breakage is very low. The locking mechanism is designed to be locked by default so any intrusion is minimized in the case of a lock failure or malfunction. This locking system allows access to the upper cabinet for maintenance purposes and replenishment of tickets. Keys for this cabinet should be

assigned only to technical and/or maintenance personnel. Access to the cash vault is not possible from inside the upper cabinet.

- The vault door locking mechanism is made of four (4) 10-gauge, stainless steel, slide bars offering a total of nine (9) locking points distributed on all four sides of the door, which has both an inner and outer steel wall and is equipped with a high security Medeco lock or optional Medeco XT electronic lock. This locking system allows access only to the cash vault for cash box removal/replacement. Keys should be assigned only to the collection personnel. The collection vault keys do not allow access to the cash box contents.
- The vault door in front of the cash vault is a double walled door. As well, the upper cabinet and vault doors are equipped with switches allowing detection of any opening of the vault door. If a change in the switch status is detected (i.e. opened or closed), and the presence or absence of the cash box, the Tango will send an alert message to the Sentinel™ MMS providing notification whenever these events happen (i.e. during collection or maintenance).

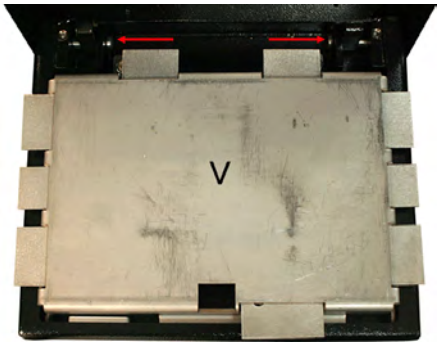


Figure 21 – Cash Vault Door Showing Locking Points

Vandalized door locks will not normally need to be drilled out to effect repair or replacement, as the Tango features an innovative vault door removal and replacement method, which can be carried out with access to the upper maintenance area, and specialized training in the procedure and use of special MacKay tools provided for this purpose.

3.6.3 Colour and Appearance

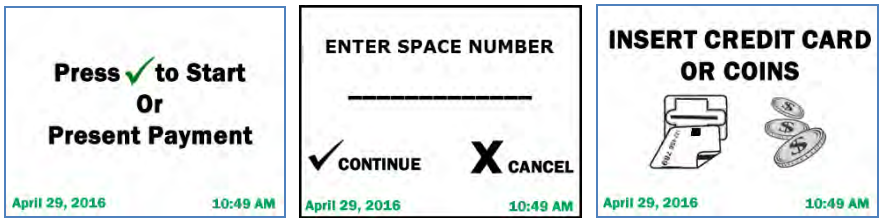
The overall dimensions of the Tango are 53.5 inches (1359 mm) in height, 12.4 inches (315 mm) in width and 13.75 inches (349 mm) in depth. The Tango is made of stainless steel and is coated with a high quality Powder coat and baked on painting process, which is resistant to scratches and will not rust. The standard color is black but can be painted in most any color. The marking of each machine includes an international parking symbol installed on both the left and right hand side of each Tango. These are high quality vinyl signs measuring approximately 6.75” in diameter and are 0.009” thick. Each vinyl sign consists of a white or silver reflective letter “P” on a blue background.

FACE PLATE COMPONENTS
Screen is protected by a 6.35mm thick MR10 Lexan cover
Meter has a weather resistant, Piezo style alpha-numeric keypad and similar 4-6 button selection keypad
Keypad activation has optional audible indication
Keypad activates the meter when in "sleep" mode
Card reader is flush mounted with no external parts – user maintains access to their card at all times
Receipt/ticket slot is protected from vandalism, weather, etc. with a specially designed metal chute

3.6.4 Display Keypad and Alpha-Numeric Keypad

The Tango includes 2 keypads: a 6 button keypad for selecting options on the screen and an alphanumeric keypad for entering license plate numbers (standard keypad but can be removed for Pay and Display machine). The keypads are both weather-resistant Piezo style keypads that meet ADA standards for press and distance above the ground. The pressing of each button provides an audible feedback confirmation and is designed for 3 – 5 years of use in all local weather conditions. The keypads can be replaced in less than 2 minutes should they become damaged. Sentinel MMS is alerted if the Tango detects a keypad error.

Figure 22 - Tango 6 button keypad below display screen and alphanumeric keypad to the right

INSTRUCTIONAL SCREEN DISPLAY
 Sample display screens
Display is a high quality, full color ¼ VGA display. Display resolution is 320 x 240 pixels
Provide up to 8 lines of text with up to 32 characters per line
Current time & date is shown at start up
Display can identify time increments (i.e. by minute or hours) or money increments
Display can identify the expiry time & date before purchase
Display can indicate "Coin Only" or "Credit Card Only" if other payment is disabled
Maintenance message can be displayed on the screen in a diagnostic mode
Pressing any key/button brings the meter out of "sleep" mode

3.6.5 Display Screen

The Tango has a large ¼ VGA (4.5" wide x 3.5" high viewing area) color graphics LCD with a built-in LED backlight. The display provides for contrast adjustment, and has high-visibility and legibility even in bright sunlight conditions. The display is orientated in landscape view, and has 320 x 240 RGB pixels (256K display colors) allowing for both graphics and text in a wide variety of sizes to be possible. The display features include an anti-glare surface treatment making viewing in direct sunlight easier. In order for characters or graphics to be visible, the LED backlight is active whenever the display is on. The display is protected by a high-quality, ¼" thick, clear Lexan® polycarbonate cover which has a UV inhibitor additive to extend the life of the Lexan, and to allow for clear, unhindered viewing of the front display.

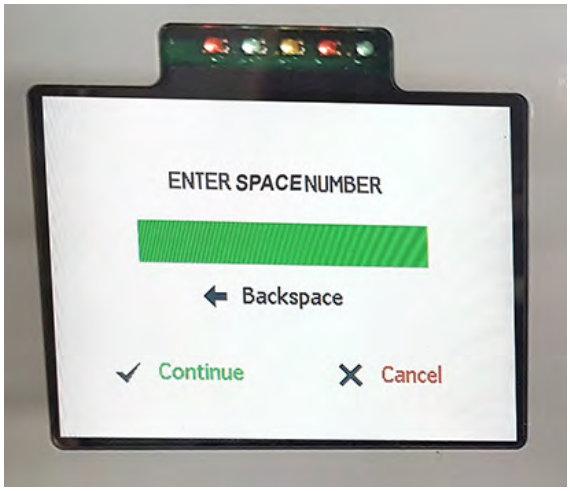


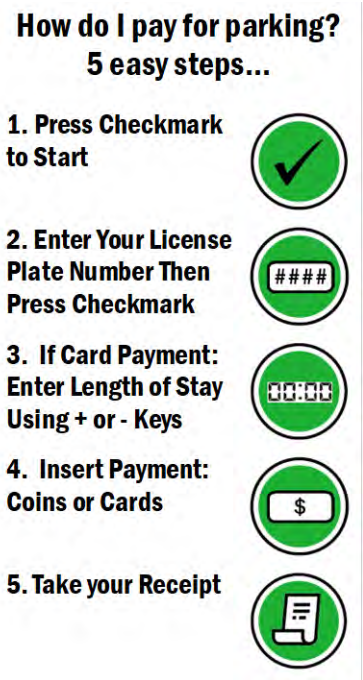
Figure 23 - Color display on the Tango

The protective covers used on the Tango has an added UV inhibitor called Margard which extends the life of the covers, reduces premature yellowing, and helps protect the Lexan from breakdown due to exposure to strong UV rays.

Condensation build-up inside the meter can be minimized by ensuring that there is some air circulation possible within the upper cabinet, that the machine is level / vertical allowing water that may have collected in the cabinet following maintenance carried out during any rainy conditions, to drain properly from the interior cabinet, through drain holes provided in the bottom of the cabinet for this purpose. Where possible, interior walls of the top half of the Tango are covered with a silver-backed bubble layer, providing some insulation against both hot and cold extremes.

The Tango's display supports multiple languages and can be selected at the start of a transaction.

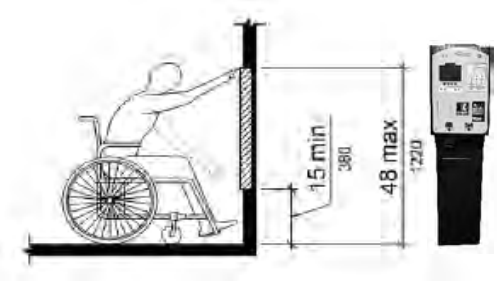
3.6.6 Sample Transaction Process



The customer interface is communicated through the display screen and can be customized to the clients needs. Typically, the process starts by "waking" the machine with a press of the Start/Checkmark button. That will prompt the user to enter their license plate number (in a pay by plate configuration) or space number (in a pay by space configuration). Pay and display configurations skip this step. Next, if the user wants to pay by credit card, they can select the amount of time they wish to purchase using the "+" or "-" keys. The machine defaults to the minimum purchase if they don't select an amount of time. Next, the user either inserts their credit card or coins if they want to pay with coins and confirms the purchase with the checkmark. The machine will authorize the transaction and provide a receipt to the user. The plate or space number is then communicated to the enforcement server along with the transaction information.

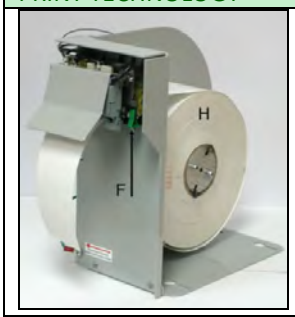
Note: The display screen communicating the transaction process can be customized to the City's requirements.

3.6.7 ADA COMPLIANT



The MacKay TANGO™ multi-space pay station is compliant with the American with Disabilities Act (ADA).

- Pay station alpha-numeric keypad maximum (top) is below 48" above the base of the unit
- Pay station main controls / keypad is 43" above the base of the unit
- The force required to activate operable parts is less than 5 pounds (22.2 N).

PRINT TECHNOLOGY
 Thermal printer with paper roll
Uses thermal print technology
Life cycle expectations of the print head are no less than 20 million-character lines and 50km of paper
Print technology uses blank ticket stock in rolls of 1000 feet
Width of the paper stock is 2.24”
Tickets are separated by a self-sharpening cutter
Ticket stock can be replaced within 60 seconds
Ticket stock is heat, fade and curl resistant
Meter provides for an optional receipt portion on a ticket
Printer jam will cause a remote alarm
Operational temperature extremes for printer operation are between -30°C to 70°C

3.6.8 Printer Solution

The Tango uses a thermal printer so there is no requirement for ink. The printer is robust and will work reliably with any paper that meets the minimum paper standards recommended by the printer manufacturer. The Tango can be configured to either issue a receipt or not.

3.6.9 Receipt (Transaction Record)

The receipt paper width is 2.24” (57mm) and must have a maximum thickness of 0.025” (0.65mm). Two standard length tickets (3” and 4”) are currently offered on the Tango and custom lengths are supported. The MacKay paper is a thermal paper that will provide a constant high quality of printing on each ticket.

The number of tickets possible from a roll of paper is determined by the size of the tickets. As would be expected, the smaller the ticket/receipt, the larger the number of tickets possible in a given roll. The paper used in the Tango is supplied in boxes of 5 rolls of 8 inches diameter. The Tango ticket issuance system has the capacity to store up to 4,500 tickets based on an 8” (203 mm) roll and a

2.5” ticket (a non-standard length), up to 4,000 tickets with a standard 3” ticket, or up to 3,000 tickets with a standard 4” ticket (used for credit card enabled Tango machines).
Editing of the details of the printed ticket is done using the PC based Ticket Editor Module. Machines must be configured according to the ticket selection.

The default information that can be found on the ticket is listed below and is illustrated in the sample tickets and credit card receipt shown above. Other customizations to meet specific customer needs are possible.

• Operator and or site name • Machine ID • Expiry time • Expiry date • Amount paid for parking	• Parking stall number • Time of transaction • Date of transaction • Credit card number (last 4 digits) • Sequence number produced by the machine with each transaction

PAYMENT OPTION – COIN ACCEPTANCE
 MacKay’s Coin SmartChute™
Able to program up to 16 different denominations of coins and tokens
Any US coins can be accepted; client choice
Types of currency and denominations are distinguished electronically
Coin acceptor uses optical sensors to detect fraud
All excess coins are channeled to secure coin vault
Coin jams can be cleaned quickly (10sec) without tools
Coin acceptor is vandal resistant and weather proof
Coin vault stores at least $600 in quarters
Meter comes with 2 vaults per unit. Tango coin vault or “cash box” is stainless steel and cannot be opened without a separate key once removed from the pay station. There is a locked/unlocked indicator on the top cover.
Tokens can be acceptable at the same time as coins if supported

3.6.10 Coin Chute

The most current version of MacKay's SmartChute™ coin chute has five individual sensors. There are three inductive type coil sensors. Metallic objects of sufficient size/density will be detected by any of these three sensors. Each sensor can be used by the meter to serve two roles: coin insertion and validation, and metallic object jam detection. All valid North American coins currently in circulation have specific metallic properties and as such, an inductive type coil sensor is the logical choice for coin insertion detection/activation. Also, fogging or build-up of water, moisture, dust, dirt, or grime will not impact or affect coin insertion detection in these types of sensors.

Figure 24 - Easy access to yellow Smartchute™ that can be cleaned or replaced in seconds. Same as coin chute in most MacKay single space meters.

In addition to these five sensors, a series of individual "anti-pull back" flippers are located at the lower end of the coin path, strategically placed between two of the inductive coil type sensors. Valid coins inserted into the meter must travel past both of these coil sensors in order to be validated, and therefore travel in the reverse direction back up the coin path (i.e. coin on a string), is restricted by these individual flippers.

The coin chute can be programmed to accept up to 16 different coins or tokens and is typically setup to accept all US quarters, nickels, dimes, and dollar coins. Customized to the City's specifications.

3.6.11 Security and Coin Collection

The Tango's cash box is a lightweight, high capacity, sealed metal unit, featuring a high-security Medeco cam lock, easy to use color coded 'GO/NOGO' reset indicators and activation/installation features for cash collections staff, as well as other security/anti-tamper features. An audit ticket is printed by the Tango whenever the cash box is removed from the machine, and in addition the Tango will transmit the collection information to the Sentinel™ MMS.

Figure 25 - Locked cash box from Tango

The coin canister is 4.1 L in capacity and can hold about $600 in quarters.

PAYMENT OPTION – CREDIT CARDS
Can accept Visa, MasterCard, American Express, Discover, and Diner's Club credit cards (client choice)
The credit card type is configurable through software by owner
Typical transaction with real-time authorization is about 7-10 seconds with good communication signal
Credit Card process is certified PCI/PADSS
Card acceptance can be configured to limit times used per time period.

3.6.12 Credit Cards

The Tango uses a single slot, dual mode card reader that captures magnetic stripe (ISO 7810) credit card data and provides an ISO 7816 interface for smart card acceptance.

PAYMENT OPTION – CREDIT CARDS
 Card reader with optional instruction / card acceptance stickers
Can accept Visa, MasterCard, American Express, Discover, and Diner's Club credit cards (client choice)
The credit card type is configurable through software by owner
Typical transaction with real-time authorization is about 7-10 seconds with good communication signal
Credit Card process is certified PCI/PADSS
Card acceptance can be configured to limit times used per time period.

3.6.13 Additional Payment Option – EMV Contactless Card Reader (Optional)

As it relates to EMV, the Tango™ meter offers a contactless credit card reader that meets the EMV L1 and L2 Certifications The card reader supports all layers of ISO14443 Type A&B communication scheme and ISO18092 NFCIP-1 standards. It is EMV compliant and supports contactless payment applications with the following: Visa® payWave, MasterCard® PayPass™, American Express® ExpressPay®, Discover® Network Zip as well as other forms of NFC payment including ApplePay and Android Pay. MacKay has just recently updated all of the Pay Stations in San Francisco, to accept all contactless credit cards, and also ApplePay.

If the card readers are disabled for any reason, an alert is immediately sent to the back office and the pay station continues to operate but accepting coins only. A message is displayed on the screen outlining the accepted payment.

3.6.14 Mobile Payment – Pay Stations

For pay stations, mobile payment allows the user to pay for a specific space number or license plate number, depending on how the City wishes to enforce. In Pay by Plate mode, the user simply enters their license plate number, pays for the amount of time they want and leaves. In pay by space mode, the user enters the space number their vehicle is parked in (space is marked with a space number), pays for the desired amount of time and leaves. Either way, the transaction is communicated to MacKay's servers where the transaction is recorded as a mobile payment in Sentinel. The time is simultaneously sent to an enforcement application that the enforcement officer can access remotely. That can either be MacKay's enforcement solution in Sentinel or, more likely, an integrated third-party application.

This integrated solution all takes place in just seconds with a proven latency of under 60 seconds 95% of the time and under 2 minutes 99% of the time ensuring mobile payment users are not ticketed after using mobile payment.

MacKay currently supports the following mobile payment solutions:

- PaybyPhone
- Passport Labs
- ParkMobile
- MacKay Pay
- And others

PROGRAMMABLE FUNCTIONS
Programming functions can be performed remotely
Programming functions are supported with multi-level security
All programming functions are retained in a log file
Tickets are fully customizable
Meter rates are programmable both remotely and at the meter
Different rates can be assigned to different time periods

COMMUNICATING, REPORTING, ALARMS AND MONITORING
Cellular modem for wireless communications
System uses either a 4G / 5G upgradable cellular modem. Supports the telecommunications provider of choice (ie AT&T, T Mobile, Verizon, etc.)
Audit and Transaction reports are available at the meter or remotely from Sentinel™ Meter Management System (Sentinel™ MMS) and Credit Call's WebMIS software suite (included in our monthly pricing).
An enforcement report is available at the meter or from Sentinel™ MMS
Occupancy status reports are available at the meter in pay by space mode or from Sentinel™ MMS
Different levels of security are available at the meter, dependent on report

OPERATIONAL SECURITY
Credit card data & communications adhere to current PCI standards
Complete card data is never retained in the meter
Coins are secured in double locked vault
Coin vaults are interchangeable between meters and made of stainless steel.
Different keys are required to remove and open the coin vault.
A hardcopy audit trail is auto generated at the meter upon coin vault removal
Removal of coin vault forces an audit trail in back office software - Sentinel™ MMS
There is an escrow system for refund of incomplete transactions
Revenue & maintenance access are separated

MAINTENANCE
Meter has self diagnostic features
The CPU is modular and easily changeable with basic tools
The CPU supports thousands of transactions in the non-volatile flash memory
Coin acceptor is modular and easily changed with basic tools
Time required to change a coin acceptor is less than one minute
Coin jams can be cleared quickly (10sec) without tools
Credit card reader is modular and easily changed with basic tools
Time required to change a card reader is less than 2 minutes
Keypad is modular and easily changed with basic tools
Time required to change a keypad is less than 2 minutes
Printer is modular and easily changed with basic tools
Time required to change a printer is less than a minute
Display is modular and easily removed with basic, or no tools
Time required to change a screen display is less than 2 minutes
Connection plugs are physically different and only fit one way

3.6.15 Electronic Components

All electronic components are plug and play. All electronics are conformally coated / sealed for outdoor use and protected from moisture by shielding where required.
Electronic components are rated to operate from -22° F to +122° F up to 95% relative humidity.

Maintenance can be performed with only a #2 Phillips screwdriver. The battery and paper rolls are commercially available or can be purchased through MacKay.

Figure 26 - CPU box inside the TANGO with each peripheral attachment

3.6.16 OPTIONAL "BROW" LIGHT

The Tango can be fit with an optional "brow" light that can light up the faceplate during dark hours.

Figure 27 - Faceplate of Tango with optional LED brow light installed for dark hours

MacKay TANGO™

MacKay TANGO™

Key features:

- High strength stainless steel keeps it secure and rust free.
- Flexible, modular design that is easy to upgrade, service and maintain.
- Powerful off-site monitoring capabilities by adding a communications kit and Sentinel ™ Meter Management System. Monitor your equipment remotely, generate reports, and receive alerts, no matter where you are.
- Comprehensive and easy-to-use configuration menus.
- ADA Compliant.
- Features a large Liquid Crystal Display with back light, capable of displaying graphics.
- English? Español? Français? The multi-language capability allows users to select the language of their choice to carry out transactions.
- Optional credit card payment. Offer end users security, convenience, and reject fraudulent payment. Use MacKay's On-line Real-time Credit Card Approval feature utilizing secure PCI compliant electronic payment processes.
- MacKay Meters backs its product lines with a solid warranty based on the confidence in the quality of its products.

<over for specifications>

www.mackaymeters.com

MacKay TANGO™

SPECIFICATIONS

GENERAL SPECIFICATIONS

Environmental

- Extended operating temperature range[1]: -30°C (-22°F) to +50°C (+122°F)
- Humidity: Up to 95% RH (non condensing)

Cabinet Materials, Dimensions & Weight

- Welded reinforced Grade 304-2B stainless steel (9 gauge carbon steel equivalence)[2] for cabinet and doors
- Aluminium front with Lexan® display covers for the LCD screens, rate/instruction plate, LED panel and site branding display
- Overall dimensions: 1359 mm (53.5 inches) (H) x 315 mm (12.4 inches) (W) x 349mm (13.75 inches) (D)
- Weight (without battery) 72 Kg (160 lbs)

Power Supply Configurations/Options

- Solar powered with commercially available battery
- AC Single Phase, 110/120VAC, 50/60 Hz

Communication Options

- Cellular wireless technology supporting GPRS or CDMA modem[3]

Payment Systems

- Coins
- Tokens (optional)
- Credit cards utilizing secure, on-line real-time PCI compliant processes (optional)
- MacKay Smart (Chip) Cards (optional)
- Cell phone payment (optional)

Ticket Printing

- Thermal printer offers alphanumeric printing in various fonts and languages

COMPONENTS

Display

- High contrast, color, sunlight readable, 320 x 240 pixels graphics LCD
- Viewing area 114mm (4.5 inches) x 89mm (3.5 inches)

Coin Acceptor

- Programmable: Accepts up to 16 coins or tokens
- 3-coil design provides accurate coin reads and long life.
- Straight drop coin chute allows for superior detection and removal of foreign objects.
- High security, stainless steel coin box that holds 4.2 L or approximately 2400 US quarters.
- Escrow and coin return holds up to 50 quarters

Card Reader (Optional)

- Single slot, dual mode card reader captures magnetic stripe (ISO 7810/11) credit card data, and provides an ISO 7816 interface for smart card acceptance
- EMV upgradeable

Keypads & Buttons

- Alphanumeric keypad
- Vandal resistant and rated for resistance to impact, shock and vibration to MIL standards
- Sealed against ingress of water and dust to IP67, and designed for exposed outdoor and extreme environmental conditions
- LED accept and cancel buttons that light up.

Printer

- Heavy-duty printer head with minimal moving parts ensuring quality, reliability and endurance
- Print life of over 20 million character lines
- Designed for high-resolution printing
- Guillotine type cutter with full or partial paper cutting options (software selectable)
- Accessible for ease of maintenance

FEATURES

Security

- High security locks for cash box, cash vault, and main door
- System monitored access sensors on main and vault doors and sensor detecting presence of cash box

Audit and Statistic

- Remote monitoring of grand totals and subtotals for coins and card transactions per type
- Full or quick audit tickets are software selectable

Maintenance

- User-friendly graphic interface tools for diagnostics, configuration and editing
- Easy access modular design

Web-Based Hosted Sentinel™ Meter Management System

- Remotely monitor and generate audit, transaction and occupancy reports for all on-street equipment using a web browser and secure web portal
- Generates a variety of reports including grand totals and subtotals for coins and card transactions per type, which can be exported as PDF or CSV files, or imported into other applications

Warranty

J.J. MacKay Canada Limited, the manufacturer, guarantees for a period of one year from the date of shipment against defects in workmanship and /or materials.

As our policy is one of continuous product improvement and development, we reserve the right to alter product specification and design.

Photos are representative; product appearance may differ.

[1] All MacKay Tango™ components are operational within this range. Standard sealed lead acid battery operational temperature rating is from -20C (-4F) to 50C (122F) when charging, and from -20C (-4F) to 60C (140F) when discharging.
[2] Independent laboratory tests indicate that all things being equal, a component made of 11-gauge 304-2B stainless steel, would have equal or greater tensile strength, shear strength and malleability, as compared to the same component made out of 9-gauge carbon steel.

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Fax (902) 752-5955

Head Office customer support and technical support:
Toll free in North America: 1-888-4MACKAY (462-2529)
Fax (902) 752-4889
Email customer.service@mackaymeters.com
Web www.mackaymeters.com

Sales Office:

MACKAY METERS™

MacKay multi-space

95LT0000700TANGO-v8-01/19

Figure 28 - Sentinel Login Screen

3.7 DELIVERABLES - SENTINEL™ METER MANAGEMENT SYSTEM

MacKay's Sentinel™ MMS (Sentinel) with mkAnalytics™ will enable City designated staff to monitor the performance of the installed mkBeacon meters / Tango pay stations on a web enabled PC or handheld device. The current status of each machine running in the City's system will be monitored through a secure web interface allowing remote monitoring of the meters from anywhere access to the internet is available. Each machine will be configured to regularly communicate to MacKay's host server which will maintain historical information on all aspects of information occurring at the meter. The server can also be configured to transmit alerts in the form of text messages to mobile phones, increasing the ability to service the meters when the occasion arises.

Sentinel will be installed on MacKay's server, as an on-line hosted data service provided by MacKay. This hosted service is available to the City enabling access to the critical data at any time but without having the need of managing an IT department. MacKay will manage the Sentinel database server where the data collected from the meters resides. With a hosted service there is no additional burden on the City staff, or further workload to the existing network personnel or infrastructure. There is no limit to the number of users the City can setup on their Sentinel account.

Sentinel was designed around integration of third party applications to ensure tat the City can utilize the latest technologies to enhance their needs.

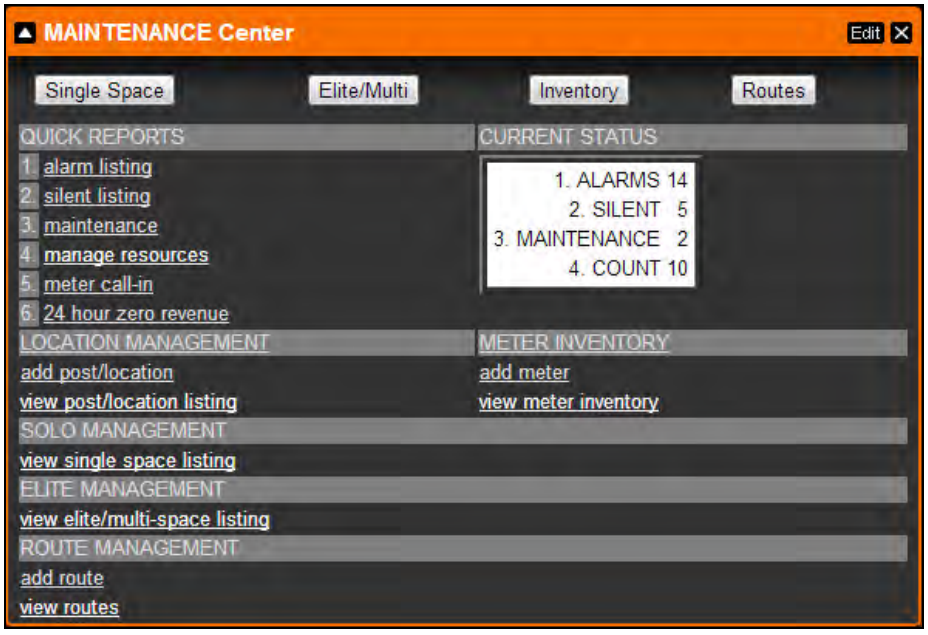


Figure 29 – Maintenance Center "Widget"

This Sentinel interface includes a login page to allow those with the correct client name, user name and password to access. Once a user logs into Sentinel, they arrive at the dashboard where the user is presented with applications or “widgets” which that user is permitted to access. Permission levels are controlled by the administrator, designated by the City. There can be more than one administrator but only administrator level can add users or modify certain elements within Sentinel.

The sentinel desktop is feature full with all permissions as administrator and limited viewing for those with lesser than admin privileges. These are set by the administrator of the system on site. All of the information from the machines is able to be drilled down upon from a number of locations not limited to the digital maps view which shows all detail from the mapped point drill down. There is an incredible amount of data with graphical charts and graphs for quick reference. Everything is exportable, printable and able to be converted to .PDF, .CSV or .XML directly from the on line program.

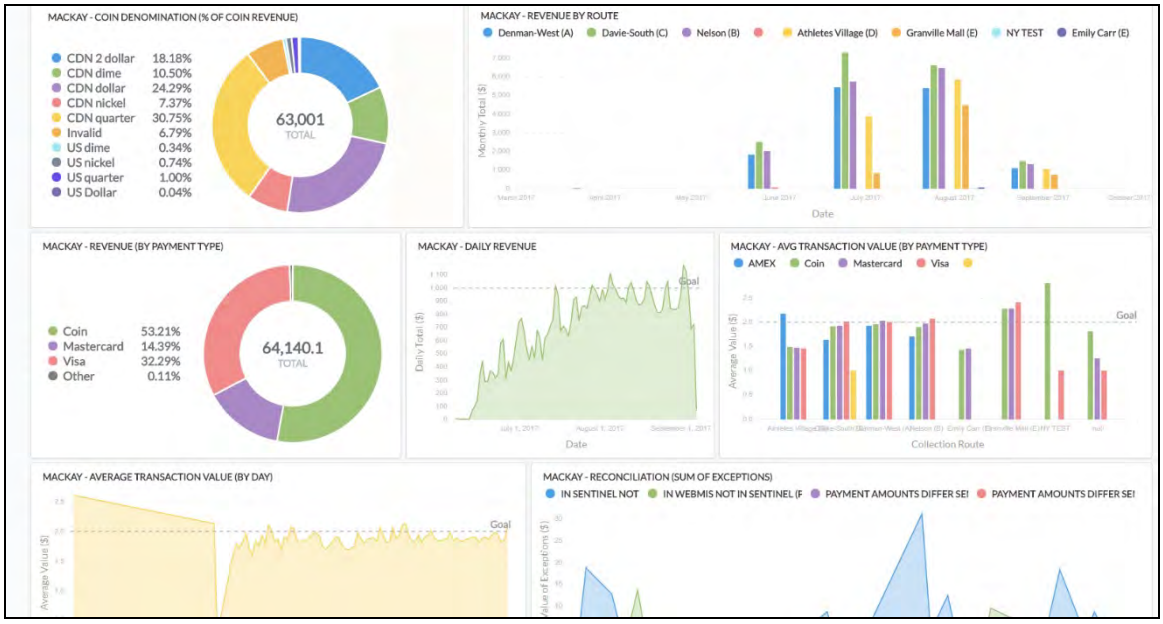


Figure 30 – Sentinel with mkAnalytics dashboard

Where the software is very comprehensive, for this proposal we are providing you with a segment of information. The following pages illustrate some selected screen shots and a brief narrative of certain aspects of interest of MacKay's Sentinel.

3.7.1 Current Alarms

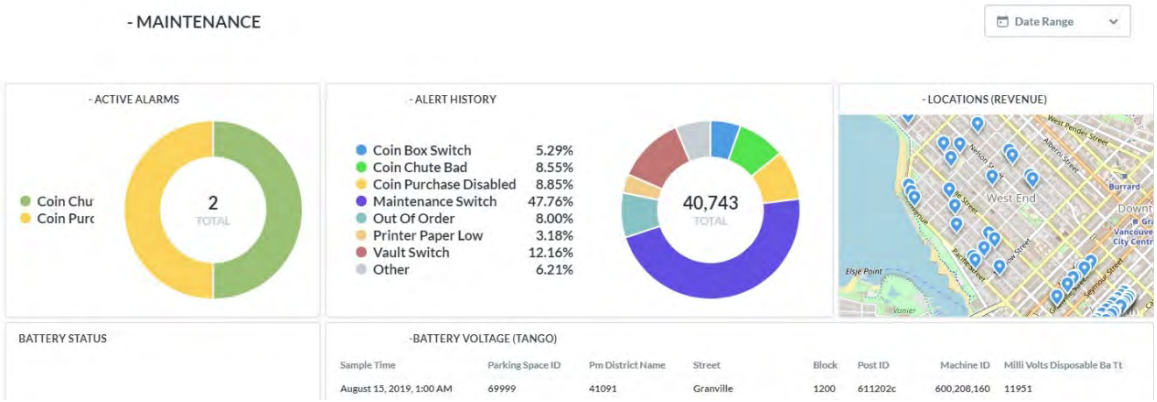


Figure 31 – Current Alarms Displayed on the mkAnalytics Dashboard

The Current Alarms application is a quick link to those meters that are experiencing problems or have issued an alert. The application shows a pie chart that compares the types of alerts received. The details link will bring you to a modified "View Meters" application and highlights the meters that are communicating alerts (or are silent because they are not communicating).

3.7.2 Reports in Sentinel™ MMS

The following is a list of reports that can be pulled from Sentinel™ MMS. All reports can be printed or exported to a spreadsheet or third party application. Supports .CSV, .PDF and .XML.

Administration Reports

- User Listing Report - a list of the user currently set up to access Sentinel™ MMS.
- User log – tracks the usage of Sentinel by user.
- Maintenance Codes Report - a list of the predefined maintenance codes for assigning maintenance
- Alert Codes Report - a list of the Alert codes and descriptions that the system monitors

Maintenance Reports

- Current Alarms – a list of all alerts currently sent from all meters
- Silent Meters – meters that have not communicated with Sentinel™ MMS in a certain time frame
- Meter Call-in – last time the meter called into Sentinel™ MMS
- Maintenance Report – a list of open maintenance tickets which are created when an alert requires service to be closed
- Meter inventory report – meter ID, status, group, last status change
- Alert History Report – list of all alerts at a meter
- Meter Maintenance Report – a list of maintenance performed on a specific meter
- Single Space Listing Report - a list of all the single space wireless meters and their current status
- Inventory Listing Report - a list of the entire inventory of meters - both active and inactive - for the customer
- Route Listing Report - a list of all the routes / groups / zones that the customer has set up
- Manage Resources Report - a list of the people / resources that the customer uses to assign maintenance to the meters. The report links to each person's maintenance list

Financial Reports

- Transaction Reports – list of all financial transactions which are defined by user criteria
- Audit Logs – List of coin and bill audits from each meter
- Coin Log – breakdown of coin types auditing
- Credit Card search – specific card search report (search partial numbers)

- Monthly Revenue Report – Summary of monthly totals
- Monthly Revenue by payment type – revenue sorted by payment type
- Occupancy Report – report compares total available time versus paid time to show occupancy
- Post History Report - a list of all post monitored by the system, their locations, and the routes / groups / zones they are included in
- Audit Log by Post # Report - Quick report to display the audit log for any unit
- Credit Card Log by Post # Report - Quick report to display the credit card log for any unit
- Coin Log by Post # Report - Quick report to display the coin log for any unit
- Daily Revenue Totals Report - Quick report for revenues from
    - Yesterday
    - This Week
    - This Month
    - This Year
- Life Time. Report includes breakdown by payment type.
- Tariff Listing Report - A list of the tariff / rate files that can be deployed to the meters and their current status
- Reconciliation Report – quickly compares credit card transactions from the meter with credit card transaction at the payment gateway to find anomalies

All reports can be narrowed down and sorted using search criteria. All data can be exported to MS Excel (.CVS format) or Adobe Acrobat (.PDF format).

3.7.3 Tariff Management

The Tariff management section allows the user / administrator to add new tariff files to Sentinel™ MMS which can be uploaded to one meter or to several meters.

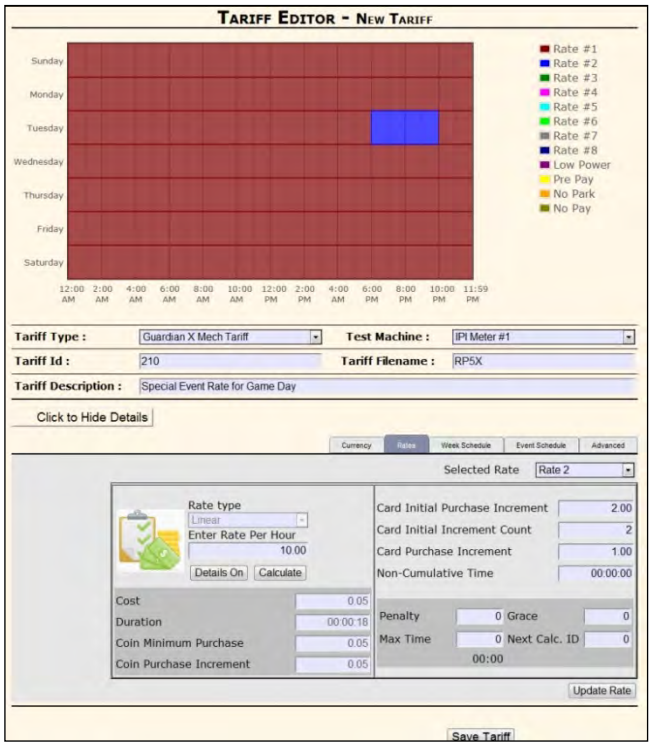


Figure 32 - Tariff Editor Application

The process works like this:

Step 1 – a tariff file is created and saved

Step 2 – the tariff file is tested against a test meter to ensure it works as expected

Step 3 – the tariff file is then activated and made

ready to deploy to the meters (locked)

Step 4 – the tariff file is then deployed to a “staging area” where the file awaits to be picked up by the meter or group of meters

Step 5 – the meter(s) checks the version of the tariff file in the staging area and downloads it if it is new

The Add Tariff application allows the user to build a new tariff file in Sentinel for either multi-space meters or single space meters. The application was designed to be user friendly; however, there are several rules that need to be followed to make sure the tariff operates correctly.

There are three distinct sections that make up the tariff editor: the weekly rate graph (which is normally colored in a single color by default with rate#1), the tariff file information (name, type, description, etc.), and the tariff details section which is hidden by default (the majority of the tariff features are in this section).

3.7.4 MKANALYTICS™

MkAnalytics™ is a simple and powerful analytics tool which lets anyone learn and make decisions from their data. It is a free add-on to Sentinel that allows the City the ability to design new visual reports that can be exported or emailed to users on a daily basis.

Like Sentinel, mkAnalytics requires a login through a web portal. The user can create their own dashboard that includes charts, graphs and spreadsheets of data that visually display a specific question the City may want answered each day.

Figure 33 - MkAnalytics dashboard with visual data elements to answer custom questions

The user simply builds out a group of questions (or has MacKay prebuild a dashboard of questions for the City) that can be displayed as pie charts, line graphs, area graphs, or simply as raw data spreadsheets. The visualizations are dynamic and update at regular intervals that the City can modify.

SENTINEL™
Meter Management System

Sentinel™
Meter Management System

MACKAY METERS™

Key features:

- Browser driven application
- Secure web interface
- Supports both wireless single space and multi space meters
- Allows for remote monitoring of key components for maintenance purposes
- MAP Display allows for geographic searches and reporting of meters
- Choose from a variety of pre-designed reports for transaction and audit data
- Provides an interface to export data to other applications including Microsoft® Excel® or Adobe® Reader®
- Role based user access
- Remote Alert Notification for quick communication of meter alarms
- Maintenance tickets to assign tasks online and manage your resources better
- Tariff editor allows administrator the ability to change meter rates remotely
- Pay by Space and Pay by Plate enforcement reports that are viewable from any Internet enabled device, including cell phones
- Flexible packages for basic and advanced user needs

<over for specifications>


Customizable Dashboard


Interactive MAP Display


Multiple Reporting Options


Real Time Alert Tools

www.mackaymeters.com

SENTINEL™ Meter Management System

SPECIFICATIONS

System Administration
The system administration feature gives the administrator control over the set up and specifications of the meters. Features include:

- Display Configuration for Single Space Meters
- Dashboard Configuration
- Alert Codes
- Add User to Sentinel™ Meter Management System (MMS)
- View / Edit Users

Email Management
Allows administrator to decide which users will be notified when alerts happen from single space wireless meters or from multi space meters.

Rate / Tariff Management
Allows administrator to build, modify and deploy rate/tariff files remotely to the wireless single space and multi space meters. Rates can be sent to a single meter or to a group of meters.

Resource Management
Control of resources at a glance by providing a place to add and manage resources such as collections, maintenance and enforcement. In resource management, the administrator can assign jobs to particular resources and also view a list of active and completed assignments. Features include:

- Add Resource
- Manage Resource
- Add Maintenance Code
- View / Edit Maintenance Codes
- View Maintenance Tickets

Meter / Post Management
In Meter Management, users can view each individual meter and see the Unit Info, Status and location for each. From this menu, detailed histories, reports, and maintenance tickets can be viewed or assigned. Features include:

- Add / View Meters (single space and multi space)
- Add / View Zones (for grouping meters)
- Add / View Inventory (meters not yet deployed)
- View transaction reports, occupancy reports, audit reports, reconciliation reports
- View alert history and maintenance history

MAP Display
With the MAP display feature, the user can search for a specific meter or a group of meters using the digital map interface. Each meter is represented by an icon that can be selected to show detailed meter information. Display the meters in a traditional mapping view or switch to the satellite photo for a bird's eye view. Features include:

- Launch MAP Display
- Add Location (map coordinates for displaying meters on digital maps)
- View Locations (edit map coordinates)

Current Alarms
The Current Alarms application provides an up-to-date report on any alerts that have been sent from the meters to Sentinel ™ MMS. The report lists the alerts currently active along with a graphic breakdown of the types of alerts. A hyperlink takes the user to a detailed report with links to the meters requiring attention.

System Status
The System Status report features several reports designed to alert the user of silent meters. Silent meters cannot communicate alerts to Sentinel ™ MMS due to communication problems. Reports include:

- Silent Listing
- Meter Call-in
- 24 Hour Zero Revenue

Pay by Space / Pay By Plate
The Pay by Space and Pay by Plate applications allow users who have pay stations in those configurations to setup, view and enforce parking using Sentinel ™ MMS. A mobile app is also available for enforcement.

MACKAY METERS™

Head Office:
J.J. MacKay Canada Limited
1342 Abercrombie Road, PO Box 338,
New Glasgow, Nova Scotia, Canada B2H 5E3

Phone (902) 752-5124
Fax (902) 752-5955

Head Office customer support and technical support:
Toll free in North America: 1-888-4MACKAY
(462-2529)

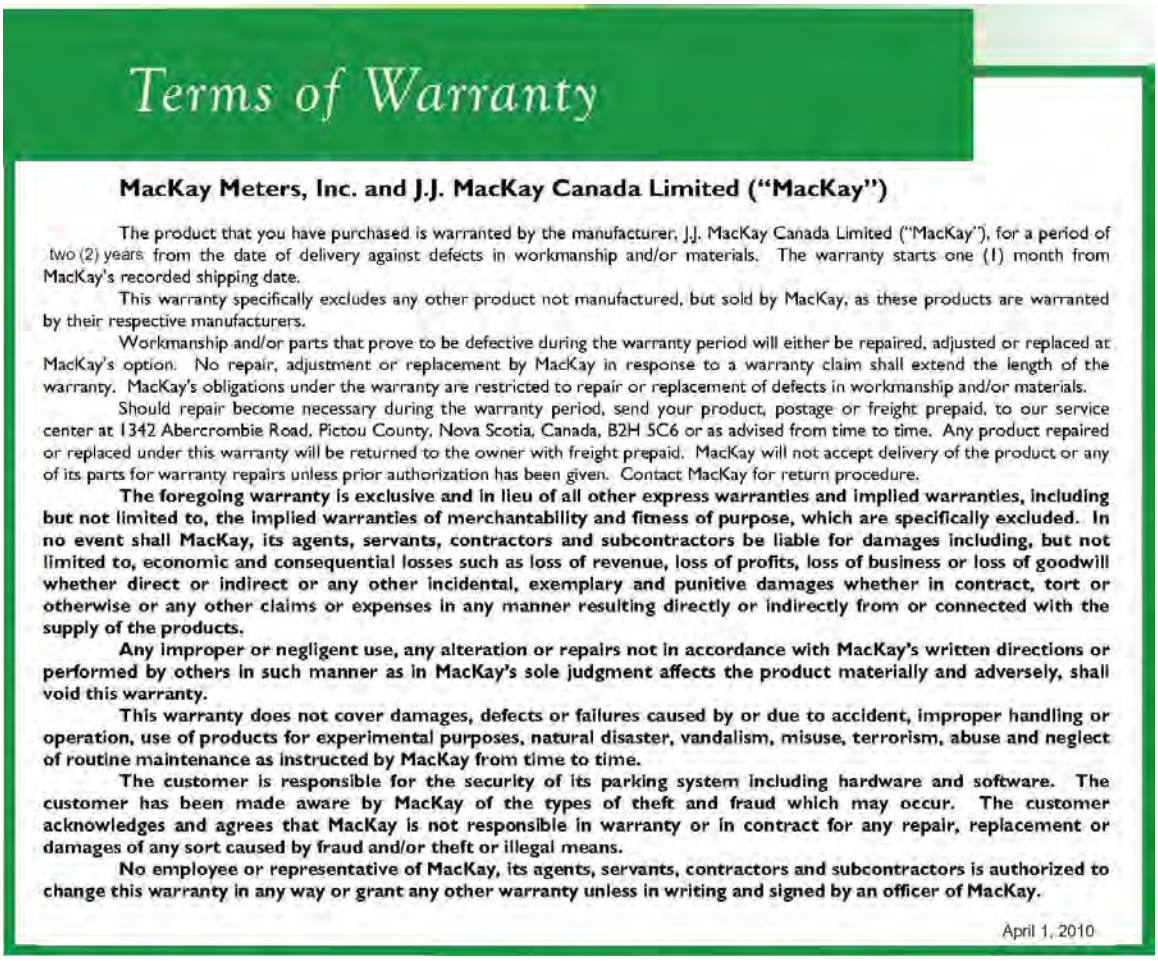
Fax (902) 752-4889
Email customer.service@mackaymeters.com
Web www.mackaymeters.com

MacKay systems

90LT0000350-01/19

3.8 MACKAY WARRANTY COVERAGE

MacKay will provide a two (2) year warranty on all **mkBeacon™ meters and MacKay Tango™ pay stations** to repair and/or replace any part or modular component determined to be defective in material or workmanship under normal use and service. MacKay's standard warranty terms will apply. To maintain warranty coverage, City technicians are required to provide the prescribed regular maintenance for these products. MacKay will provide the City with all operating and maintenance manuals necessary to operate and maintain the product and software. Carrying out the prescribed maintenance procedures therein, and as instructed from time to time by MacKay in writing, is necessary to ensure that the warranty on all products and software purchased from MacKay is not voided.



Terms of Warranty

MacKay Meters, Inc. and J.J. MacKay Canada Limited ("MacKay")

The product that you have purchased is warranted by the manufacturer, J.J. MacKay Canada Limited ("MacKay"), for a period of two (2) years from the date of delivery against defects in workmanship and/or materials. The warranty starts one (1) month from MacKay's recorded shipping date.

This warranty specifically excludes any other product not manufactured, but sold by MacKay, as these products are warranted by their respective manufacturers.

Workmanship and/or parts that prove to be defective during the warranty period will either be repaired, adjusted or replaced at MacKay's option. No repair, adjustment or replacement by MacKay in response to a warranty claim shall extend the length of the warranty. MacKay's obligations under the warranty are restricted to repair or replacement of defects in workmanship and/or materials.

Should repair become necessary during the warranty period, send your product, postage or freight prepaid, to our service center at 1342 Abercrombie Road, Pictou County, Nova Scotia, Canada, B2H 5C6 or as advised from time to time. Any product repaired or replaced under this warranty will be returned to the owner with freight prepaid. MacKay will not accept delivery of the product or any of its parts for warranty repairs unless prior authorization has been given. Contact MacKay for return procedure.

The foregoing warranty is exclusive and in lieu of all other express warranties and implied warranties, including but not limited to, the implied warranties of merchantability and fitness of purpose, which are specifically excluded. In no event shall MacKay, its agents, servants, contractors and subcontractors be liable for damages including, but not limited to, economic and consequential losses such as loss of revenue, loss of profits, loss of business or loss of goodwill whether direct or indirect or any other incidental, exemplary and punitive damages whether in contract, tort or otherwise or any other claims or expenses in any manner resulting directly or indirectly from or connected with the supply of the products.

Any improper or negligent use, any alteration or repairs not in accordance with MacKay's written directions or performed by others in such manner as in MacKay's sole judgment affects the product materially and adversely, shall void this warranty.

This warranty does not cover damages, defects or failures caused by or due to accident, improper handling or operation, use of products for experimental purposes, natural disaster, vandalism, misuse, terrorism, abuse and neglect of routine maintenance as instructed by MacKay from time to time.

The customer is responsible for the security of its parking system including hardware and software. The customer has been made aware by MacKay of the types of theft and fraud which may occur. The customer acknowledges and agrees that MacKay is not responsible in warranty or in contract for any repair, replacement or damages of any sort caused by fraud and/or theft or illegal means.

No employee or representative of MacKay, its agents, servants, contractors and subcontractors is authorized to change this warranty in any way or grant any other warranty unless in writing and signed by an officer of MacKay.

April 1, 2010

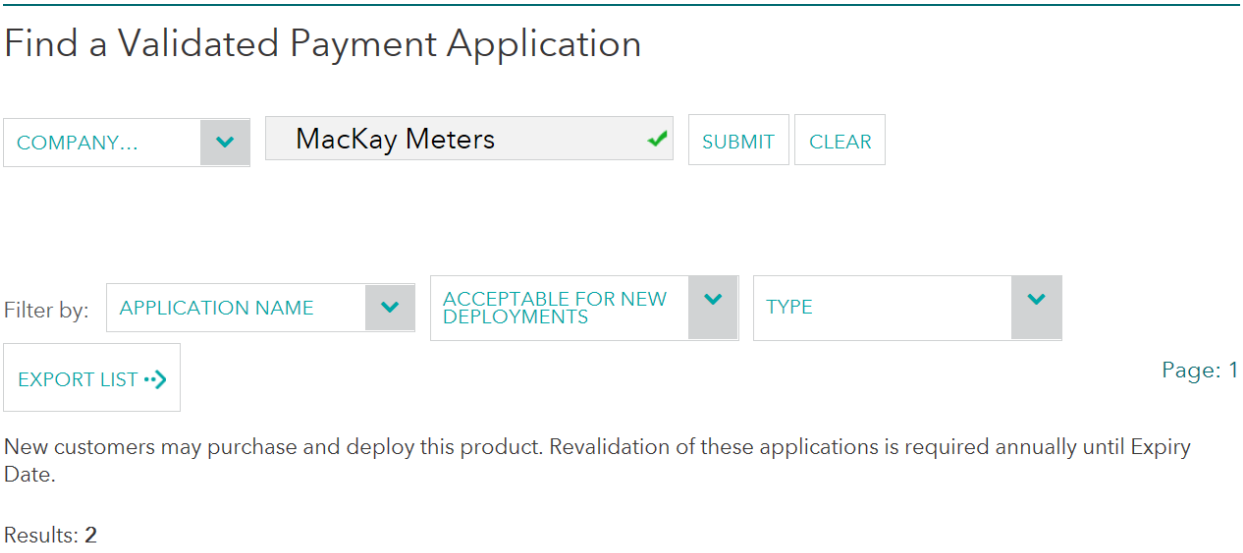
3.9 SECURITY & PRIVACY STANDARDS COMPLIANCE (PCI)

The mkBeacon™ meters and MacKay Tango™ pay stations are able to accept credit card payments in compliance with PCI Standards including Visa, MasterCard, Discover and American Express. MacKay Meters (MacKay) has satisfactorily met the security requirements of the Payment Card Industry Data Security Standard (PCI DSS) as a Level 1 Service Provider and is registered with both Visa and MasterCard. J.J. MacKay Canada Limited/MacKay Meters, Inc. is listed on:

Visa's Global List of PCI DSS Validated Service Providers http://www.visa.com/splisting/

and MasterCard's Compliant Service Provider List with list available on:
https://www.mastercard.us/en-us/merchants/safety-security/security-recommendations/merchants-need-to-know.html

The payment applications resident on MacKay's parking equipment have been validated for compliance with PA-DSS and are listed on the Payment Card Industry Security Standards Council (PCI SSC) List of Validated Payment Applications.
https://www.pcisecuritystandards.org/assessors_and_solutions/payment_applications



COMPANY	VALIDATION NOTES	DEPLOYMENT NOTES	REVALIDATION DATE	EXPIRY DATE	VALIDATED BY PA-QSA
MacKay Meters					
Multi-Space Parking Meter with Credit Card Payment					
Version #: 8.4 **App Type:** POS Kiosk **Target Market:** Customers are the operators of on-street parking/parking lots. These could be municipalities, colleges/universities, hospitals and private parking operators for use by the general public. **Reference #:** 16-07.00159.006 **Tested Platforms/Operating Systems:** Windows CE **Service Pack/Build/Version:** 5.0	Validated According to PA-DSS *(PA-DSS v3.2)*	Acceptable for New Deployments	7 Dec 2017	28 Oct 2022	RSM US LLP
Description Provided by Vendor: Description Provided by Vendor: A payment software for parking meters. The multi-space parking meters are dedicated devices used to manage both on-street and off-street parking spaces. The application is operated by consumers who swipe or tap their card at the device. The application transmits the cardholder data to the payment gateway. The payment application includes real-time credit card processing, hold and send protocols, hotlist, contactless payment and remote connection capability using Short Messaging Service (SMS).					
Parking Meter with Credit Card Payment					
Version #: 04.01 **App Type:** POS Kiosk **Target Market:** Customers are the operators of on-street parking/parking lots. These could be municipalities, colleges/universities, hospitals and private parking operators for use by the general public. **Reference #:** 16-07.00159.007 **Tested Platforms/Operating Systems:** Firmware running directly on integrated circuits **Service Pack/Build/Version:** Firmware running directly on integrated circuits	Validated According to PA-DSS *(PA-DSS v3.2)*	Acceptable for New Deployments	8 Dec 2017	28 Oct 2022	RSM US LLP
Description Provided by Vendor: A payment software for parking meters. The parking meters or kiosks are dedicated devices used to manage both on-street and off-street parking spaces. . The application is operated by consumers who swipe or tap their card at the device. The application transmits the cardholder data to the payment gateway. The payment application includes real-time credit card processing, hold and send protocols, hotlist, contactless payment and remote connection capability using Short Messaging Service (SMS).					

3.9.1 CUSTOMER SUPPORT

MacKay places a strong emphasis on delivering the highest standards in customer support and training. For the equipment provided, at an agreed date and time, MacKay will provide sufficient training on the MacKay mkBeacon™, Tango™ and Sentinel™ Meter Management System. MacKay also provides a toll free 1-800 number to access one of our customer support specialists.

3.9.2 TRAINING PROGRAM

MacKay will manufacture the mkBeacon™ and Tango™ meters, ship the product to the City, install the meters and train the City staff on operating and maintaining the meters. MacKay will also train the City staff on using the Sentinel™ Meter Management System to monitor the mkBeacon™ and Tango™ meters and the revenue generated by those meters.

Training will focus on the specific characteristics of the products, their capabilities, and user interface with the system. The training sessions can be divided into small groups of technicians/staff according to their respective tasks. Groups can be formed for collection, maintenance/repair and system reporting and management. Training shall be such that each trainee learns by significant 'hands on' experience under the guidance of an experienced trainer, assigned by MacKay to carry out an agreed list of first line fault corrections, maintenance and other operations.

The delivered training programs will enhance the capabilities of the operations and maintenance functions. All training will be supported by a variety of printed training materials, as well as a complete set of technical manuals. In addition, customer service or sales support staff can arrange Webex (internet/phone meetings) to further provide on-line training sessions/support.

As training will take place during the installation of the meters with City staff present, all normal customer and owner functions will be fully tested and operational by the end of the training session. This final testing will be witnessed by the City staff.

3.9.3 MAINTENANCE

For this submission, it is understood that City technicians will provide regular maintenance for purchased products. Since all of the equipment is made primarily of modular components, we believe the City will find that the maintenance requirements to keep it operational are minimal and easily managed with appropriate and thorough training of City staff by MacKay together with a few spare meters and spare parts inventory maintained by the City.

MacKay will provide all the required operation and maintenance manuals necessary to operate and maintain the product and software. Carrying out the prescribed maintenance procedures therein, and as instructed from time to time by MacKay in writing, is necessary to ensure that the warranty on all products and software purchased from MacKay is not void.

Sample Proposed Training Schedule

The following is a sample proposed schedule for training MacKay will provide to designated City staff (for the mkBeacons – A Tango training plan is available upon request). Prior to the installation /activation of any mkBeacon meters on-street, MacKay will provide the training courses listed below during the installation of the meters. The below training schedule will be refined and approved in conjunction with MacKay and City staff after award of any meter procurement contract. (S=mkBeacon, M=Sentinel MMS).

Depending on the number of attendees, and size of the installation, most meter and MMS training can be scheduled and completed over a 1 week period. Ideally for knowledge retention training should be carried out during the installation weeks.

Course S01-1 – mkBeacon Meter Commissioning & Installation for Technicians

Course S02-1 – mkBeacon Meter Service & Repair for Technicians

Course M03-1 – Introduction to Sentinel™ Meter Management System for Technicians

Course M06-1 – Advanced MMS Training I – Sentinel™ Meter Management System for Collections, Finance, Accounting, & Audit Staff, Supervisors and Managers

Course M07-1 – Advanced MMS Training II – Sentinel™ Meter Management System for Meter Shop Staff, Supervisors and Managers

Course M08-1 - Advanced MMS Training III – Sentinel™ Meter Management System for Managers & Administrators

All attendees who successfully complete the course curriculum covered shall be issued a MacKay Guardian™ mkBeacon and Sentinel™ Meter Management System Level I Technician Certificate. Attendees to all 3 courses will have completed up to four, 8-hour training days.

4. REFERENCES

4.1.1 REFERENCE 1 – CITY OF VANCOUVER

- In 2017 MacKay was chosen to provide both single space and multi space products for the City of Vancouver. An initial install of 60 Tango pay stations in Pay by Plate mode completed. An additional 260 pay stations have since been ordered. There are now 320 Tango pay stations and over 100 2-Bay mkBeacon meters installed on street.
- Integration includes Pay by Phone for mobile payment and Gtechna for enforcement.
- Project was awarded in 2017 and runs for 5 years as the provider of both single space and multi space equipment.
- Lessons learned – Many lessons were learned with this install, in particular, the project highlighted the importance of quick data transfer from our pay-by-plate pay stations, to the enforcement server (Gtechna in this instance). In any pay-by-plate installation, the latency of the data being sent is crucial to ensure tickets are not being written in error. With MacKay's robust .API, MacKay was able to reduce this data latency to be under 2 minutes 99% of the time and under 60 seconds 95% of the time. We also created a report in our MMS that was customized for the city to capture the latency of data delivery.

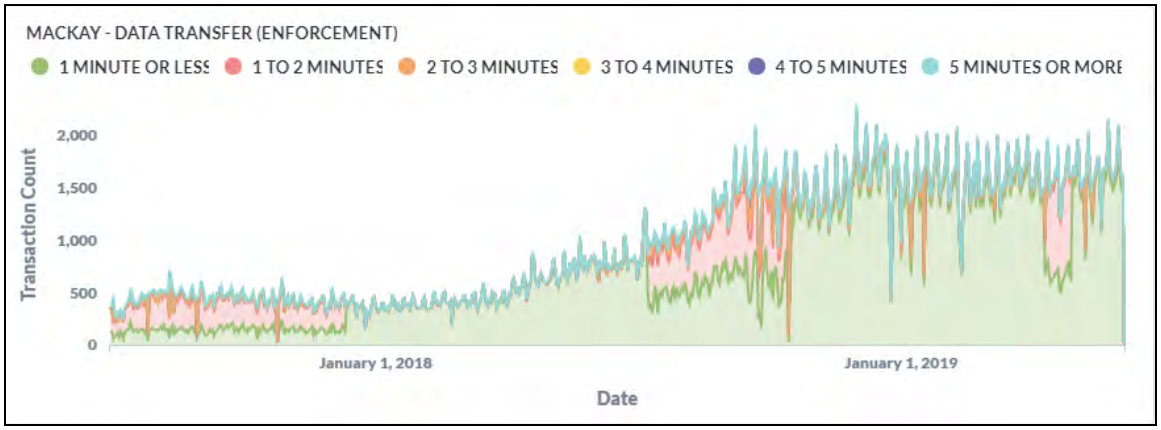


Figure 34 - Data Latency report for monitoring transaction time to the enforcement application

- Reference

  Contact: Mark DeSanti

  City of Vancouver Parking Division

  T : 604-871-6957

  M : 604-362-1547

  mark.desanti@vancouver.ca

4.1.2 REFERENCE 2 – CITY OF SAN FRANCISCO

- In 2014 MacKay was chosen to provide 500 pay stations to SFMTA. In 2017, 100 mkBeacon meters were ordered and installed. Pay stations included Medeco electronic locks for the vaults. In 2018, 140 TANGO pay stations were delivered, and installed.
- The SFMTA equipment is integrated with Pay by Phone for mobile payment and with Conduent and Gtechna for enforcement.
- Installed 100 mkBeacons wireless meters in 2017., 500 Pay Stations in 2014 and150 Tango pay stations in 2018 Current contract runs until November 2020.
- Lessons learned – During the SFMTA project, MacKay learned many valuable lessons, but in particular, the importance of being flexible from an .API perspective. MacKay currently interfaces with the SFMTA Oracle database, and sends every bit of data collected to this system. Given this database is specific to the City of San Francisco, MacKay had to customize the interface in order to send the data in a robust and reliable nature. We are now using this interface to provide real-time rate changes and real-time meter configuration changes as per the City's newest and evolving bylaws. This is the industry's FIRST true, dynamic system.
- Reference Contact: Steven Lee, Manager, Financial Services and Contracts
  San Francisco Municipal Transportation Agency
  1 South Van Ness Avenue 7th Floor
  San Francisco, CA 94103
  Phone: (415) 701-4592

4.1.3 REFERENCE 3 – CITY OF WALNUT CREEK

- In 2018, Walnut Creek chose MacKay to replace over 1600 of the competition's smart meters with their single/dual space wireless meters. In January, 2019, 936 mkBeacons were installed.
- Walnut Creek equipment is integrated with Parkmobile for mobile payment and for the population of the Parkmobile data for visual enforcement on the meters. Additionally, MacKay sends data to Smarking for additional data analytics
- Installed 936 mkBeacons in 2019.

- New decals were created and tested to aid in payment for new customers. Online videos were also provided to the City for their use in instructing the public on using the new meters. Videos can be seen here: http://www.walnut-creek.org/local-attractions/parking-downtown

- Lesson Learned – The importance of educating the public about new technology.....in particular switching from a single space installation to the introduction of a primarily 'DUAL' space installation. Providing, how to use videos, public outreach programs in preparation to the install, having city ambassadors present were all important parts to this smooth transition. Also, the power of branding was learned. The city had customized decals, and face plates provided by MacKay to help with this transition and to help change the image of their meter inventory completely.

Figure 35 - Walnut Creek 2-bay and single bay 2 hour meter (green) and 2 Bay and single bay 10 hour meters (purple).

- Reference

  Contact: Karlan Larson

  Phone: 925-943-5899

  21201 La Puente Road

  P.O. Box 682

  Walnut, CA 91789

  Email: KLarson@walnut-creek.org

5. REQUIRED FORMS

The following section includes the required forms.

6. APPENDIX

The following section includes additional materials referenced in the response.

City of Fort Lauderdale • Procurement Services Division
100 N. Andrews Avenue, 619 • Fort Lauderdale, Florida 33301
954-828-5933 Fax 954-828-5576
purchase@fortlauderdale.gov

ADDENDUM NO.1

RFP/ ITB No. 12342-805
TITLE: Parking Meter Technology, with Maintenance and Support

ISSUED: January 16, 2020

This addendum is being issued to make the following change(s):

1. Revised Bid Specs uploaded.
   See 12342-805 - Parking Meter Technology - V5.docx

2. Revised Exhibit 1 updated.
   See Exhibit 1 - Meter Technical Specifications_V4.xlsx

All other terms, conditions, and specifications remain unchanged.

Laurie Platkin, CPPB
Senior Procurement Specialist

Company Name: MacKay Meters, Inc.
(please print)

Bidder's Signature: _____

Date: Feb. 4, 2020

City of Fort Lauderdale • Procurement Services Division
100 N. Andrews Avenue, 619 • Fort Lauderdale, Florida 33301
954-828-5933 Fax 954-828-5576
purchase@fortlauderdale.gov

ADDENDUM NO.2

RFP/ ITB No. 12342-805
TITLE: Parking Meter Technology, with Maintenance and Support

ISSUED: January 24, 2020

This addendum is being issued to make the following change(s):

1) Revised Bid Specs. Section 3.5 added. See 12342-805 - Parking Meter Technology - V6.docx

3.5 The City, in its facilitation of a coordinated parking environment, will require all providers to integrate into its backend software platform of choice. This software platform will perform the following tasks: calculation of parking prices, rates, rules, or restrictions; creation and management of parking zones (including, without limitation zone numbers, locations, and associated rates, rules, and/or restrictions); provision of reporting on parking session activity in a back office tool; processing credit card transactions; and transmitting data to parking enforcement systems. Proposers must integrate with City-specified API endpoints for these operations, including the reconciliation of funds with the City, and as a result, the City will not use or purchase any of the foregoing functionality from any Participant. This ensures that the City will have the capability to manage all provider technology through a single centralized interface with the City. Successful respondents will be required to process payments through WorldPay, and all funds will be deposited in a merchant account designated by the City. Therefore, the successful respondent will be required to have their hardware certified to be compliant with World Pay for gateway services and merchant processing services.

All other terms, conditions, and specifications remain unchanged.

Laurie Platkin, CPPB
Senior Procurement Specialist

Company Name: MacKay Meters, Inc.
(please print)

Bidder's Signature: _____

Date: Feb. 4, 2020

BID/PROPOSAL CERTIFICATION

Please Note: If responding to this solicitation through BidSync, the electronic version of the bid response will prevail, unless a paper version is clearly marked **by the bidder** in some manner to indicate that it will supplant the electronic version. All fields below must be completed. If the field does not apply to you, please note N/A in that field.

If you are a foreign corporation, you may be required to obtain a certificate of authority from the department of state, in accordance with Florida Statute §607.1501 (visit http://www.dos.state.fl.us/).

Company: (Legal Registration) MacKay Meters, Inc. EIN (Optional): 59-341-0888

Address: 1342 Abercrombie Road

City: New Glasgow State: NS Zip: B2H5E3

Telephone No. 902-752-5124 FAX No. 902-752-5955 Email: j.taylor@mackaymeters.com

Delivery: Calendar days after receipt of Purchase Order **(section 1.02 of General Conditions)**: See Section 3.3

Total Bid Discount **(section 1.05 of General Conditions)**: na

Check box if your firm qualifies for MBE / SBE / WBE **(section 1.09 of General Conditions)**: ☐

ADDENDUM ACKNOWLEDGEMENT - Proposer acknowledges that the following addenda have been received and are included in the proposal:

Addendum No	Date Issued	Addendum No.	Date Issued	Addendum No	Date Issued
1	Jan 16, 2020				
2	Jan.24, 2020				

VARIANCES: If you take exception or have variances to any term, condition, specification, scope of service, or requirement in this competitive solicitation you must specify such exception or variance in the space provided below or reference in the space provided below all variances contained on other pages within your response. Additional pages may be attached if necessary. No exceptions or variances will be deemed to be part of the response submitted unless such is listed and contained in the space provided below. The City does not, by virtue of submitting a variance, necessarily accept any variances. If no statement is contained in the below space, it is hereby implied that your response is in full compliance with this competitive solicitation. If you do not have variances, simply mark N/A. **If submitting your response electronically through BIDSYNC you must also click the "Take Exception" button.**

Exceptions as noted in the Meter Technical Specifications spreadsheet

The below signatory hereby agrees to furnish the following article(s) or services at the price(s) and terms stated subject to all instructions, conditions, specifications addenda, legal advertisement, and conditions contained in the bid/proposal. I have read all attachments including the specifications and fully understand what is required. By submitting this signed proposal I will accept a contract if approved by the City and such acceptance covers all terms, conditions, and specifications of this bid/proposal. The below signatory also hereby agrees, by virtue of submitting or attempting to submit a response, that in no event shall the City's liability for respondent's direct, indirect, incidental, consequential, special or exemplary damages, expenses, or lost profits arising out of this competitive solicitation process, including but not limited to public advertisement, bid conferences, site visits, evaluations, oral presentations, or award proceedings exceed the amount of Five Hundred Dollars ($500.00). This limitation shall not apply to claims arising under any provision of indemnification or the City's protest ordinance contained in this competitive solicitation.

Submitted by:

James MacKay
Name (printed)

Feb. 4, 2020
Date

Signature

VP Sales
Title

NON-COLLUSION STATEMENT:

By signing this offer, the vendor/contractor certifies that this offer is made independently and *free* from collusion. Vendor shall disclose below any City of Fort Lauderdale, FL officer or employee, or any relative of any such officer or employee who is an officer or director of, or has a material interest in, the vendor's business, who is in a position to influence this procurement.

Any City of Fort Lauderdale, FL officer or employee who has any input into the writing of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement.

For purposes hereof, a person has a material interest if they directly or indirectly own more than 5 percent of the total assets or capital stock of any business entity, or if they otherwise stand to personally gain if the contract is awarded to this vendor.

In accordance with City of Fort Lauderdale, FL Policy and Standards Manual, 6.10.8.3,

> 3.3. City employees may not contract with the City through any corporation or business entity in which they or their immediate family members hold a controlling financial interest (e.g. ownership of five (5) percent or more).
>
> 3.4. Immediate family members (spouse, parents and children) are also prohibited from contracting with the City subject to the same general rules.

Failure of a vendor to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the City Procurement Code.

NAME	RELATIONSHIPS

In the event the vendor does not indicate any names, the City shall interpret this to mean that the vendor has indicated that no such relationships exist.

CONTRACTOR'S CERTIFICATE OF COMPLIANCE WITH NON-DISCRIMINATION PROVISIONS OF THE CONTRACT

The completed and signed form should be returned with the Contractor's submittal. If not provided with submittal, the Contractor must submit within three business days of City's request. Contractor may be deemed non-responsive for failure to fully comply within stated timeframes.

Pursuant to City Ordinance Sec. 2-17(a)(i)(ii), bidders must certify compliance with the Non-Discrimination provision of the ordinance.

(a) Contractors doing business with the City shall not discriminate against their employees based on the employee's race, color, religion, gender (including identity or expression), marital status, sexual orientation, national origin, age, disability or any other protected classification as defined by applicable law.

Contracts. Every Contract exceeding $100,000, or otherwise exempt from this section shall contain language that obligates the Contractor to comply with the applicable provisions of this section.

The Contract shall include provisions for the following:

(i) The Contractor certifies and represents that it will comply with this section during the entire term of the contract.

(ii) The failure of the Contractor to comply with this section shall be deemed to be a material breach of the contract, entitling the City to pursue any remedy stated below or any remedy provided under applicable law.

Authorized Signature

James MacKay, VP Sales
Print Name and Title

Feb. 4, 2020
Date

CONTRACT PAYMENT METHOD

The City of Fort Lauderdale has implemented a Procurement Card (P-Card) program which changes how payments are remitted to its vendors. The City has transitioned from traditional paper checks to credit card payments via MasterCard or Visa as part of this program.

This allows you as a vendor of the City of Fort Lauderdale to receive your payments fast and safely. No more waiting for checks to be printed and mailed.

In accordance with the contract, payments on this contract will be made utilizing the City's P-Card (MasterCard or Visa). Accordingly, bidders must presently have the ability to accept the credit card or take whatever steps necessary to implement acceptance of a card before the start of the contract term, or contract award by the City.

All costs associated with the Contractor's participation in this purchasing program shall be borne by the Contractor. The City reserves the right to revise this program as necessary.

By signing below you agree with these terms.

Please indicate which credit card payment you prefer:

☒ MasterCard

☒ Visa

MacKay Meters, Inc
Company Name

James MacKay
Name (Printed)

Feb. 4, 2020
Date

Signature

VP Sales
Title

E-VERIFY AFFIRMATION STATEMENT

RFP/Bid /Contract No: #12342-805

Project Description: PARKING METER TECHNOLOGY, WITH MAINTENANCE AND SUPPORT

Contractor/Proposer/Bidder acknowledges and agrees to utilize the U.S. Department of Homeland Security's E-Verify System to verify the employment eligibility of,

(a) all persons employed by Contractor/Proposer/Bidder to perform employment duties within Florida during the term of the Contract, and,
(b) all persons (including subcontractors/vendors) assigned by Contractor/Proposer/Bidder to perform work pursuant to the Contract.

The Contractor/Proposer/Bidder acknowledges and agrees that use of the U.S. Department of Homeland Security's E-Verify System during the term of the Contract is a condition of the Contract.

Contractor/Proposer/ Bidder Company Name: MacKay Meters, Inc.

Authorized Company Person's Signature:

Authorized Company Person's Title: VP Sales

Date: Feb. 4, 2020

CSIO

CERTIFICATE OF LIABILITY INSURANCE

This certificate is issued as a matter of information only and confers no rights upon the certificate holder and imposes no liability on the insurer. This certificate does not amend, extend or alter the coverage afforded by the policies below.

1. CERTIFICATE HOLDER - NAME AND MAILING ADDRESS	2. INSURED'S FULL NAME AND MAILING ADDRESS
	MacKay Meters, Inc. /J.J. MacKay Canada Limited
	Darren Stroud
	P.O. Box 338
POSTAL CODE	New Glasgow NS POSTAL CODE B2H 5E3

3. DESCRIPTION OF OPERATIONS/LOCATIONS/AUTOMOBILES/SPECIAL ITEMS TO WHICH THIS CERTIFICATE APPLIES (but only with respect to the operations of the Named Insured)

Confirmation of Insurance

4. COVERAGES

This is to certify that the policies of insurance listed below have been issued to the insured named above for the policy period indicated notwithstanding any requirements, terms or conditions of any contract or other document with respect to which this certificate may be issued or may pertain. The insurance afforded by the policies described herein is subject to all terms, exclusions and conditions of such policies.

LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS

TYPE OF INSURANCE	INSURANCE COMPANY AND POLICY NUMBER	EFFECTIVE DATE YYYY/MM/DD	EXPIRY DATE YYYY/MM/DD	LIMITS OF LIABILITY (Canadian dollars unless indicated otherwise) COVERAGE	DED.	AMOUNT OF INSURANCE
COMMERCIAL GENERAL LIABILITY	Chubb Insurance Company of Canada 35814085	2019/06/30	2020/06/30	COMMERCIAL GENERAL LIABILITY BODILY INJURY AND PROPERTY DAMAGE LIABILITY - GENERAL AGGREGATE		10,000,000
☐ CLAIMS MADE OR ☒ OCCURRENCE				- EACH OCCURRENCE	1D,000	1,000,000
☒ PRODUCTS AND / OR COMPLETED OPERATIONS				PRODUCTS AND COMPLETED OPERATIONS AGGREGATE		1,000,000
☒ EMPLOYER'S LIABILITY				☐ PERSONAL INJURY LIABILITY OR ☒ PERSONAL AND ADVERTISING INJURY LIABILITY		1,000,000
☒ CROSS LIABILITY				MEDICAL PAYMENTS		
☐ WAIVER OF SUBROGATION				TENANTS LEGAL LIABILITY		
☐ TENANTS LEGAL LIABILITY				POLLUTION LIABILITY EXTENSION		
☐ POLLUTION LIABILITY EXTENSION						
☐						
☐						
☒ NON-OWNED AUTOMOBILES	Chubb Insurance Company of Canada 35814085	2019/06/30	2020/06/30	NON-OWNED AUTOMOBILES		1,000,000
☐ HIRED AUTOMOBILES				HIRED AUTOMOBILES		
AUTOMOBILE LIABILITY				BODILY INJURY AND PROPERTY DAMAGE COMBINED		
☐ DESCRIBED AUTOMOBILES				BODILY INJURY (PER PERSON)		
☐ ALL OWNED AUTOMOBILES				BODILY INJURY (PER ACCIDENT)		
☐ LEASED AUTOMOBILES **				PROPERTY DAMAGE		
** ALL AUTOMOBILES LEASED IN EXCESS OF 30 DAYS WHERE THE INSURED IS REQUIRED TO PROVIDE INSURANCE						
EXCESS LIABILITY	Chubb Insurance Company of Canada 79841661	2019/06/30	2020/06/30	EACH OCCURRENCE		4,000,000
☒ UMBRELLA FORM				AGGREGATE		
☐						
OTHER LIABILITY (SPECIFY)						
☐						
☐						

5. CANCELLATION

Should any of the above described policies be cancelled before the expiration date thereof, the issuing company will endeavor to mail 30 days written notice to the certificate holder named above, but failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents or representatives.

6. BROKERAGE/AGENCY FULL NAME AND MAILING ADDRESS	7. ADDITIONAL INSURED NAME AND MAILING ADDRESS (Commercial General Liability- but only with respect to the operations of the Named Insured)
Arthur J. Gallagher Canada Limited	
227 Main Street	
Antigonish NS POSTAL CODE B2G 2M5	
BROKER CLIENT ID:	POSTAL CODE

8. CERTIFICATE AUTHORIZATION

ISSUER Arthur J Gallagher Canada Limited	CONTACT NUMBER(S) TYPE Phone NO. 902-863-3211 TYPE NO.
AUTHORIZED REPRESENTATIVE Peter Fraser, BBA, CAIB	TYPE Fax NO. 902-863-1336 TYPE NO.
SIGNATURE OF AUTHORIZED REPRESENTATIVE	DATE 2020/01/06 EMAIL ADDRESS

Form **W-9**
(Rev. December 2014)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Give Form to the requester. Do not send to the IRS.

Print or type
See Specific Instructions on page 2.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.
MacKay Meters, Inc.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification; check only **one** of the following seven boxes:
☐ Individual/sole proprietor or single-member LLC ☑ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate
☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶
Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner.
☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):
Exempt payee code (if any)
Exemption from FATCA reporting code (if any)
(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.)
1342 Abercrombie Road

Requester's name and address (optional)

6 City, state, and ZIP code
New Glasgow, NS Canada, B2H 5E3

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Social security number
			–			–				

or

Employer identification number
5	9	–	3	4	1	0	8	8	8

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

Sign Here | **Signature of U.S. person ▶** | **Date ▶**

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at *www.irs.gov/fw9*.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding?* on page 2.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

Line 3

Check the appropriate box in line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box in line 3.

Limited Liability Company (LLC). If the name on line 1 is an LLC treated as a partnership for U.S. federal tax purposes, check the "Limited Liability Company" box and enter "P" in the space provided. If the LLC has filed Form 8832 or 2553 to be taxed as a corporation, check the "Limited Liability Company" box and in the space provided enter "C" for C corporation or "S" for S corporation. If it is a single-member LLC that is a disregarded entity, do not check the "Limited Liability Company" box; instead check the first box in line 3 "Individual/sole proprietor or single-member LLC."

Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space in line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)

2—The United States or any of its agencies or instrumentalities

3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

4—A foreign government or any of its political subdivisions, agencies, or instrumentalities

5—A corporation

6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession

7—A futures commission merchant registered with the Commodity Futures Trading Commission

8—A real estate investment trust

9—An entity registered at all times during the tax year under the Investment Company Act of 1940

10—A common trust fund operated by a bank under section 584(a)

11—A financial institution

12—A middleman known in the investment community as a nominee or custodian

13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over $600 required to be reported and direct sales over $5,000[1]	Generally, exempt payees 1 through 5[2]
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

[1] See Form 1099-MISC, Miscellaneous Income, and its instructions.

[2] However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

Note. You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns.

Line 6

Enter your city, state, and ZIP code.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on this page), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at *www.ssa.gov*. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at *www.irs.gov/businesses* and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting IRS.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note. Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: *A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.*

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
1	**General Specifications**	**Please note: Please fill this sheet out for SINGLE SPACE METERS only**	**Proposer is to respond to all requirements highlighted in *yellow*. If vendor selects "will meet" please list compliance date in Comments section.**	**If, applicable, you may use this space to expand on your response and/or reference supporting documentation (e.g. file attachments, online information, etc.) on how your solution meets the requirement.**
1.1	Pay for parking	Payment must be available through multiple options, including coin, credit card and mobile payment integration. Near Field Communication (NFC) (including Apple Pay and Google Pay) payments shall be supported and available.	**Meets**	NFC Payment requires the optional NFC reader to be installed.
1.2	Configure Payment Environment	Explain the process of converting meters from Pay-and Display, Pay-By-Space, and Pay-By Plate	**Does Not Meet**	**Not applicable to single space meters**
1.2	Configure Rate Structure	Meters must have the ability to store a minimum of 8 different rate structures that are configurable by time of day, length of stay and day of the week.	**Meets**	
1.3	Screen size	Meters must have a large screen display in order for rate information to be displayed, rather than signs posted on the meter.	**Meets**	
1.4	Pre-pay	Meters must have pre-payment option (payments made in advance of operating hours).	**Meets**	
1.5	Add meter time	Meters must have the ability to add time to existing transactions, however, the add time feature must disallow the ability to purchase time past the maximum time for a parking space.	**Meets**	
1.6	Ability to Display Information	All technology shall be able to electronically display the following to the patron with minimal effort: i. rates ii. days and hours of operation iii. user instructions	**Meets**	
1.7	Vendor Support	Proposers must offer strong customer support 7 days a week including holidays. i. Timely, same-day responses are required. Ii. A single point of contact for the City is required during normal business hours (MST). Vendor will coordinate, in advance, scheduled time off and identify an alternative point of contact during these designated times.	**Will Meet**	A combination of strong customer support along with a designated project / account manager will be in place for the City.
1.8	Request for Quotations	Requests for Quotations from the City must be to be fulfilled within three business days, and/or at a status update on the 3rd business day and every 2 days thereafter. This is to include all requests for all equipment and parts.	**Meets**	
1.9	Return Merchandise Authorization	Return Merchandise Authorization (RMA) requests must be fulfilled within 30 calendar days, and/or a status update as the expected time of arrival (ETA). RMA shipments to the City must include advance email delivery notification, delivery date/time and the associated tracking number to the designated City point of contact. Deliveries to the City shall only occur within the mutually established delivery hours of operation.	**Meets**	
1.10	Change Rates	Changing rates using the Meter Management System (MMS) shall be completely web-based (no software to install), easy to use with customizable tariff naming and the ability to download rates onto customizable, user-defined groups of meters.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
1.11	ADA Compliance	All technology, equipment, and systems shall be ADA-compliant.	**Meets**	Pole height should be under 31" for the mkBeacon to be ADA compliant.
1.12	New Materials	All materials and components shall be new and unused.	**Meets**	
1.13	Modular Components	All technology shall have a modular design. Components shall be able to be quickly changed in the field.	**Meets**	
1.14	Weatherproof Electronics	All electronic components, connections and wiring shall be fully weatherproofed.	**Meets**	
1.15	Meter Quality	The meters shall be weather, rust and graffiti resistant and shall be made of stainless steel or an equivalent material.	**Meets**	
1.16	Doors	Vault and access doors must be sealed to prevent water/sand intrusion.	**Meets**	
1.17	Meter Lighting	The City prefers that the meter has additional lighting or illumination for dark hour usage.	**Meets**	
1.18	Wireless Communication	All technology shall wirelessly communicate usage, payment status, and maintenance alert data in real-time.	**Meets**	
1.19	Web-based MMS	All technology shall be managed by a web-based meter maintenance system. It is required that the meter maintenance system provide an accessible chain of events that identifies the footprint of usage including the user, date and time stamp, who completed an input, activity or event and the action completed.	**Meets**	
1.20	Environmental Durability	All technology shall be warranted to operate as proposed within a temperature range of -15 degrees Fahrenheit to +140 degrees Fahrenheit and under environmental conditions found in the City of Fort Lauderdale, including but not limited to sleet, rain, hail, ocean mist, grime, sand, fog, salt, sun (including direct sunlight), and vibrations.	**Meets**	
2	**MMS Requirements**			
2.1	MMS Maintenance Tickets	Shall be able to remotely update meter pricing, regulations, and configuration	**Meets**	
2.2	Meter Activity Reporting	Shall be able to provide reports on meter activity and shall, at a minimum, include: i. Metrics dashboard based on routes, Meter Technicians, faults, resolved, mean time to repair (MTTR), etc., ii.Auto push of faults to Meter Technicians.	**Meets**	
2.3	Work Order Tickets	Shall be able to automatically create maintenance work order tickets for meter-generated alarms or patron reports of meter malfunctions. Maintenance tickets shall be able to be updated via email, smartphone and tablet.	**Meets**	
2.4	Meter Maintenance Records	Shall record meter maintenance completed by repair staff.	**Meets**	
2.5	Meter Status Indicator	Shall easily indicate meter status and send alarms to designated personnel if a meter is not functioning.	**Meets**	
3	**Wireless Two-Way Communications**			
3.1	Wireless Communications	The technology will be equipped with a modem, antenna, and the required software to support wireless communications.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
3.2	Communications Service	The wireless communications shall be supplied as a "communications service" during the life of the contract, not as a specific type of modem or wireless carrier supply.	**Meets**	
4	**Equipment Display**			
4.1	Display in and out of light	Graphic display shall be easy to read under various daytime and nighttime lighting conditions, including fog and direct sunlight and at various angles.	**Meets**	
4.2	Backlit Display	The meter shall have a backlit graphic display panel that is large enough to legibly display all necessary operating status messages to patrons and repair personnel. The display must be energy efficient and operate in a solar-charging (or equivalent) configuration and not cause excessive battery drain.	**Meets**	
4.3	Scratch & Impact Resistant	The display shall be scratch and impact resistant.	**Meets**	
4.4	Rate & Hours	Current rates and hours must be able to be displayed on the graphic display and be remotely programmed.	**Meets**	
4.5	Program Rates	City shall have the ability to program rates independent of vendor support with no additional costs associated with these changes.	**Meets**	
4.7	Pre Payment (Special Events/Valet Operations)	City shall have the the ability to have meters show meters are not available during the hours and not take a payment.	**Meets**	
4.6	Rate Options	Customers shall be able to select their rate option prior to submitting payment in order for the meter to translate the amount due and inform the customer of the payment value.	**Meets**	
4.7	Dynamic Messaging	Graphic display shall support dynamic messaging functionality to reflect changes in pricing, regulations, display messages, format, or configurations made in the MMS and communicated wirelessly to the meter at least once per day. The City shall have the ability to change or adjust the graphic display independent of vendor support and there shall be no additional costs for these types of adjustments.	**Meets**	
4.8	Special Messaging	All meters shall have an ability to display special messaging i.e., holiday and special event messages, which can be downloaded remotely..	**Meets**	
4.9	Display Content	Meter display shall clearly communicate the following electronically, alphanumerically and graphically: i. Rates ii. Days and hours of meter operation iii. Regulations iv. Instructions to the user: 1. Read Error, Please Reinsert Card – if card is removed from the mechanism before it could read the information on the card; 2. Coin Only – at the sole discretion of City, if the card slot is inoperable; 3. Card Only – at the sole discretion of City, if the coin slot is inoperable; 4. Out of Order – at the sole discretion of City, if the coin and card slots are inoperable, with customizable instructions. v. Special messaging	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
5	**Keypad**			
5.1	Keypad Durability	Keypads must be vandal resistant, weatherproof, and corrosion resistant.	**Meets**	
5.2	Display Feedback	Meters must provide visual, audible or tactile indication that a button has been pressed, as feedback to the patron.	**Meets**	
5.3	Security	Meters shall have high security locks for all meter doors. Electronic locks are required on any revenue accessible door with online programmable access parameters including restrictions for maintenance, collections, days of week and hours of day. Meters must have manual override process in case of failure or electronic lock malfunction.	**Meets**	Electronic locks on the vault doors are optional and their pricing can be found in the pricing section. Meters will come standard with MacKay's M Series + locks.
5.4	Upgrades	Upgrades to the MMS or other systems will be distributed, communicated, and implemented (e.g., training of appropriate staff) during the term of the contract including ongoing refresher training available to the City.	**Meets**	
6	**Payments**			
6.1	Credit cards	All meters must support secure real-time authorization of credit cards and optional contactless cards.	**Meets**	Pricing for optional contactless (NFC)credit card readers can be found in the pricing section.
6.3	Payments	Proposer shall be able to describe coin, card and alternative payment operations, including the number of different coins/currency accepted and the type of card-based payments, including magnetic stripe, contactless cards and chip-based cards (as applicable).	**Meets**	The mkBeacon supports up to 16 different coins or tokens, magnetic stripe credit cards (Visa, MasterCard, Amex, Discover, Diners), chip-based smart cards, contactless credit cards, and mobile payment (Passport, ParkMobile, Pay-by-Phone, etc.)
6.4	Coin payment	The meter shall accept coins through a jam-resistant coin interface and jam- resistant card payments through a card interface.	**Meets**	
6.5	Alternative payment to coin	If the coin slot is inoperable, meters must have the option to still accept card payments and third-party payments (e.g., mobile payments).	**Meets**	
6.6	Coin chute free-fall	The coin chute or track and coin verifier unit shall be a free-fall type (non-moving and non-mechanized) or an equivalent.	**Meets**	
6.7	Coin chute anti-backup	The coin chute or track shall include an anti-backup provision to prevent and detect the attempted retrieval of deposited coins (e.g., attached to strings, paddles, wires, etc.).	**Meets**	
6.8	Coin security	Coins must be deposited directly into, and stored within, secured containers in the vault area of the meter.	**Meets**	
6.9	Money collection	Meter monies (coins and cash, if applicable) must be easy to collect, simple to reconcile and include audit capabilities.	**Meets**	
6.10	Clearing jammed coin	Maintenance personnel must be able to easily clear coin jams without the use of special tools and without accessing the vault.	**Meets**	
6.11	Clearing jammed bills	Maintenance personnel must be able to easily clear bill jams without the use of special tools and without accessing the vault.	**Does Not Meet**	Not applicable to single space meters
6.12	Pre-payment acceptance	All meters shall be able to be programmed to accept pre-payments prior to start of regulated parking and extended payment within applicable City policy requirements.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
6.13	PCI	The meter, the associated communications system, the backend server and gateway services shall all be compliant with Payment Card Industry Data Security Standard (PCI Level 1 certified by a Qualified Security Assessor (QSA)).	**Meets**	
6.14	PA-DSS Certified	Meter shall be PA-DSS certified by a Qualified Security Assessor (QSA).	**Meets**	
6.15	EMV Compliance	The technology must be EMV compliant.	**Meets**	The contactless card reader is certified Level 2 EMV compliant.
6.16	Adjust parking prices	The MMS system shall allow the City to dynamically and remotely adjust parking prices on the meters in real-time.	**Meets**	MacKay's Sentinel MMS meets this requirement
7	**Clock**			
7.1	24/7/365 Time Display	The meter must have a 365-day calendar real-time clock that completes a daily time-sync with the server at least once every 24 hours and that will either retain the time settings during battery replacements or servicing, or will accurately reset the time settings without losing prior programming; reset shall occur within 3 seconds of battery replacement or servicing. If back-up power built into the meter is used for this function, this back-up power must allow at least 15 minutes for a given battery change without losing the clock settings.	**Meets**	
7.2	Daylight Savings Time	The clock shall be programmable at least one year in advance for automatic daylight savings time changes.	**Meets**	
7.3	Time and Date accuracy	The time-of-day clock shall be accurate to within plus or minus two seconds per day (where a day is defined as any given 24-hour period). □ i. There shall be no upper limit or maximum deviation that would prevent the clock from syncing with the MMS. □ ii. The clock shall track the day of week, Monday through Sunday. □ iii. Time of day and day of week shall be displayed to maintenance staff, on the front display screen, when the reset feature is activated.	**Meets**	
8	**Power**			
8.1	Battery containment and accessibility	Batteries shall be located in an easily accessible storage area inside the unit that can be changed out in less than 30 seconds once the meter is opened.	**Meets**	
8.2	Nickel-Cadmium Battery	For environmental reasons, Nickel-Cadmium batteries shall not be used to power the meters.	**Meets**	
8.3	Meter power	The meter will be powered by battery and/or rechargeable solar-powered battery pack.	**Meets**	
8.4	Battery alert	When battery voltage falls below a minimum threshold, the meter will generate an alert prior to the meter going out of service.	**Meets**	
8.5	Battery corrosion resistance	Battery connections will be designed to resist corrosion and sustain a minimum of five years of service.	**Meets**	
8.6	Battery life display	Current battery voltage for both rechargeable (solar or equivalent) and non-rechargeable batteries will be available on the display and through the MMS.	**Meets**	
8.7	Data retention without power	All locally-stored meter data will be retained during battery replacement and battery failures of seven days or less.	**Meets**	
8.8	Battery life	Battery shall have a life of at least 1 year.	**Meets**	The MacKay mkBeacon meter is the industry's only battery neutral parking meter allowing its battery to have a life well over your requested 1 year period.

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
9	**Security**			
9.1	Secure Container	Coins passing through the meter shall be deposited directly into secured containers in a separate vault area.	**Meets**	
9.2	Coin Vault	The coin vault areas shall not be accessible from the maintenance compartment.	**Meets**	
9.3	Vandal Resistant	Meters shall be resistant to vandalism and other attacks to remove or disable coin from the coin cans.	**Meets**	
10	**Warranty/Vendor Support**			
10.1	Information Support	The customer support help desk shall have the ability to collect and/or provide detailed information to the City via the hotline and/or via log in to the back-office software, including: i. Verify, log and dispatch reports of meter malfunctions in real time with online tracking	**Meets**	
10.2	Toll free phone number	Proposer shall provide the City with toll free telephone numbers enabling them to reach Proposer's staff during normal business hours.	**Meets**	
10.3	Off-Site Diagnosis	The system must be capable of providing remote off-site diagnosis and support via wireless access. The system must be capable of remote software upgrades via wireless access.	**Meets**	
10.4	Quarterly bulletins	Vendor shall be required to provide quarterly technical bulletins that identify product notifications, technology updates, lessons learned from other installations and overall system and performance details including software and firmware upgrades with an explanation of features and improvements.	**Will Meet**	
10.5	System Warranty/Guarantee	Provide system warranty guarantees and extended warranty options on all hardware and software effective from the date of installation.	**Meets**	Warranty information is shown in the technical response
11	**Training by Vendor**			
11.1	Continued Training	The City requires an on-site 2-hour refresher training every 4 months that will include a review of project issues, system performance and product updates. Vendor shall provide all training at a location to be determined by the City or its designee.	**Will Meet**	
11.2	Vendor travel costs	Vendor shall cover all travel costs.	**Will Meet**	
11.3	Training/System Documentation	Vendor shall supply and keep current hard and digital copies of all operating, training, repair and user's manuals, which includes detailed instructions for system usage.	**Meets**	
12	**MMS Reporting/Maintenance Tracking/Enforcement**			
12.1	Equipment Downtime and Data Transmission Status	The MMS must provide secure, web-based back office reporting, including real time exception reporting for equipment downtime and data transmission issues.	**Meets**	
12.2	Maintenance Tracking/Ticket Generation	The MMS shall provide maintenance tracking with automated technical ticket generation.	**Meets**	
12.3	Maintenance App	The MMS shall provide a smartphone application to update, reassign and close out maintenance tickets.	**Meets**	
12.4	Track Maintenance Issues	The MMS shall have the capability to track maintenance issues, completion of maintenance tasks and reports on meter uptime.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
12.5	Maintenance Scheduling	The MMS shall provide scheduling capabilities for both preventive and non-recurring maintenance.	**Meets**	Sentinel MMS provides automated maintenance tickets which once repair is completed, the ticket is closed.
12.6	Maintenance Dispatch	The MMS shall provide a maintenance dispatch interface for the scheduling, routing, recording and reporting of error/problem corrections.	**Meets**	Automated maintenance dispatch interface is inherant in Sentinel Mobi for routing to the correct technician in real time, recording the event, repair of encountered error and remedy.
12.7	Maintenance/Enforcement Area/Zones	The MMS shall provide an online mapping module for parking spaces and meters to identify maintenance and enforcement areas/zones. The MMS shall provide real-time verification of parking spaces payment status for enforcement purposes.	**Meets**	
12.8	Sync Rate Changes	The MMS shall allow the remote download of all rate changes, display changes, other user interface changes and operating system changes and upgrades with no upcharge for wireless data usage.	**Meets**	
12.9	Reporting Analytics Tool	The web-based MMS reporting analytics tool shall allow for: □ i. custom filtering of data fields □ ii. drop & drag report capabilities □ iii. table creation where reports can be saved for individual or global use	**Meets**	
12.10	Export Data	The MMS shall allow for online scheduled reports to be exported as Excel, CSVs and/or PDFs.	**Meets**	
13	**Integrations**			
13.1	Real-Time Integration	Proposer must provide real-time integration with the City's current and future parking technology vendors, including, at a minimum, mobile/text provider(s), citation issuance/enforcement handhelds and the license plate recognition (LPR) provider (TBD). Proposer shall confirm integration capabilities with the City's existing and future vendors and/or describe any costs associated with implementing the integration required to support the proposed technology solution.	**Will Meet**	MacKay currently has an integration with the city's current pay by phone vendor - paybyphone. It does not have an integration with either POM, or Global. MacKay does currently have integrations with over 20 companies such as: Passport Labs, ParkMobile, DataTicket, gTechna, Genetec, Conduent etc.
13.2	Data and integration	Vendor will be required to provide data and integration with other City designated systems, initially including MapIt, a live database connection with GIS data that requires 9 decimals and, in the near future, Cartegraph and other potential system to be identified.	**Will Meet**	If the successful vendor, MacKay will require further information, including .api documents from the other City designated systems. Any licences or fees that these other City designated systems charge MacKay for the requested integrated functionality would be the cost of the City. MacKay does not create GIS data but has the ability to receive and share GIS information.
13.3	Meter data	Vendor will be required to provide all meter related data in a format and interface as defined by the City.	**Does Not Meet**	MacKay does not currently meet this requirement because the format and interface are not currently defined. It would be MacKay's expectation that this requirement is easily met once the expectations are shared.
14	**Extensibility**			
14.1	Data Import/Export	System shall have ability for Data Import/Export: Mobile/Text payment, Cartegraph, MapIt, PMIS	**Will Meet**	
14.2	Availability %	System shall have availability of 99.9%	**Will Meet**	
15	**Capacity**			
15.1	Number of Users	System will allow access to approximately 30 employees	**Meets**	
15.2	Number of Customer Records	Meters shall have ability to process approximately 100 transactions per meter per day.	**Meets**	
15.3	Historical Data	Ability to store over a million transactions per year.	**Meets**	
15.4	Spaces	Ability to support up to 6500 spaces.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
16	**Continuity**			
16.1	Recovery Time Objective (RTO)	If the system experiences an outage/goes offline, issue shall be resolved in 2 hours or less.	**Will Meet**	
16.2	Recovery Point Objective (RPO)	Recovery Point Objective (RPO) is to have no data loss. The system needs to operate off-line with no data loss within PCI Processing requirments.	**Will Meet**	
17	**Usability**			
17.1	Web UX/UI Standards	All technology shall have a modular design. Components shall be able to be quickly changed in the field.	**Meets**	
18	**Data**			
18.1	Data Retention	Vendors to meet the 5-year records retention schedule of the City of Fort Lauderdale.	**Will Meet**	
18.2	Data Migration	Vendor shall be able to work with outside vendors to perform data migration. This could include data mapping, data cleanup/verification, data transfer, and other testing as defined by City requirements.	**Will Meet**	It would be MacKay's expectation that this requirement is easily met once the expectations are shared.
19	**System Migration**			
19.1		Vendor shall be able to work with existing meter vendor to transition records from current MMS to include, but not limited to: meter locations; payment by meter, street and zone within timeframes specified by City requirements.	**Will Meet**	It would be MacKay's expectation that this requirement is easily met if exisiting meter vendors are forthright with the requested information.

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
1	**General Specifications**	**Please note: Please fill this sheet out for DUAL SPACE METERS only**	**Proposer is to respond to all requirements highlighted in *yellow*. If vendor selects "will meet" please list compliance date in notes section**	**If, applicable, you may use this space to expand on your response and/or reference supporting documentation (e.g. file attachments, online information, etc.) on how your solution meets the requirement.**
1.1	Pay for parking	Payment must be available through multiple options, including coin, credit card and mobile payment integration. Near Field Communication (NFC) (including Apple Pay and Google Pay) payments shall be supported and available.	**Meets**	NFC Payment requires the optional NFC reader to be installed.
1.2	Configure Payment Environment	Explain the process of converting meters from Pay-and Display, Pay-By-Space, and Pay-By Plate	**Does Not Meet**	**Not applicable to dual space meters**
1.3	Configure Rate Structure	Meters must have the ability to store a minimum of 8 different rate structures that are configurable by time of day, length of stay and day of the week.	**Meets**	
1.4	Screen size	Meters must have a large screen display in order for rate information to be displayed, rather than signs posted on the meter.	**Meets**	
1.5	Pre-pay	Meters must have pre-payment option (payments made in advance of operating hours).	**Meets**	
1.6	Add meter time	Meters must have the ability to add time to existing transactions, however, the add time feature must disallow the ability to purchase time past the maximum time for a parking space.	**Meets**	
1.7	Ability to Display Information	All technology shall be able to electronically display the following to the patron with minimal effort: i. rates ii. days and hours of operation iii. user instructions	**Meets**	
1.8	Vendor Support	Proposers must offer strong customer support 7 days a week including holidays. i. Timely, same-day responses are required. Ii. A single point of contact for the City is required during normal business hours (MST). Vendor will coordinate, in advance, scheduled time off and identify an alternative point of contact during these designated times.	**Will Meet**	A combination of strong customer support along with a designated project / account manager will be in place for the City.
1.9	Request for Quotations	Requests for Quotations from the City must be to be fulfilled within three business days, and/or at a status update on the 3rd business day and every 2 days thereafter. This is to include all requests for all equipment and parts.	**Meets**	
1.10	Return Merchandise Authorization	Return Merchandise Authorization (RMA) requests must be fulfilled within 30 calendar days, and/or a status update as the expected time of arrival (ETA). RMA shipments to the City must include advance email delivery notification, delivery date/time and the associated tracking number to the designated City point of contact. Deliveries to the City shall only occur within the mutually established delivery hours of operation.	**Meets**	
1.11	Change Rates	Changing rates using the Meter Management System (MMS) shall be completely web-based (no software to install), easy to use with customizable tariff naming and the ability to download rates onto customizable, user-defined groups of meters.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
1.12	ADA Compliance	All technology, equipment, and systems shall be ADA-compliant.	**Meets**	Pole height should be under 31" for the mkBeacon to be ADA compliant.
1.13	New Materials	All materials and components shall be new and unused.	**Meets**	
1.14	Modular Components	All technology shall have a modular design. Components shall be able to be quickly changed in the field.	**Meets**	
1.15	Weatherproof Electronics	All electronic components, connections and wiring shall be fully weatherproofed.	**Meets**	
1.16	Meter Quality	The meters shall be weather, rust and graffiti resistant and shall be made of stainless steel or an equivalent material.	**Meets**	
1.17	Doors	Vault and access doors must be sealed to prevent water/sand intrusion.	**Meets**	
1.18	Meter Lighting	The City prefers that the meter has additional lighting or illumination for dark hour usage.	**Meets**	
1.19	Wireless Communication	All technology shall wirelessly communicate usage, payment status, and maintenance alert data in real-time.	**Meets**	
1.20	Web-based MMS	All technology shall be managed by a web-based meter maintenance system. It is required that the meter maintenance system provide an accessible chain of events that identifies the footprint of usage including the user, date and time stamp, who completed an input, activity or event and the action completed.	**Meets**	
1.21	Environmental Durability	All technology shall be warranted to operate as proposed within a temperature range of -15 degrees Fahrenheit to +140 degrees Fahrenheit and under environmental conditions found in the City of Fort Lauderdale, including but not limited to sleet, rain, hail, ocean mist, grime, sand, fog, salt, sun (including direct sunlight), and vibrations.	**Meets**	
2	**MMS Requirements**			
2.1	MMS Maintenance Tickets	Shall be able to remotely update meter pricing, regulations, and configuration	**Meets**	
2.2	Meter Activity Reporting	Shall be able to provide reports on meter activity and shall, at a minimum, include: i. Metrics dashboard based on routes, Meter Technicians, faults, resolved, mean time to repair (MTTR), etc., ii.Auto push of faults to Meter Technicians.	**Meets**	
2.3	Work Order Tickets	Shall be able to automatically create maintenance work order tickets for meter-generated alarms or patron reports of meter malfunctions. Maintenance tickets shall be able to be updated via email, smartphone and tablet.	**Meets**	
2.4	Meter Maintenance Records	Shall record meter maintenance completed by repair staff.	**Meets**	
2.5	Meter Status Indicator	Shall easily indicate meter status and send alarms to designated personnel if a meter is not functioning.	**Meets**	
3	**Wireless Two-Way Communications**			
3.1	Wireless Communications	The technology will be equipped with a modem, antenna, and the required software to support wireless communications.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
3.2	Communications Service	The wireless communications shall be supplied as a "communications service" during the life of the contract, not as a specific type of modem or wireless carrier supply.	**Meets**	
4	**Equipment Display**			
4.1	Display in and out of light	Graphic display shall be easy to read under various daytime and nighttime lighting conditions, including fog and direct sunlight and at various angles.	**Meets**	
4.2	Backlit Display	The meter shall have a backlit graphic display panel that is large enough to legibly display all necessary operating status messages to patrons and repair personnel. The display must be energy efficient and operate in a solar-charging (or equivalent) configuration and not cause excessive battery drain.	**Meets**	
4.3	Scratch & Impact Resistant	The display shall be scratch and impact resistant.	**Meets**	
4.4	Rate & Hours	Current rates and hours must be able to be displayed on the graphic display and be remotely programmed.	**Meets**	
4.5	Program Rates	City shall have the ability to program rates independent of vendor support with no additional costs associated with these changes.	**Meets**	
4.6	Rate Options	Customers shall be able to select their rate option prior to submitting payment in order for the meter to translate the amount due and inform the customer of the payment value.	**Meets**	
4.7	Dynamic Messaging	Graphic display shall support dynamic messaging functionality to reflect changes in pricing, regulations, display messages, format, or configurations made in the MMS and communicated wirelessly to the meter at least once per day. The City shall have the ability to change or adjust the graphic display independent of vendor support and there shall be no additional costs for these types of adjustments.	**Meets**	
4.8	Special Messaging	All meters shall have an ability to display special messaging i.e., holiday and special event messages, which can be downloaded remotely..	**Meets**	
4.9	Display Content	Meter display shall clearly communicate the following electronically, alphanumerically and graphically: i. Rates ii. Days and hours of meter operation iii. Regulations iv. Instructions to the user: 1. Read Error, Please Reinsert Card – if card is removed from the mechanism before it could read the information on the card; 2. Coin Only – at the sole discretion of City, if the card slot is inoperable; 3. Card Only – at the sole discretion of City, if the coin slot is inoperable; 4. Out of Order – at the sole discretion of City, if the coin and card slots are inoperable, with customizable instructions. v. Special messaging	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
5	**Keypad**			
5.1	Keypad Durability	Keypads must be vandal resistant, weatherproof, and corrosion resistant.	**Meets**	
5.2	Display Feedback	Meters must provide visual, audible or tactile indication that a button has been pressed, as feedback to the patron.	**Meets**	
5.3	Security	Meters shall have high security locks for all meter doors. Electronic locks are required with online programmable access parameters including restrictions for maintenance, collections, days of week and hours of day. Meters must have manual override process in case of failure or electronic lock malfunction.	**Meets**	Electronic locks on the vault doors are optional and their pricing can be found in the pricing section. Meters will come standard with MacKay's M Series + locks. locks.
5.4	Upgrades	Upgrades to the MMS or other systems will be distributed, communicated, and implemented (e.g., training of appropriate staff) during the term of the contract including ongoing refresher training available to the City.	**Meets**	
6	**Payments**			
6.1	Credit cards	All meters must support secure real-time authorization of credit cards and optional contactless cards.	**Meets**	Pricing for optional contactless (NFC) credit card readers can be found in the pricing section.
6.2	Credit cards	Credit card payments can be accepted during weak wireless signal occurrences.	**Meets**	
6.3	Payments	Proposer shall be able to describe coin, card and alternative payment operations, including the number of different coins/currency accepted and the type of card-based payments, including magnetic stripe, contactless cards and chip-based cards (as applicable).	**Meets**	The mkBeacon supports up to 16 different coins or tokens, magnetic stripe credit cards (Visa, MasterCard, Amex, Discover, Diners), chip-based smart cards, contactless credit cards, and mobile payment (Passport, ParkMobile, Pay-by-Phone, etc.)
6.4	Coin payment	The meter shall accept coins through a jam-resistant coin interface and jam- resistant card payments through a card interface.	**Meets**	
6.5	Coin shutter	The coin discrimination system should contain an automatic shutter, which opens during operational hours for coin insertion of approved coins, but not for non-metallic objects.	**Does Not Meet**	
6.6	Alternative payment to coin	If the coin slot is inoperable, meters must have the option to still accept card payments and third-party payments (e.g., mobile payments).	**Meets**	
6.7	Coin chute free-fall	The coin chute or track and coin verifier unit shall be a free-fall type (non-moving and non-mechanized) or an equivalent.	**Meets**	
6.8	Coin chute anti-backup	The coin chute or track shall include an anti-backup provision to prevent and detect the attempted retrieval of deposited coins (e.g., attached to strings, paddles, wires, etc.).	**Meets**	
6.9	Coin security	Coins must be deposited directly into, and stored within, secured containers in the vault area of the meter.	**Meets**	
6.10	Money collection	Meter monies (coins and cash, if applicable) must be easy to collect, simple to reconcile and include audit capabilities.	**Meets**	
6.11	Clearing jammed coin	Maintenance personnel must be able to easily clear coin jams without the use of special tools and without accessing the vault.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
6.12	Pre-payment acceptance	All meters shall be able to be programmed to accept pre-payments prior to start of regulated parking and extended payment within applicable City policy requirements.	**Meets**	
6.13	PCI	The meter, the associated communications system, the backend server and gateway services shall all be compliant with Payment Card Industry Data Security Standard (PCI Level 1 certified by a Qualified Security Assessor (QSA)).	**Meets**	
6.14	PA-DSS Certified	Meter shall be PA-DSS certified by a Qualified Security Assessor (QSA).	**Meets**	
6.15	EMV Compliance	The technology must be EMV compliant.	**Meets**	The contactless card reader is certified Level 2 EMV compliant.
6.16	Adjust parking prices	The MMS system shall allow the City to dynamically and remotely adjust parking prices on the meters in real-time.	**Meets**	MacKay's Sentinel MMS meets this requirement
7	**Clock**			
7.1	24/7/365 Time Display	The meter must have a 365-day calendar real-time clock that completes a daily time-sync with the server at least once every 24 hours and that will either retain the time settings during battery replacements or servicing, or will accurately reset the time settings without losing prior programming; reset shall occur within 3 seconds of battery replacement or servicing. If back-up power built into the meter is used for this function, this back-up power must allow at least 15 minutes for a given battery change without losing the clock settings.	**Meets**	
7.2	Daylight Savings Time	The clock shall be programmable at least one year in advance for automatic daylight savings time changes.	**Meets**	
7.3	Time and Date accuracy	The time-of-day clock shall be accurate to within plus or minus two seconds per day (where a day is defined as any given 24-hour period). □ i. There shall be no upper limit or maximum deviation that would prevent the clock from syncing with the MMS. □ ii. The clock shall track the day of week, Monday through Sunday. □ iii. Time of day and day of week shall be displayed to maintenance staff, on the front display screen, when the reset feature is activated.	**Meets**	
8	**Power**			
8.1	Meter power	The meter will be powered by battery and/or rechargeable solar-powered battery pack.	**Meets**	
8.2	Battery containment and accessibility	Batteries shall be located in an easily accessible storage area inside the unit that can be changed out in less than 30 seconds once the meter is opened.	**Meets**	
8.3	Nickel-Cadmium Battery	For environmental reasons, Nickel-Cadmium batteries shall not be used to power the meters.	**Meets**	
8.4	Battery alert	When battery voltage falls below a minimum threshold, the meter will generate an alert prior to the meter going out of service.	**Meets**	
8.5	Battery corrosion resistance	Battery connections will be designed to resist corrosion and sustain a minimum of five years of service.	**Meets**	
8.6	Battery life display	Current battery voltage for both rechargeable (solar or equivalent) and non-rechargeable batteries will be available on the display and through the MMS.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
8.7	Data retention without power	All locally-stored meter data will be retained during battery replacement and battery failures of seven days or less.	**Meets**	
8.8	Battery life	Battery shall have a life of at least 1 year.	**Meets**	The MacKay mkBeacon meter is the industry's only battery neutral parking meter allowing its battery to have a life well over your requested 1 year period.
9	**Security**			
9.1	Secure Container	Coins passing through the meter shall be deposited directly into secured containers in a separate vault area.	**Meets**	
9.2	Coin Vault	The coin vault areas shall not be accessible from the maintenance compartment.	**Meets**	
9.3	Vandal Resistant	Meters shall be resistant to vandalism and other attacks to remove or disable coin from the coin cans.	**Meets**	
10	**Warranty/Vendor Support**			
10.1	Information Support	The customer support help desk shall have the ability to collect and/or provide detailed information to the City via the hotline and/or via log in to the back-office software, including: i. Verify, log and dispatch reports of meter malfunctions in real time with online tracking	**Meets**	
10.2	Toll free phone number	Proposer shall provide the City with toll free telephone numbers enabling them to reach Proposer's staff during normal business hours.	**Meets**	
10.3	Off-Site Diagnosis	The system must be capable of providing remote off-site diagnosis and support via wireless access. The system must be capable of remote software upgrades via wireless access.	**Meets**	
10.4	Quarterly bulletins	Vendor shall be required to provide quarterly technical bulletins that identify product notifications, technology updates, lessons learned from other installations and overall system and performance details including software and firmware upgrades with an explanation of features and improvements.	**Will Meet**	
10.5	System Warranty/Guarantee	Provide system warranty guarantees and extended warranty options on all hardware and software effective from the date of installation.	**Meets**	Warranty information is shown in the technical response
11	**Training by Vendor**			
11.1	Continued Training	The City requires an on-site 2-hour refresher training every 4 months that will include a review of project issues, system performance and product updates. Vendor shall provide all training at a location to be determined by the City or its designee.	**Will Meet**	
11.2	Vendor travel costs	Vendor shall cover all travel costs.	**Will Meet**	
11.3	Training/System Documentation	Vendor shall supply and keep current hard and digital copies of all operating, training, repair and user's manuals, which includes detailed instructions for system usage.	**Meets**	
12	**MMS Reporting/Maintenance Tracking/Enforcement**			
12.1	Equipment Downtime and Data Transmission Status	The MMS must provide secure, web-based back office reporting, including real time exception reporting for equipment downtime and data transmission issues.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
12.2	Maintenance Tracking/Ticket Generation	The MMS shall provide maintenance tracking with automated technical ticket generation.	**Meets**	
12.3	Maintenance App	The MMS shall provide a smartphone application to update, reassign and close out maintenance tickets.	**Meets**	
12.4	Track Maintenance Issues	The MMS shall have the capability to track maintenance issues, completion of maintenance tasks and reports on meter uptime.	**Meets**	
12.5	Maintenance Scheduling	The MMS shall provide scheduling capabilities for both preventive and non-recurring maintenance.	**Meets**	Sentinel MMS provides automated maintenance tickets which once repair is completed, the ticket is closed.
12.6	Maintenance Dispatch	The MMS shall provide a maintenance dispatch interface for the scheduling, routing, recording and reporting of error/problem corrections.	**Meets**	Automated maintenance dispatch interface is inherant in Sentinel Mobi for routing to the correct technician in real time, recording the event, repair of encountered error and remedy.
12.7	Maintenance/Enforcement Area/Zones	The MMS shall provide an online mapping module for parking spaces and meters to identify maintenance and enforcement areas/zones. The MMS shall provide real-time verification of parking spaces payment status for enforcement purposes.	**Meets**	
12.8	Sync Rate Changes	The MMS shall allow the remote download of all rate changes, display changes, other user interface changes and operating system changes and upgrades with no upcharge for wireless data usage.	**Meets**	
12.9	Reporting Analytics Tool	The web-based MMS reporting analytics tool shall allow for: □ i. custom filtering of data fields □ ii. drop & drag report capabilities □ iii. table creation where reports can be saved for individual or global use	**Meets**	
12.10	Export Data	The MMS shall allow for online scheduled reports to be exported as Excel, CSVs and/or PDFs.	**Meets**	
12.11	System Transactions	For a pay-by-plate or pay-by-space solution, system transactions shall be communicated to the back-office system in real time to support enforcement queries and integration requirements. The system shall support enforcement queries for vehicle payment status.	**Does Not Meet**	Not Applicable to Dual space meters
13	**Integrations**			
13.1	Real-Time Integration	Proposer must provide real-time integration with the City's current and future parking technology vendors, including, at a minimum, mobile/text provider(s), citation issuance/enforcement handhelds and the license plate recognition (LPR) provider (TBD). Proposer shall confirm integration capabilities with the City's existing and future vendors and/or describe any costs associated with implementing the integration required to support the proposed technology solution.	**Will Meet**	MacKay currently has an integration with the city's current pay by phone vendor - paybyphone. It does not have an integration with either POM, or Global. MacKay does currently have integrations with over 20 companies such as: Passport Labs, ParkMobile, DataTicket, gTechna, Genetec, Conduent etc.
13.2	Data and integration	Vendor will be required to provide data and integration with other City designated systems, initially including MapIt, a live database connection with GIS data that requires 9 decimals and, in the near future, Cartegraph and other potential system to be identified.	**Will Meet**	If the successful vendor, MacKay will require further information, including .api documents from the other City designated systems. Any licences or fees that these other City designated systems charge MacKay for the requested integrated functionality would be the cost of the City. MacKay does not create GIS data but has the ability to receive and share GIS information.

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
13.3	Meter data	Vendor will be required to provide all meter related data in a format and interface as defined by the City.	**Does Not Meet**	MacKay does not currently meet this requirement because the format and interface are not currently defined. It would be MacKay's expectation that this requirement is easily met once the expectations are shared.
14	**Extensibility**			
14.1	Data Import/Export	System shall have ability for Data Import/Export: Mobile/Text payment, Cartegraph, MapIt, PMIS	**Will Meet**	
14.2	Availability %	System shall have availability of 99.9%	**Will Meet**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
15	**Capacity**			
15.1	Number of Users	System will allow access to approximately 30 employees	**Meets**	
15.2	Number of Customer Records	Meters shall have ability to process approximately 100 transactions per meter per day.	**Meets**	
15.3	Historical Data	Ability to store over a million transactions per year.	**Meets**	
15.4	Spaces	Ability to support up to 6500 spaces.	**Meets**	
16	**Continuity**			
16.1	Recovery Time Objective (RTO)	If the system experiences an outage/goes offline, issue shall be resolved in 2 hours or less.	**Will Meet**	
16.2	Recovery Point Objective (RPO)	Recovery Point Objective (RPO) is to have no data loss. The system needs to operate off-line with no data loss within PCI Processing requirments.	**Will Meet**	
17	**Usability**			
17.1	Web UX/UI Standards	All technology shall have a modular design. Components shall be able to be quickly changed in the field.	**Meets**	
18	**Data**			
18.1	Data Retention	Vendors to meet the 5-year records retention schedule of the City of Fort Lauderdale.	**Will Meet**	
18.2	Data Migration	Vendor shall be able to work with outside vendors to perform data migration. This could include data mapping, data cleanup/verification, data transfer, and other testing as defined by City requirements.	**Will Meet**	It would be MacKay's expectation that this requirement is easily met once the expectations are shared.
19	**System Migration**			
19.1		Vendor shall be able to work with existing meter vendor to transition records from current MMS to include, but not limited to: meter locations; payment by meter, street and zone within timeframes specified by City requirements.	**Will Meet**	It would be MacKay's expectation that this requirement is easily met if exisiting meter vendors are forthright with the requested information.

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
1	**General Specifications**	**Please note: Please fill this sheet out for PAY STATIONS only**	**Proposer is to respond to all requirements highlighted in *yellow*. If vendor selects "will meet" please list compliance date in notes section**	**If, applicable, you may use this space to expand on your response and/or reference supporting documentation (e.g. file attachments, online information, etc.) on how your solution meets the requirement.**
1.1	Pay for parking	Payment must be available through multiple options, including coin, credit card and mobile payment integration. Near Field Communication (NFC) (including Apple Pay and Google Pay) payments shall be supported and available.	**Meets**	NFC Payment requires the optional NFC reader to be installed.
1.2	Configure Payment Environment	Explain the process of converting meters from Pay-and Display, Pay-By-Space, and Pay-By Plate	**Meets**	Change from Pay and Display to Pay by Space or Pay by Plate is a software change.
1.3	Configure Rate Structure	Meters must have the ability to store a minimum of 8 different rate structures that are configurable by time of day, length of stay and day of the week.	**Meets**	
1.4	Screen size	Meters must have a large screen display in order for rate information to be displayed, rather than signs posted on the meter.	**Meets**	
1.5	Pre-pay	Meters must have pre-payment option (payments made in advance of operating hours).	**Meets**	
1.6	Add meter time	Meters must have the ability to add time to existing transactions, however, the add time feature must disallow the ability to purchase time past the maximum time for a parking space.	**Meets**	
1.7	Ability to Display Information	All technology shall be able to electronically display the following to the patron with minimal effort: i. rates ii. days and hours of operation iii. user instructions	**Meets**	
1.8	Vendor Support	Proposers must offer customer support 7 days a week including holidays. i. Timely, same-day responses are required. Ii. A single point of contact for the City is required during normal business hours (MST). Vendor will coordinate, in advance, scheduled time off and identify an alternative point of contact during these designated times.	**Will Meet**	A combination of strong customer support along with a designated project / account manager will be in place for the City.
1.9	Request for Quotations	Requests for Quotations from the City must be to be fulfilled within three business days, and/or at a status update on the 3rd business day and every 2 days thereafter. This is to include all requests for all equipment and parts.	**Meets**	
1.10	Return Merchandise Authorization	Return Merchandise Authorization (RMA) requests must be fulfilled within 30 calendar days, and/or a status update as the expected time of arrival (ETA). RMA shipments to the City must include advance email delivery notification, delivery date/time and the associated tracking number to the designated City point of contact. Deliveries to the City shall only occur within the mutually established delivery hours of operation.	**Meets**	
1.11	Change Rates	Changing rates using the Meter Management System (MMS) shall be completely web-based (no software to install), easy to use with customizable tariff naming and the ability to download rates onto customizable, user-defined groups of meters.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
1.12	ADA Compliance	All technology, equipment, and systems shall be ADA-compliant.	**Meets**	
1.13	New Materials	All materials and components shall be new and unused.	**Meets**	
1.14	Modular Components	All technology shall have a modular design. Components shall be able to be quickly changed in the field.	**Meets**	
1.15	Weatherproof Electronics	All electronic components, connections and wiring shall be fully weatherproofed.	**Meets**	
1.16	Meter Quality	The meters shall be weather, rust and graffiti resistant and shall be made of stainless steel or an equivalent material.	**Meets**	
1.17	Doors	Vault and access doors must be sealed to prevent water/sand intrusion.	**Meets**	
1.18	Meter Lighting	The City prefers that the meter has additional lighting or illumination for dark hour usage.	**Meets**	An optional lighting bar can be added to the top of the Tango if requested.
1.19	Wireless Communication	All technology shall wirelessly communicate usage, payment status, and maintenance alert data in real-time.	**Meets**	
1.20	Web-based MMS	All technology shall be managed by a web-based meter maintenance system. It is required that the meter maintenance system provide an accessible chain of events that identifies the footprint of usage including the user, date and time stamp, who completed an input, activity or event and the action completed.	**Meets**	
1.20	Environmental Durability	All technology shall be warranted to operate as proposed within a temperature range of -15 degrees Fahrenheit to +140 degrees Fahrenheit and under environmental conditions found in the City of Fort Lauderdale, including but not limited to sleet, rain, hail, ocean mist, grime, sand, fog, salt, sun (including direct sunlight), and vibrations.	**Meets**	
2	**MMS Requirements**			
2.1	MMS Maintenance Tickets	Shall be able to remotely update meter pricing, regulations, and configuration	**Meets**	
2.2	Meter Activity Reporting	Shall be able to provide reports on meter activity and shall, at a minimum, include: i. Metrics dashboard based on routes, Meter Technicians, faults, resolved, mean time to repair (MTTR), etc., ii.Auto push of faults to Meter Technicians.	**Meets**	
2.3	Work Order Tickets	Shall be able to automatically create maintenance work order tickets for meter-generated alarms or patron reports of meter malfunctions. Maintenance tickets shall be able to be updated via email, smartphone and tablet.	**Meets**	
2.4	Meter Maintenance Records	Shall record meter maintenance completed by repair staff.	**Meets**	
2.5	Meter Status Indicator	Shall easily indicate meter status and send alarms to designated personnel if a meter is not functioning.	**Meets**	
3	**Wireless Two-Way Communications**			
3.1	Wireless Communications	The technology will be equipped with a modem, antenna, and the required software to support wireless communications.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
3.2	Communications Service	The wireless communications shall be supplied as a "communications service" during the life of the contract, not as a specific type of modem or wireless carrier supply.	**Meets**	
4	**Equipment Display**			
4.1	Display in and out of light	Graphic display shall be easy to read under various daytime and nighttime lighting conditions, including fog and direct sunlight and at various angles.	**Meets**	
4.2	Backlit Display	The meter shall have a backlit graphic display panel that is large enough to legibly display all necessary operating status messages to patrons and repair personnel. The display must be energy efficient and operate in a solar-charging (or equivalent) configuration and not cause excessive battery drain.	**Meets**	
4.3	Scratch & Impact Resistant	The display shall be scratch and impact resistant.	**Meets**	
4.4	Rate & Hours	Current rates and hours must be able to be displayed on the graphic display and be remotely programmed.	**Meets**	
4.5	Program Rates	City shall have the ability to program rates independent of vendor support with no additional costs associated with these changes.	**Meets**	
4.6	Validation/Permit Codes	Validation/Permit Codes- Ability to create specific codes to be utilized during special events and pre-selling of parking spaces where MS meters are located to eliminate the need of creating dashboard permits.Ability to create codes in the backoffice with specific parameters i. Code to be used on specific day and times ii. Valid for specific amount of time iii. Ability to limit the number of times code can be used or a continuous code for extended period of time	**Will Meet**	MacKay currently does not meet this specification but it is in the queue for development in Q3/4 of 2020
4.7	Rate Options	Customers shall be able to select their rate option prior to submitting payment in order for the meter to translate the amount due and inform the customer of the payment value.	**Meets**	
4.8	Dynamic Messaging	Graphic display shall support dynamic messaging functionality to reflect changes in pricing, regulations, display messages, format, or configurations made in the MMS and communicated wirelessly to the meter at least once per day. The City shall have the ability to change or adjust the graphic display independent of vendor support and there shall be no additional costs for these types of adjustments.	**Meets**	
4.9	Special Messaging	All meters shall have an ability to display special messaging i.e., holiday and special event messages, which can be downloaded remotely..	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
4.10	Display Content	Meter display shall clearly communicate the following electronically, alphanumerically and graphically: i. Rates ii. Days and hours of meter operation iii. Regulations iv. Instructions to the user: 1. Read Error, Please Reinsert Card – if card is removed from the mechanism before it could read the information on the card; 2. Coin Only – at the sole discretion of City, if the card and cash slots are inoperable; 3. Cash Only - at the sole discretion of City, if coin and card slot is inoperable 4. Card Only – at the sole discretion of City, if the coin and cash slots are inoperable; 5. Out of Order – at the sole discretion of City, if the coin, cash and card slost are inoperable, with customizable instructions. v. Special messaging (Special events rates / valet opertions)	**Meets**	
5	**Keypad**			
5.1	Keypad Durability	Keypads must be vandal resistant, weatherproof, and corrosion resistant.	**Meets**	
5.2	Lighted Key Pad	Meters should have lighted keypads	**Does Not Meet**	The keypads used by MacKay are not back lit. The Tango pay station does have an optional brow light that will illuminate the front of the pay station, including the keypad.
5.3	Display Feedback	Meters must provide visual, audible or tactile indication that a button has been pressed, as feedback to the patron.	**Meets**	
5.4	Security	Meters shall have high security locks for all meter doors. Electronic locks are required with online programmable access parameters including restrictions for maintenance, collections, days of week and hours of day. Meters must have manual override process in case of failure or electronic lock malfunction.	**Meets**	Electronic locks are optional and their pricing can be found in the pricing section. Meters will come standard with MacKay's M Series + locks.
5.5	Upgrades	Upgrades to the MMS or other systems will be distributed, communicated, and implemented (e.g., training of appropriate staff) during the term of the contract including ongoing refresher training available to the City.	**Meets**	
6	**Payments**			
6.1	Credit cards	All meters must support secure real-time authorization of credit cards and optional contactless cards.	**Meets**	Pricing for optional contactless (NFC) credit card readers can be found in the pricing section.
6.2	Credit cards	Credit card payments can be accepted during weak wireless signal occurrences.	**Meets**	
6.3	Payments	Proposer shall be able to describe coin, card and alternative payment operations, including the number of different coins/currency accepted and the type of card-based payments, including magnetic stripe, contactless cards and chip-based cards (as applicable).	**Meets**	The Tango pay station supports up to 16 different coins or tokens, magnetic stripe credit cards (Visa, MasterCard, Amex, Discover, Diners), chip-based smart cards, contactless credit cards, and mobile payment (Passport, ParkMobile, Pay-by-Phone, etc.)
6.4	Coin payment	The meter shall accept coins through a jam-resistant coin interface and jam- resistant card payments through a card interface.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
6.5	Coin shutter	The coin discrimination system should contain an automatic shutter, which opens during operational hours for coin insertion of approved coins, but not for non-metallic objects.	**Does Not Meet**	The Tango pay station does not uses a coin shutter as these devices tend to be maintenance heavy items. Instead, the Tango includes additional sensors in the coin chute used to detect non-metalic objects and obstructions.
6.6	Alternative payment to coin	If the coin slot is inoperable, meters must have the option to still accept card payments and third-party payments (e.g., mobile payments).	**Meets**	
6.7	Coin chute free-fall	The coin chute or track and coin verifier unit shall be a free-fall type (non-moving and non-mechanized) or an equivalent.	**Meets**	
6.8	Coin chute anti-backup	The coin chute or track shall include an anti-backup provision to prevent and detect the attempted retrieval of deposited coins (e.g., attached to strings, paddles, wires, etc.).	**Meets**	
6.9	Coin security	Coins must be deposited directly into, and stored within, secured containers in the vault area of the meter.	**Meets**	
6.10	Money collection	Meter monies (coins and cash, if applicable) must be easy to collect, simple to reconcile and include audit capabilities.	**Meets**	
6.11	Clearing jammed coin	Maintenance personnel must be able to easily clear coin jams without the use of special tools and without accessing the vault.	**Meets**	
6.12	Pre-payment acceptance	All meters shall be able to be programmed to accept pre-payments prior to start of regulated parking and extended payment within applicable City policy requirements.	**Meets**	
6.13	PCI	The meter, the associated communications system, the backend server and gateway services shall all be compliant with Payment Card Industry Data Security Standard (PCI Level 1 certified by a Qualified Security Assessor (QSA)).	**Meets**	
6.14	PA-DSS Certified	Meter shall be PA-DSS certified by a Qualified Security Assessor (QSA).	**Meets**	
6.15	EMV Compliance	The technology must be EMV compliant.	**Meets**	The contactless card reader is certified Level 2 EMV compliant.
6.16	Adjust parking prices	The MMS system shall allow the City to dynamically and remotely adjust parking prices on the meters in real-time.	**Meets**	MacKay's Sentinel MMS meets this requirement
7	**Clock**			
7.1	24/7/365 Time Display	The meter must have a 365-day calendar real-time clock that completes a daily time-sync with the server at least once every 24 hours and that will either retain the time settings during battery replacements or servicing, or will accurately reset the time settings without losing prior programming; reset shall occur within 3 seconds of battery replacement or servicing. If back-up power built into the meter is used for this function, this back-up power must allow at least 15 minutes for a given battery change without losing the clock settings.	**Meets**	
7.2	Daylight Savings Time	The clock shall be programmable at least one year in advance for automatic daylight savings time changes.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
7.3	Time and Date accuracy	The time-of-day clock shall be accurate to within plus or minus two seconds per day (where a day is defined as any given 24-hour period). □ i. There shall be no upper limit or maximum deviation that would prevent the clock from syncing with the MMS. □ ii. The clock shall track the day of week, Monday through Sunday. □ iii. Time of day and day of week shall be displayed to maintenance staff, on the front display screen, when the reset feature is activated.	**Meets**	
8	**Power**			
8.1	Meter power	The meter will be powered by solar-powered and/or rechargeable battery pack or direct wire (120 volt)	**Meets**	
8.2	Battery containment and accessibility	Batteries shall be located in an easily accessible storage area inside the unit that can be changed out in less than 30 seconds once the meter is opened.	**Meets**	
8.3	Nickel-Cadmium Battery	For environmental reasons, Nickel-Cadmium batteries shall not be used to power the meters.	**Meets**	
8.4	Battery alert	When battery voltage falls below a minimum threshold, the meter will generate an alert prior to the meter going out of service.	**Meets**	
8.5	Battery corrosion resistance	Battery connections will be designed to resist corrosion and sustain a minimum of five years of service.	**Meets**	
8.6	Battery life display	Current battery voltage for both rechargeable (solar or equivalent) and non-rechargeable batteries will be available on the display and through the MMS.	**Meets**	
8.7	Data retention without power	All locally-stored meter data will be retained during battery replacement and battery failures of seven days or less.	**Meets**	
8.8	Battery life	Battery shall have a life of at least 1 year.	**Meets**	
9	**Security**			
9.1	Secure Container	Coins passing through the meter shall be deposited directly into secured containers in a separate vault area.	**Meets**	
9.2	Coin Vault	The coin vault areas shall not be accessible from the maintenance compartment.	**Meets**	
9.3	Vandal Resistant	Meters shall be resistant to vandalism and other attacks to remove or disable coin from the coin cans.	**Meets**	
10	**Warranty/Vendor Support**			
10.1	Information Support	The customer support help desk shall have the ability to collect and/or provide detailed information to the City via the hotline and/or via log in to the back-office software, including: □ i. Verify, log and dispatch reports of meter malfunctions in real time with online tracking	**Meets**	
10.2	Toll free phone number	Proposer shall provide the City with toll free telephone numbers enabling them to reach Proposer's staff during normal business hours.	**Meets**	
10.3	Off-Site Diagnosis	The system must be capable of providing remote off-site diagnosis and support via wireless access. The system must be capable of remote software upgrades via wireless access.	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
10.4	Quarterly bulletins	Vendor shall be required to provide quarterly technical bulletins that identify product notifications, technology updates, lessons learned from other installations and overall system and performance details including software and firmware upgrades with an explanation of features and improvements.	**Will Meet**	
10.5	System Warranty/Guarantee	Provide system warranty guarantees and extended warranty options on all hardware and software effective from the date of installation.	**Meets**	Warranty information is shown in the technical response
11	**Training by Vendor**			
11.1	Continued Training	The City requires an on-site 2-hour refresher training every 4 months that will include a review of project issues, system performance and product updates. Vendor shall provide all training at a location to be determined by the City or its designee.	**Will Meet**	
11.2	Vendor travel costs	Vendor shall cover all travel costs.	**Will Meet**	
11.3	Training/System Documentation	Vendor shall supply and keep current hard and digital copies of all operating, training, repair and user's manuals, which includes detailed instructions for system usage.	**Meets**	
12	**MMS Reporting/Maintenance Tracking/Enforcement**			
12.1	Equipment Downtime and Data Transmission Status	The MMS must provide secure, web-based back office reporting, including real time exception reporting for equipment downtime and data transmission issues.	**Meets**	
12.2	Maintenance Tracking/Ticket Generation	The MMS shall provide maintenance tracking with automated technical ticket generation.	**Meets**	
12.3	Maintenance App	The MMS shall provide a smartphone application to update, reassign and close out maintenance tickets.	**Meets**	
12.4	Track Maintenance Issues	The MMS shall have the capability to track maintenance issues, completion of maintenance tasks and reports on meter uptime.	**Meets**	
12.5	Maintenance Scheduling	The MMS shall provide scheduling capabilities for both preventive and non-recurring maintenance.	**Meets**	Sentinel MMS provides automated maintenance tickets which once repair is completed, the ticket is closed.
12.6	Maintenance Dispatch	The MMS shall provide a maintenance dispatch interface for the scheduling, routing, recording and reporting of error/problem corrections.	**Meets**	Automated maintenance dispatch interface is inherant in Sentinel Mobi for routing to the correct technician in real time, recording the event, repair of encountered error and remedy.
12.7	Maintenance/Enforcement Area/Zones	The MMS shall provide an online mapping module for parking spaces and meters to identify maintenance and enforcement areas/zones. The MMS shall provide real-time verification of parking spaces payment status for enforcement purposes.	**Meets**	
12.8	Sync Rate Changes	The MMS shall allow the remote download of all rate changes, display changes, other user interface changes and operating system changes and upgrades with no upcharge for wireless data usage.	**Meets**	
12.9	Reporting Analytics Tool	The web-based MMS reporting analytics tool shall allow for: □ i. custom filtering of data fields □ ii. drop & drag report capabilities □ iii. table creation where reports can be saved for individual or global use	**Meets**	

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
12.10	Export Data	The MMS shall allow for online scheduled reports to be exported as Excel, CSVs and/or PDFs.	**Meets**	
12.11	System Transactions	For a pay-by-plate or pay-by-space solution, system transactions shall be communicated to the back-office system in real time to support enforcement queries and integration requirements. The system shall support enforcement queries for vehicle payment status.	**Meets**	
13	**Integrations**			
13.1	Real-Time Integration	Proposer must provide real-time integration with the City's current and future parking technology vendors, including, at a minimum, mobile/text provider(s), citation issuance/enforcement handhelds and the license plate recognition (LPR) provider (TBD). Proposer shall confirm integration capabilities with the City's existing and future vendors and/or describe any costs associated with implementing the integration required to support the proposed technology solution.	**Will Meet**	MacKay currently has an integration with the city's current pay by phone vendor - paybyphone. It does not have an integration with either POM, or Global. MacKay does currently have integrations with over 20 companies such as: Passport Labs, ParkMobile, DataTicket, gTechna, Genetec, Conduent etc.
13.2	Data and integration	Vendor will be required to provide data and integration with other City designated systems, initially including MapIt, a live database connection with GIS data that requires 9 decimals and, in the near future, Cartegraph and other potential system to be identified.	**Will Meet**	If the successful vendor, MacKay will require further information, including .api documents from the other City designated systems. Any licences or fees that these other City designated systems charge MacKay for the requested integrated functionality would be the cost of the City. MacKay does not create GIS data but has the ability to receive and share GIS information.
13.3	Meter data	Vendor will be required to provide all meter related data in a format and interface as defined by the City.	**Does Not Meet**	MacKay does not currently meet this requirement because the format and interface are not currently defined. It would be MacKay's expectation that this requirement is easily met once the expectations are shared.
14	**Extensibility**			
14.1	Data Import/Export	System shall have ability for Data Import/Export: Mobile/Text payment, Cartegraph, MapIt, PMIS	**Will Meet**	
14.2	Availability %	System shall have availability of 99.9%	**Will Meet**	
15	**Capacity**			
15.1	Number of Users	System will allow access to approximately 30 employees	**Meets**	
15.2	Number of Customer Records	Meters shall have ability to process approximately 100 transactions per meter per day.	**Meets**	
15.3	Historical Data	Ability to store over a million transactions per year.	**Meets**	
15.4	Spaces	Ability to support up to 6500 spaces.	**Meets**	
16	**Continuity**			
16.1	Recovery Time Objective (RTO)	If the system experiences an outage/goes offline, issue shall be resolved in 2 hours or less.	**Will Meet**	
16.2	Recovery Point Objective (RPO)	Recovery Point Objective (RPO) is to have no data loss. The system needs to operate off-line with no data loss within PCI Processing requirments.	**Will Meet**	
17	**Usability**			
17.1	Web UX/UI Standards	All technology shall have a modular design. Components shall be able to be quickly changed in the field.	**Meets**	
18	**Data**			
18.1	Data Retention	Vendors to meet the 5-year records retention schedule of the City of Fort Lauderdale.	**Will Meet**	
18.2	Data Migration	Vendor shall be able to work with outside vendors to perform data migration. This could include data mapping, data cleanup/verification, data transfer, and other testing as defined by City requirements.	**Will Meet**	It would be MacKay's expectation that this requirement is easily met once the expectations are shared.

Company Name and Contact Information:				
	Requirement Name	**Requirement Description**	**Requirement Compliance**	**Vendor Response Comments - Optional**
19	**System Migration**			
19.1		Vendor shall be able to work with existing meter vendor to transition records from current MMS to include, but not limited to: meter locations; payment by meter, street and zone within timeframes specified by City requirements.	**Will Meet**	It would be MacKay's expectation that this requirement is easily met if exisiting meter vendors are forthright with the requested information.